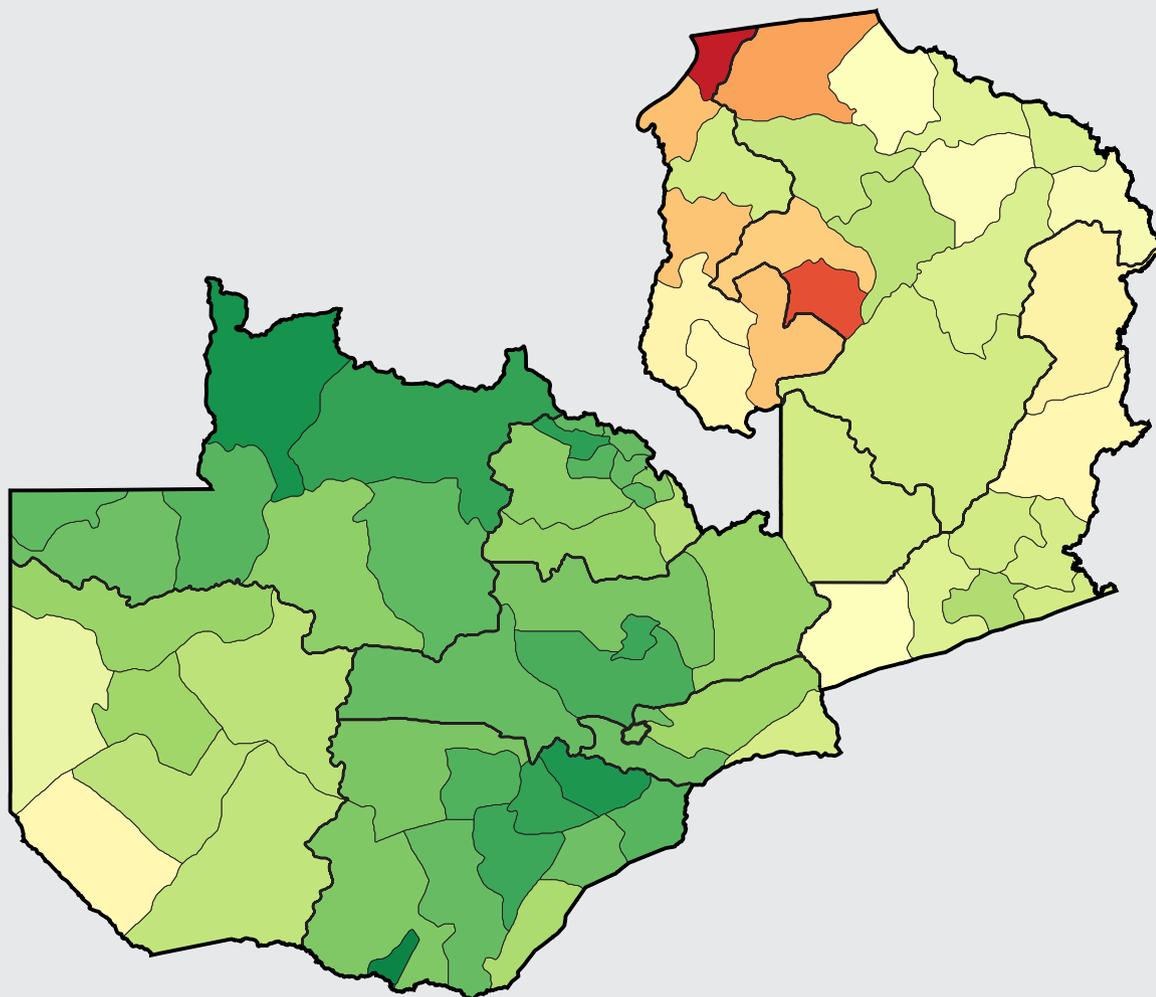


Assessing Impact, Improving Health

Progress in Child Health Across Districts in Zambia

A REPORT OF THE MCPA PROJECT



IHME

INSTITUTE FOR HEALTH METRICS AND EVALUATION
UNIVERSITY OF WASHINGTON



UNIVERSITY OF ZAMBIA

This report was prepared by the Institute for Health Metrics and Evaluation (IHME) and the Department of Economics at the University of Zambia (UNZA). This work is intended to provide information on levels and trends in under-5 mortality and coverage of key child health interventions across districts in Zambia. The estimates may change following peer review. The contents of this publication may not be reproduced in whole or in part without permission from IHME.

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ABOUT IHME

The Institute for Health Metrics and Evaluation (IHME) is an independent global health research center at the University of Washington that provides rigorous and comparable measurement of the world's most important health problems and evaluates the strategies used to address them. IHME makes this information freely available so that policymakers have the evidence they need to make informed decisions about how to allocate resources to best improve population health.

To express interest in collaborating or request further information on the Malaria Control Policy Assessment (MCPA) project in Zambia, please contact IHME at:

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ABOUT THIS REPORT

Assessing Impact, Improving Health: Progress in Child Health Across Districts in Zambia provides the most up-to-date results from the MCPA project in Zambia, including district-level trends for a range of indicators and the impact of malaria control and other child health interventions on under-5 mortality. This report expands upon the 2011 report produced by IHME and the University of Zambia (UNZA), *Maternal and Child Health Intervention Coverage in Zambia: the Heterogeneous Picture*.

The MCPA project was led by Emmanuela Gakidou at IHME and Felix Masiye at UNZA. Data collation was primarily con-

ducted by Peter Hangoma and Peter Mulenga, researchers at the Department of Economics at UNZA, and Frank Kukunga at the Central Statistical Office (CSO). Trends in under-5 mortality were produced by Laura Dwyer-Lindgren at IHME, with contributions from Casey Olives of the University of Washington. At IHME, intervention coverage analyses were conducted by K. Ellicott Colson, with contributions from Laura Dwyer-Lindgren, Tom Achoki, Nancy Fullman, and Matthew Schneider (now at USAID). The causal attribution analysis was performed by Marie Ng and K. Ellicott Colson. This report was written by Nancy Fullman, with contributions from William Heisel.

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Acronyms

AIDS	Acquired immunodeficiency syndrome
ANC4	Antenatal care, a minimum of four visits
BCG	Bacillus Calmette-Guérin vaccine
CSO	Central Statistical Office
DPT3	Diphtheria-pertussis-tetanus vaccine (three doses)
GPR	Gaussian Process Regression
HIV	Human immunodeficiency virus
IHME	Institute for Health Metrics and Evaluation
IPTp2	Intermittent preventive therapy in pregnancy, a minimum of two doses
IRS	Indoor residual spraying
ITN	Insecticide-treated net
JICA	Japan International Cooperation Agency
MCPA	Malaria Control Policy Assessment
MOH	Ministry of Health
MSL	Medical Stores Limited
NMCC	National Malaria Control Centre
PCA	Principal component analysis
PMTCT	Prevention of mother-to-child transmission of HIV
SBA	Skilled birth attendance
UNZA	University of Zambia

Terms and definitions

All-cause under-5 mortality:

the probability (expressed as the rate per 1,000 live births) that children born alive will die before reaching the age of 5 years

Antenatal care (ANC4) coverage:

the proportion of women 15 to 49 years old who had four or more antenatal visits at a health facility during pregnancy

BCG immunization coverage:

the proportion of children under 5 years old who have been vaccinated against tuberculosis

Childhood underweight:

the proportion of children under 5 years old who are two or more standard deviations below the international anthropometric reference population median of weight for age

DPT3 coverage:

the proportion of children 12 to 59 months old who have received three doses of the diphtheria-pertussis-tetanus (DPT) vaccine

Exclusive breastfeeding coverage:

the proportion of children who were exclusively breastfed during their first six months after birth

Indoor residual spraying coverage:

the proportion of households that were sprayed with an insecticide-based solution in the last 12 months

Insecticide-treated net (ITN):

a net treated with an insecticide-based solution that is used for protection against mosquitos that can carry malaria

Intermittent preventive therapy in pregnancy, two doses (IPTp2):

the proportion of pregnant women who received at least two treatment doses of Fansidar (sulfadoxine/pyrimethamine) at antenatal care visits during pregnancy

Intervention coverage:

the proportion of individuals or households who received an intervention that they needed

ITN ownership:

the proportion of households that own at least one ITN

ITN use by children under 5:

the proportion of children under 5 years old who slept under an ITN the previous night, as reported by household heads

Measles immunization coverage:

the proportion of children 12 to 59 months old who have received measles vaccination

Pentavalent immunization coverage:

the proportion of children 12 to 59 months old who have received the pentavalent vaccine, which includes protection against diphtheria-pertussis-tetanus (DPT), hepatitis B, and *Haemophilus influenzae* type b

Polio immunization coverage:

the proportion of children 12 to 59 months old who have received three doses of the oral polio vaccine

Prevention of mother-to-child transmission of HIV (PMTCT):

the receipt of antiretroviral drugs as prophylaxis to reduce the risk of mother-to-child transmission of HIV among HIV-positive pregnant women

Skilled birth attendance coverage:

the proportion of pregnant women 15 to 49 years old who delivered with a skilled birth attendant (a doctor, nurse, midwife, or clinical officer)

Executive summary

Zambia has seen remarkable improvement in childhood survival over the past two decades. While the scale-up of malaria control interventions has been proposed as one of the biggest drivers behind that improvement, little research has been done on how much of the reduction in childhood mortality may be attributed to malaria control and how much is the result of improvements in other child health interventions. To address this knowledge gap, the University of Zambia (UNZA) and the Institute for Health Metrics and Evaluation (IHME) worked together on the Malaria Control Policy Assessment (MCPA) project. The goal of MCPA was to harness existing data in Zambia and use rigorous statistical methods to quantify the impact of malaria control and other child health interventions on under-5 mortality trends across districts.

We found that between 1990 and 2010, a combination of rapidly scaled up child health interventions contributed to an additional 11% of declines in under-5 mortality across Zambia. We looked at the combined effect of these interventions because the scale-up in ownership of insecticide-treated nets (ITNs) and use of indoor residual spraying (IRS) coincided with the scale-up in three other key child health interventions: the pentavalent vaccine, exclusive breastfeeding, and services to help prevent mother-to-child transmission of HIV (PMTCT) at health facilities. Isolating the specific impact of each intervention is not possible. Nevertheless, jointly, these interventions contributed significantly to the reduction of under-5 mortality throughout the country.

The MCPA project in Zambia produced district-level trends for key child health outcomes and interventions from 1990 to 2010. This is the first time that annual estimates for under-5 mortality and intervention coverage have been generated at the district level. In this report, district profiles detail trends in child health over time and benchmark the districts' performance across indicators. With this information, local and national policymakers and health officials can identify areas of successful health service delivery and detect early signs of declining intervention coverage or stalled progress.

This report shows that Zambia is succeeding on several fronts in child health. First, countrywide reductions in under-5 mortality were also accompanied by improvements in equity

across districts, as some of the districts with the highest mortality rates in 1990 recorded some of the greatest declines by 2010. Second, coverage of key malaria control interventions, such as ITN ownership, increased dramatically in many districts. Third, the majority of districts were successful in quickly increasing coverage of the pentavalent vaccine after its introduction in 2005. Finally, rates of exclusive breastfeeding markedly rose in most districts, reflecting the country's investments in improving child nutrition and breastfeeding practices (WBTi 2008).

These successes were accompanied by concerning trends for three key child health interventions in Zambia. First, most districts saw a decline in the 2000s in antenatal care (ANC4), which is the proportion of pregnant women 15 to 49 years old who had four or more visits to a health facility during pregnancy. This finding is particularly worrisome given that districts generally increased levels of ANC4 during the 1990s. Second, coverage of polio immunization dropped in some of the districts that are considered at high risk for polio importation from neighboring countries. Third, in some areas of Zambia, skilled birth attendance declined to very low levels. Targeting these areas for improvement should be a priority to ensure that the country's achievements in child health continue into the present decade.

With a focus on districts, findings from the MCPA project in Zambia provide side-by-side comparisons of health performance over time, geography, and intervention type. The child health landscape is remarkably heterogeneous across districts, highlighting the need for continuous and timely assessment of district-level trends. With regularly collected and analyzed district health information, policymakers can have the evidence base to make targeted, data-driven decisions for achieving greater and more equitable health gains in Zambia.

Introduction

Over the past decade, Zambia's child health and development landscape has been substantially reshaped by new programs, interventions, and priorities, including extensive malaria control programs. In order to fully understand what has contributed to Zambia's progress in under-5 mortality, it is important to comprehensively account for all efforts to improve child health.

The MCPA project in Zambia had two main objectives:

- 1) Determine what proportion of the decline in all-cause under-5 mortality in Zambia was attributable to the scale-up of malaria control interventions, while accounting for a range of other key child health interventions and non-health factors.
- 2) Assess this impact at the district level between 1990 and 2010.

In order to achieve these objectives, annual estimates of district-level trends from 1990 to 2010 were systematically generated for each of the 72 districts in Zambia and across a range of key child health outcomes and interventions. Detailed descriptions of the findings for each district are presented in this report. District-level data can be downloaded from IHME's Global Health Data Exchange: <http://ghdx.healthmetricsandevaluation.org/>.

The MCPA project sought to use all available data sources, which are presented in Table 1. These analyses aimed to make full use of the best available data in Zambia. Provincial estimates of under-5 mortality and intervention coverage were previously available, but for the first time district-level trends were derived from these data sources using robust statistical methods. Annex 1 provides an overview of the analytical approach used to generate the estimates in this report.

BOX 1

MAIN FINDINGS FROM THE MCPA PROJECT IN ZAMBIA

- ▶ Under-5 mortality substantially declined throughout Zambia from 1990 to 2010. Some of the greatest progress was recorded in districts with the highest levels of under-5 mortality in 1990.
- ▶ Coverage of malaria control interventions rapidly increased, especially between 2005 and 2010. These gains in coverage were observed throughout Zambia.
- ▶ At the same time malaria interventions were scaled up, Zambia also successfully increased levels of coverage for three non-malaria child health interventions: the pentavalent vaccine, exclusive breastfeeding, and the availability of PMTCT services at health facilities.
- ▶ Together, these rapidly scaled up interventions were responsible for an 11% reduction in the under-5 mortality rate from 2000 to 2010. Sustaining high coverage of these interventions is critical for child health in Zambia.
- ▶ Amidst the country's health successes, some worrisome trends emerged that warrant attention. Most districts saw sharp declines in antenatal care visits during the 2000s, and skilled birth attendance fell to very low levels in several places. Others experienced a minimal scale-up of the pentavalent vaccine, and some of the high-risk districts for polio importation recorded drops in polio immunization coverage. Addressing these gaps in health service provision is crucial to maintaining the country's gains in child health.

Table 1. Data sources used in the MCPA project

DATA SOURCE	YEARS REPRESENTED
SURVEYS	
Demographic and Health Survey (DHS)	1992, 1996-1997, 2001-2002, 2007
Malaria Indicator Survey (MIS)	2006, 2008, 2010, 2012
Multiple Indicator Cluster Survey (MICS)	1999
Living Conditions Monitoring Survey (LCMS)	1996, 1998, 2002-2003, 2004-2005, 2006, 2010
Health Facility Census	Japan International Cooperation Agency (JICA) (2005-2006)
Sexual Behavior Survey (SBS)	2005, 2009
Household Health Coverage Survey	2008
Netmark Survey reports	2000, 2004
POPULATION CENSUSES	
National census	1990, 2000, 2010
ADMINISTRATIVE SOURCES	
Health Management Information System (HMIS)	2000-2008; 2009
Malaria intervention databases	National Malaria Control Centre (NMCC) (2005-2010)
Facility-level PMTCT services	National AIDS Council quarterly status report (2005-2009)
HIV/AIDS projections	Central Statistical Office (CSO) (2005)
Drug supply and delivery records	Medical Stores Limited (MSL) (2007-2010)
Precipitation data	Global Precipitation Climatology Centre (1986-2012)
Malaria endemicity ($PfPR_{2-10}$)	Malaria Atlas Project (2007, 2010)

An earlier version of this report was published in 2011, *Maternal and Child Health Intervention Coverage in Zambia: the Heterogeneous Picture*, and focused on intervention coverage trends between 1990 and 2010. The present report provides a broader range of updated results, including under-5 mortality

and coverage of the pentavalent vaccine, and drills deeper into Zambia's trends in child health at the district level. Further, the present report quantifies the contribution of malaria control and other key child health interventions to Zambia's reductions in under-5 mortality.

Main findings

Under-5 mortality declines observed across districts, accompanied by reductions in inequities

Zambia made substantial progress in improving child survival between 1990 and 2010. At the national level, all-cause under-5 mortality decreased by 37%, from 174 deaths per 1,000 live births in 1990 (95% CI: 168, 181) to 109 in 2010 (95% CI: 104, 116). All districts saw reductions in their levels of under-5 mortality during this time. Moreover, many of the districts with the highest levels of under-5 mortality in 1990 showed the greatest declines by 2010. Figure 1 depicts how the range in under-5 mortality across districts has become narrower.

In 1990, levels of under-5 mortality spanned from 125 deaths per 1,000 live births (95% CI: 97, 161) to 276 (95% CI: 220, 338) in different districts. Twenty years later, this gap substantially tightened, with a range of 83 deaths per 1,000 live births (95% CI: 60, 113) to 150 (95% CI: 109, 203). The difference between the district with the highest level of under-5 mortality and the lowest was more than halved from 1990 to 2010 (dropping from a difference of 151 to 67), illustrating how Zambia's progress in reducing under-5 mortality was also associated with decreased health inequities across districts.

Despite these improvements, it is worth noting that some districts and regions documented less progress. Districts in Northern province had very high levels of under-5 mortality in 1990, and though many recorded large declines, their rates still remained among the highest in the country in 2010 (greater than 120 deaths per 1,000 live births). Additional efforts to reduce under-5 mortality need to be prioritized in these districts.

Malaria interventions are rapidly scaled up in Zambia, but most districts fall short of national targets

Coverage of malaria interventions greatly increased through-

out Zambia after 2000, with most of the gains occurring since 2005. Nationally, the proportion of households that either owned at least one ITN or received IRS increased from 8% in 2000 to 37% in 2005 and then rapidly climbed to 71% in 2010. Coverage of intermittent preventive therapy in pregnancy (IPTp2) quickly rose from 16% in 2002 to around 70% in 2008.

In the early 2000s, coverage of malaria control interventions was very low throughout Zambia, with only a few districts benefiting from ITN pilot programs and early implementation of IRS. By 2010, however, all districts had coverage levels exceeding 55% for having either ITNs or IRS. Figure 2 shows the rise in coverage of malaria control from 2000 to 2010.

Districts saw a wide variety of trends in IPTp2 coverage during the 2000s. IPTp2 levels rose rapidly in many districts throughout the 2000s. Others saw an increase in coverage and then a leveling off by 2010. A third group of districts experienced substantial declines in coverage during the late 2000s. Last, a subset of districts recorded very small changes in IPTp2 coverage during this period.

Zambia's *National Malaria Strategic Plan, 2006-2010* set several malaria intervention coverage targets to achieve by 2010, including (1) $\geq 80\%$ of households with at least three ITNs; (2) $\geq 85\%$ of eligible households in 15 target districts having received IRS; (3) $\geq 80\%$ of pregnant women receiving ≥ 2 doses of Fansidar/SP (IPTp2); and (4) $\geq 80\%$ of children under 5 years old sleeping under an ITN or residing in a house with IRS (MOH 2006). These targets were very ambitious, and despite marked progress since 2000, no district achieved all four targets in 2010. Only five districts reached two of the four targets. Table 2 displays the 28 districts that met one or more of these targets in 2010. The target that was most frequently met was the third target, with 16 districts achieving at least 80% IPTp2 coverage in 2010.

Figure 1. District-level estimates of all-cause under-5 mortality for 1990, 2000, and 2010

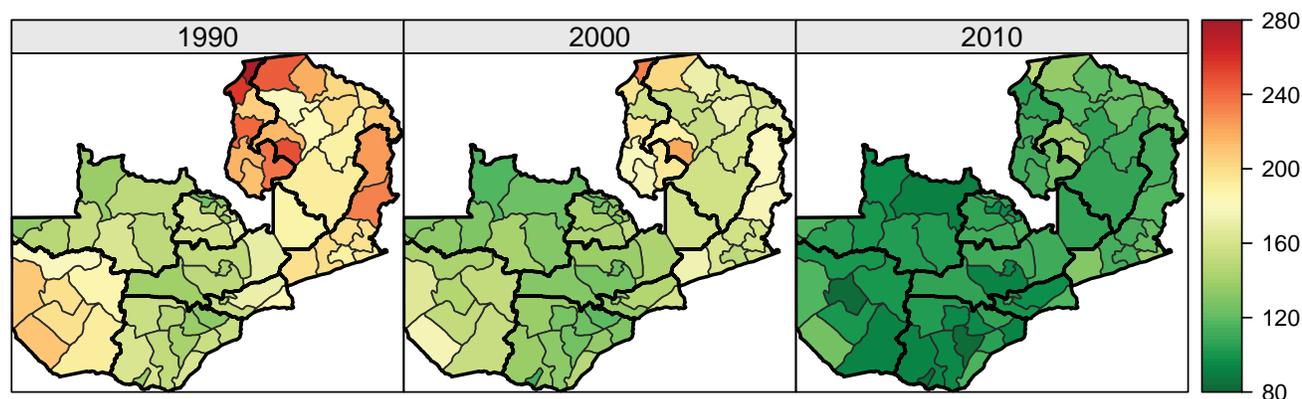


Figure 2. Percentage of households covered by an ITN, IRS, or both interventions, in 2000, 2005, and 2010

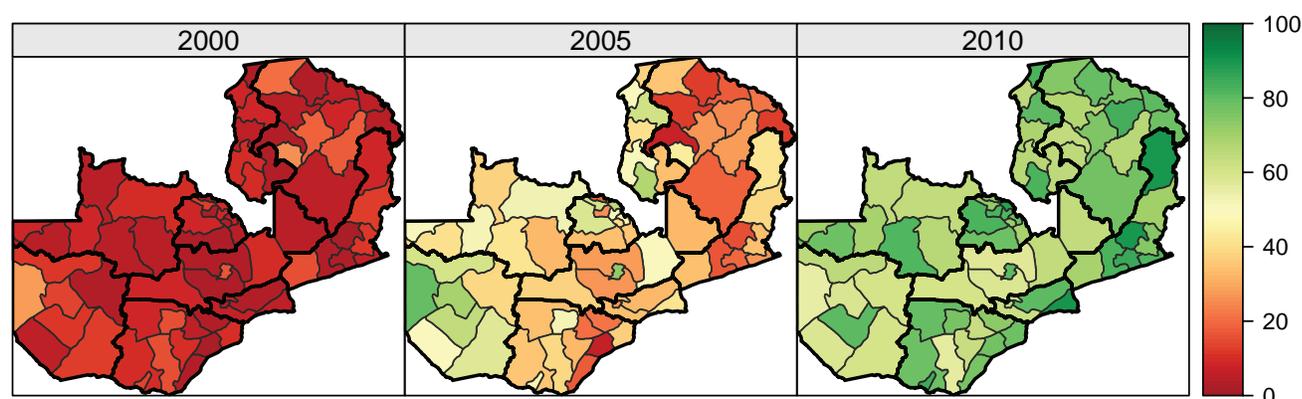


Table 2. District attainment of 2010 malaria intervention targets

GEOGRAPHY		MALARIA INTERVENTION TARGETS			
PROVINCE	DISTRICT	OWNERSHIP OF ≥ 1 ITN*	IRS COVERAGE**	IPTP, ≥ 2 DOSES	UNDER-5 ITN USE OR IRS
Central	Kabwe			81%	
	Mkushi			92%	
Copperbelt	Chingola			93%	
	Kalulushi				83%
	Kitwe			87%	81%
	Lufwanyama			91%	
	Masaiti			89%	
	Mpongwe			89%	
Eastern	Mufulira			80%	85%
	Ndola			94%	
	Chadiza	81%		81%	
	Chama	90%			
	Katete	85%			81%
Luapula	Mambwe	90%			89%
	Petauke				80%
Lusaka	Chiengi	80%			
	Milenge	80%			
Northern	Chongwe			87%	
	Kafue			90%	
	Luangwa	89%			
North-western	Mufumbwe	82%			
Southern	Mpulungu			87%	
	Mungwi	84%			
	Nakonde	81%			
Western	Livingstone				90%
Southern	Lukulu			96%	
	Mongu			89%	
	Senanga			88%	

Notes:

* The NMCC goal was ownership of at least three ITNs by 2010.

** The NMCC goal was 85% coverage of eligible households by 2010. Based on MCPA analyses, no district reached 85% IRS coverage; however, household eligibility could not be ascertained.

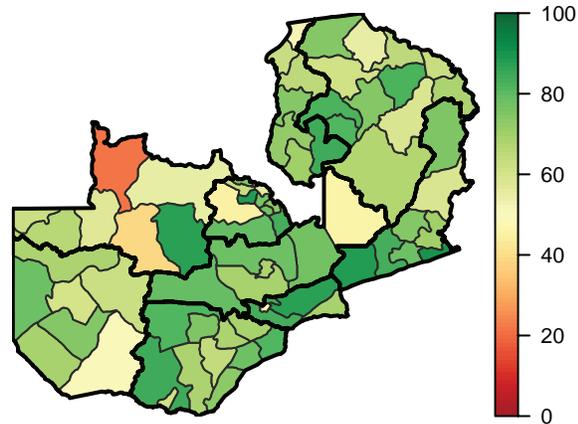
Scale-up of the pentavalent vaccine varies, polio immunization falls in some areas

Just looking at the national level, trends in immunization coverage generally point to progress. But at the district level, we see a wide range of trends, with progress, stagnation, and troubling declines in coverage.

The pentavalent vaccine was formally introduced in Zambia in 2005, and the country achieved 67% coverage in 2010. At the district level, coverage of the pentavalent vaccine ranged from as low as 22% (95% CI: 8%, 44%) to as high as 90% (95% CI: 81%, 96%) in 2010, with some districts showing strong progress since 2005 and others showing minimal gains in coverage. Figure 3 depicts this range for pentavalent coverage in 2010. Many of the largest gains were observed in Eastern province, while several districts in North-western province continued to have some of the lowest levels of pentavalent coverage in 2010. Identifying how to improve the delivery or uptake of the pentavalent vaccine for these districts ought to be a priority.

In 2010, polio immunization coverage reached 81% at the national level. However, coverage varied greatly across districts, ranging from 24% (95% CI: 10%, 42%) to 99% (95% CI: 98%, 100%). Zambia’s polio-free certification was accepted in 2005, but several districts that border the Democratic Republic of Congo (DRC) and Angola are considered at high risk for polio importation from these countries (WHO 2011). Some of these high-risk districts recorded declining coverage of polio immunization during the 2000s and had some of the lowest levels of coverage in Zambia in 2010. If Zambia is to optimally protect itself from imported polio, deliberate efforts are needed to ensure that levels of polio immunization are sustained at high levels in high-risk areas.

Figure 3. The proportion of children who received the pentavalent vaccine in 2010



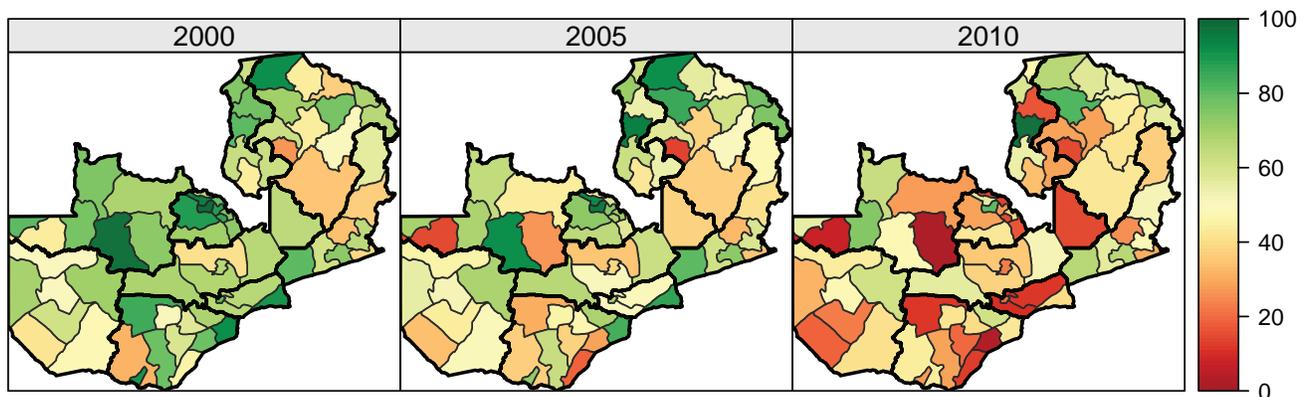
Coverage of antenatal care substantial declined while skilled birth attendance gradually increased

After maintaining moderately high levels of ANC4 through the 1990s, coverage in Zambia declined during the 2000s, dropping to 37% in 2010. At the same time, skilled birth attendance (SBA) coverage gradually increased, rising to 55% in 2010.

For most districts, ANC4 coverage reached its highest levels between 1990 and 2000, after which coverage markedly fell. Figure 4 shows ANC4 coverage in most districts dropping from higher levels (green) to much lower ones (shades of orange to red). Understanding why so many districts experienced such sharp declines in antenatal care should be a high priority in Zambia. It is important to note that a few districts did increase ANC4 coverage during this time. It is likely that much could be learned from these districts about approaches to ANC4 provision and support of health-seeking behaviors.

Trends in SBA coverage widely varied across districts, as did the range in levels of coverage throughout the country. In 2010, SBA coverage ranged from less than 1% to 98% (95% CI: 91%, 100%). About five districts had very low levels of SBA

Figure 4. Coverage of four or more antenatal care visits (ANC4) in 2000, 2005, and 2010



during the 1990s but then brought coverage to above the national average in 2010. Approximately 10 recorded steady gains in SBA during the 1990s before sharply falling to levels below 20%. A number of districts had consistently low levels over the two decades, while a few maintained high coverage. Zambia would likely benefit from further investigation into the district's differences in skilled birth attendance trends, especially to determine ways to improve coverage in places where SBA appears to be minimal.

Breastfeeding increased to high levels

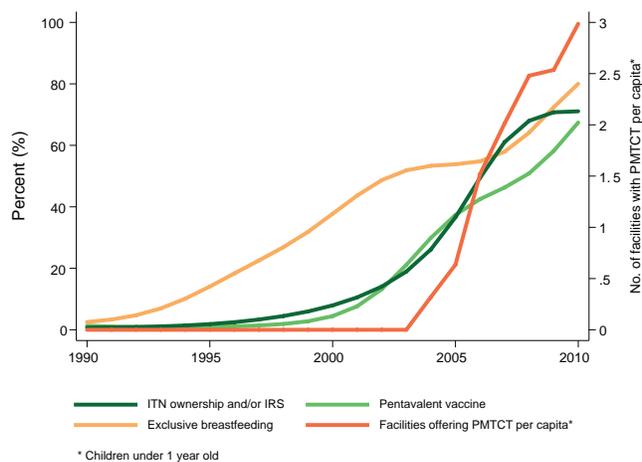
Rates of exclusive breastfeeding rose steadily throughout the 1990s and 2000s before reaching 80% nationally in 2010. Most districts followed this trend, but there were some notable exceptions. Some districts experienced an earlier scale-up of exclusive breastfeeding, recording their highest levels in the early 2000s, but saw coverage quickly decline by 2010. A few districts, mostly in Eastern province, consistently trailed the national scale-up of exclusive breastfeeding, barely reaching 60% in 2010.

Rapid scale-up of key child health interventions contributes to declines in under-5 mortality

To assess the impact of malaria control on under-5 mortality in Zambia, the MCPA research team conducted a causal attribution analysis that included a full range of child health interventions and non-health factors. More details on the methods and statistical models used can be found in Annex 1.

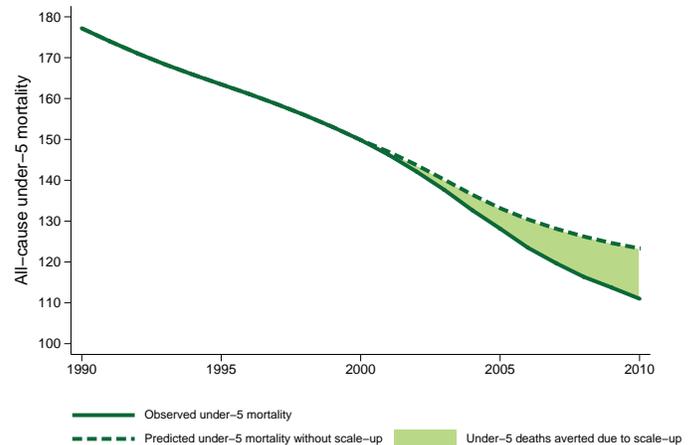
The team found that Zambia had scaled up several interventions at the same time. Figure 5 shows how gains in ITN and IRS coverage coincided with rising levels of the pentavalent vaccine, exclusive breastfeeding, and the availability of PMTCT in health facilities. It was statistically impossible to tease out the individual effects of these interventions on under-5 mortality. Instead, researchers created a composite indicator of "rapidly scaled up interventions."

Figure 5. The scale-up of malaria control interventions and a subset of key child health interventions



After accounting for other factors (including socioeconomic indicators), rapidly scaled up interventions were significantly associated with Zambia's reductions in all-cause under-5 mortality. If the coverage of these interventions had remained at levels observed in 2000, under-5 mortality would have been 11% higher in 2010 (124 deaths per 1,000 live births (95% CI: 118, 129)) than what was actually observed for that year (109 deaths per 1,000 live births (95% CI: 104, 116)) (Figure 6).

Figure 6. Trends in under-5 mortality as observed and predicted in the absence of rapidly scaled up interventions, 1990-2010



This finding suggests that the rapid scale-up of these five maternal and child health interventions hastened the decline of under-5 mortality by 1% per year. It is important to note that under-5 mortality rates would have continued to decline in Zambia between 2000 and 2010, even without the scale-up of these interventions. In fact, under-5 mortality decreased 14% between 1990 and 2000, dropping from 174 deaths per 1,000 live births (95% CI: 168, 181) to 149 in 2000 (95% CI: 144, 156). Given the declines that Zambia experienced in under-5 mortality from 1990 to 2000, we would have predicted an 18% decrease in under-5 mortality between 2000 and 2010. Instead, with the scale-up of these five interventions, the country recorded a 26% decline during this time. In other words, the simultaneous scale-up of ITNs, IRS, the pentavalent vaccine, exclusive breastfeeding, and PMTCT services accelerated the declines in under-5 mortality by an additional 1% per year.

Conclusions and policy implications

Between 1990 and 2010, the health landscape in Zambia markedly changed, and for the most part, these changes reflect progress and service delivery success throughout the country. Under-5 mortality substantially decreased at the national level, and the gap between districts with the highest and lowest under-5 mortality substantially decreased. These declines in under-5 mortality can be tied to Zambia's successful efforts in expanding coverage for a subset of child health interventions: ITN ownership, IRS, the pentavalent vaccine, exclusive breastfeeding, and the availability of PMTCT services. These five interventions were rapidly scaled up during the 2000s and jointly contributed to an additional 11% reduction in all-cause under-5 mortality in Zambia beyond what would have been expected based on the country's trends in under-5 mortality during the 1990s. The scale-up of malaria control has been a key part of Zambia's improved health service environment, and sustaining high levels of malaria control interventions, alongside other life-saving interventions, is of critical importance.

Amidst these successes, IHME and UNZA identified some troubling trends that warrant further policy attention. Overall, the proportion of pregnant women who sought at least four antenatal care visits drastically decreased between 2000 and 2010. Several districts recorded levels of ANC4 below 20% in 2010, which suggests that a vast majority of women in these places do not receive optimal antenatal care during pregnancy. Knowing that antenatal care services are closely linked to better maternal and child health outcomes (WHO 2003), Zambia should address these declining trends in ANC4.

Immunization rates remained at least moderately high at the national level, but some districts showed concerning declines for certain vaccines, namely polio, and fell behind in the scale-up of the pentavalent vaccine. A number of districts that are considered at risk for polio importation from the DRC and Angola recorded recent declines in immunization coverage. Several districts showed minimal gains in coverage of the

pentavalent vaccine, falling well below the national average in 2010. Prioritizing the acceleration of pentavalent coverage in districts lagging behind the national trend should be considered.

Zambia's new malaria strategic plan maps out an ambitious goal toward a "malaria-free Zambia" (MOH 2011), for which universal coverage of ITNs or IRS and increasing IPTp from two to three doses (IPTp2 to IPTp3) are new intervention targets for 2015. Given that fewer than half of Zambia's districts achieved at least one of the malaria intervention coverage targets for 2010, the country may need to consider strategies to further expand and sustain higher levels of malaria intervention coverage in order to meet its 2015 goals.

As demonstrated through the MCPA project in Zambia, national trends can mask significant differences at the district level. The district profiles included in this report provide a data-driven foundation for benchmarking district performance and targeting areas for improvement. It is important for governments to prioritize monitoring and data gathering at the district level to make future analyses more robust and to provide critical inputs for decision-making and priority-setting by district health offices.

To maintain and further accelerate the health gains Zambia has made in child survival, continued efforts dedicated to delivering a range of health interventions, including malaria control, are needed. The regular and timely collection of district health data will be crucial for guiding policy decisions and resource allocation. The country's investments in nationwide surveys served as the cornerstone for the analyses in this report, and they are likely to remain a vital source of health data alongside Zambia's health information systems. By using its district-level data and focusing on health gaps experienced by its districts, Zambia is in the position to further accelerate progress in childhood survival and to promote greater equality in health attainment throughout the country.

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Annex 1. Overview of the MCPA analytical approach and methods

In order to comprehensively assess the impact of malaria control on under-5 mortality in a data-driven, systematic way, the MCPA research team's methodological framework took place in three main steps:

(1) Collating data and generating source-specific estimates. The MCPA research team brought together a broad range of data sources, including surveys, population censuses, and administrative sources, to generate source-specific estimates for all indicators of interest. In total, 20 household surveys, one health facility census, three population censuses, and two administrative sources (National Malaria Control Centre indoor residual spraying database and facility PMTCT services from the National AIDS Council) were included in the final analysis.

(2) Estimating trends for 72 districts from 1990 to 2010. Given the range of data types assembled for the MCPA project, statistical modeling approaches had to be used in order to synthesize the estimates from these different data sources into a unified trend. Demographic methods for analyzing birth history data were combined with small area estimation modeling to generate district-level trends for all-cause under-5 mortality. A two-step method involving spatio-temporal smoothing and Gaussian Process Regression (GPR) was used to produce district-level trends for intervention coverage and non-health indicators.

(3) Conducting causal attribution analyses. Many models and combinations of covariates were rigorously tested in order to identify the most robust and valid model for assessing the relationship between declines in mortality and individual health interventions and non-health indicators. The types of models that were explored included single- and multistage linear models, lasso, functional data analysis, first differences, differences-in-differences, structural equations modeling, and factor analysis. The model that was ultimately selected is a linear model with bootstrapping, as it better accounts for autocorrelation over years and districts. The list of covariates that were explored included rainfall levels, fertility, birth spacing, maternal education, school attendance among teenagers, female headship of households, mean household size, household sanitation, prevalence of improved sources of cooking fuel, prevalence of improved wall type in homes, electricity, immunization coverage, and coverage of malaria and maternal and child health interventions described in the

main text of this report. Covariates that were not included because of lack of data availability include coverage of malaria treatment for children with fever, coverage of antibiotic treatment for children with pneumonia, coverage of oral rehydration treatment for children with diarrhea, coverage of pediatric HIV treatment, quality of district health office management, district health expenditures and health personnel, access to health facilities, malaria transmission intensity over time and by district, and nutritional interventions.

The MCPA research team found that it was statistically impossible to tease out the impact of malaria control interventions from other interventions that also experienced large gains in coverage during the 2000s. Instead, principal component analysis (PCA) was used to bundle these rapidly scaled-up interventions—malaria control, exclusive breastfeeding, facilities offering PMTCT per population under 1 year old, and coverage of the pentavalent vaccine—into a composite indicator. The final model estimates the joint effect of these interventions on under-5 mortality:

$$\begin{aligned} \ln({}_5q_0)_{ij} &= \beta_0 + \beta_1 Scaled_{ij} + \beta_2 SES_{ij} + \beta_3 Und_{ij} \\ &+ \beta_4 SES_{ij} * Scaled_{ij} + \beta_5 SES_{ij} * Und_{ij} + \beta_6 ANC1_{ij} \\ &+ \beta_7 DPT3_{ij} + \beta_8 Meas_{ij} + \beta_9 Year_i + \mu_{k[j]} + \varepsilon_{ij} \end{aligned}$$

The final model was a linear model with bootstrapping, where for each district j , province k , and year i , $\ln({}_5q_0)$ is the natural logarithm of the under-5 mortality rate, β_0 is the intercept, $Scaled$ is the composite indicator for rapidly scaled up interventions, and SES is the composite measure for non-health factors. Und is the proportion of children who are underweight, $SES * Scaled$ is an interaction between the non-health factor composite measure and the composite indicator for rapidly scaled up interventions, $SES * Und$ is an interaction between the non-health factor composite measure and the proportion of children who are underweight, $ANC1$ is coverage of one antenatal care visit, $DPT3$ is coverage of three doses of DPT, $Meas$ is coverage of one dose of the measles vaccine, $Year$ is the corresponding year, $\mu_{k[j]}$ is a random effect on province k to which j belongs, and ε_{ij} is the error term.

District profiles

Tracking trends in child health outcomes and intervention coverage at the district level provides timely, useful, and actionable information to national and local policymakers in Zambia.

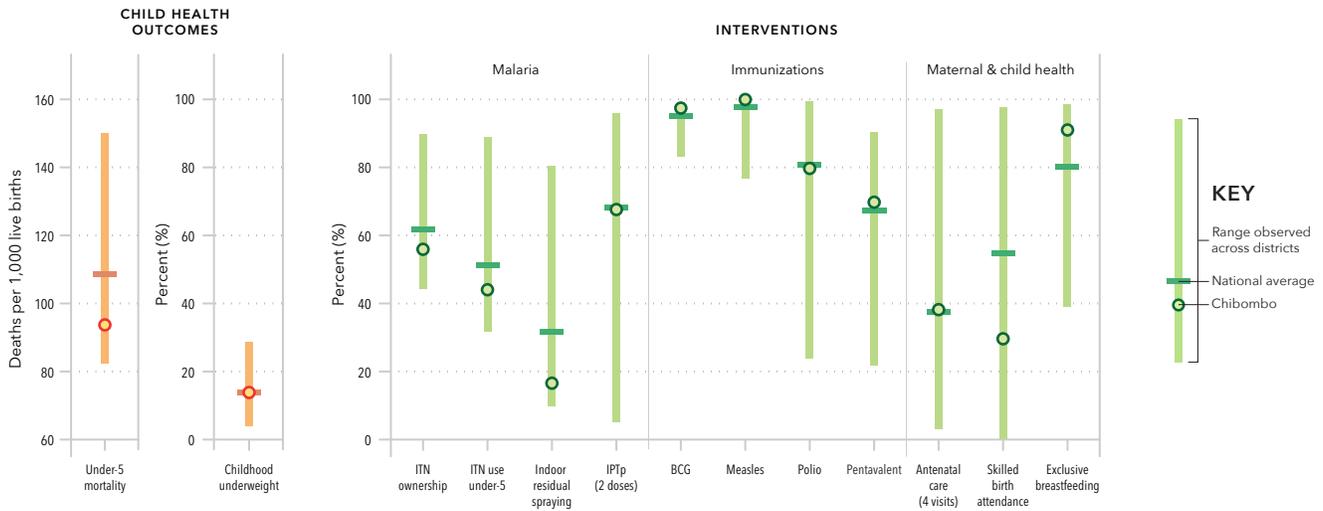
The district profiles are ordered alphabetically within each province. Each profile provides a “child health barometer” for 2010, which compares a given district’s performance on key child health outcomes and interventions to the national average and the range observed across districts. Further, each profile details trends observed for each group of interventions: malaria interventions, immunizations, and other maternal and child health interventions.

These district profiles aim to provide a foundation from which local health officials can assess their districts’ child health status and then target high-priority areas for improvement. Individual profiles can be downloaded from IHME’s Global Health Data Exchange: <http://ghdx.healthmetricsandevaluation.org/>.

Central province



Chibombo



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

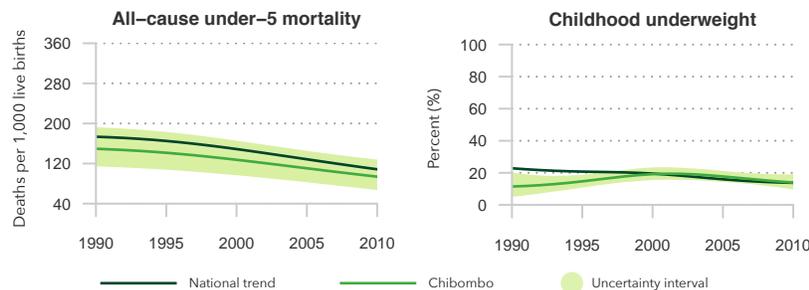
Chibombo substantially reduced all-cause under-5 mortality between 1990 and 2010, bringing its mortality levels among the lowest in Zambia. Childhood underweight, however, increased during the 1990s before declining. Prioritizing ways to further accelerate gains for child health outcomes, especially underweight, should be considered.

Several interventions, including IPTp2, the pentavalent vaccine, and exclusive breastfeeding, were scaled up to or above the national average by 2010. After slight dips in coverage, BCG and measles immunization rose above the national averages in 2010.

However, amidst these gains, some worrisome trends were identified and warrant further attention. Chibombo's scale-up of ITNs and IRS lagged behind the national trend, and polio coverage declined in recent years. Skilled birth attendance stayed quite low, and alarmingly, ANC4 dropped sharply from high levels of coverage in the early 1990s.

In 2010, Chibombo generally met or exceeded national levels for immunizations, and equaled or fell below for malaria interventions. For maternal and child health interventions, the district had a more mixed performance. In comparison with the national average, Chibombo showed much lower levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Chibombo recorded a significant reduction in all-cause under-5 mortality, dropping 37% from 149 deaths per 1,000 live births in 1990 (95% CI: 116, 190) to 94 in 2010 (95% CI: 69, 126). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the lowest in Zambia for that year.

The proportion of children who were underweight steadily increased from 11% in 1990 (95% CI: 6%, 19%) to 19% in the early 2000s. Levels of underweight remained at 19% through 2003, after which prevalence declined to 14% in 2010 (95% CI: 10%, 18%), equaling the national average for that year.

MALARIA INTERVENTIONS



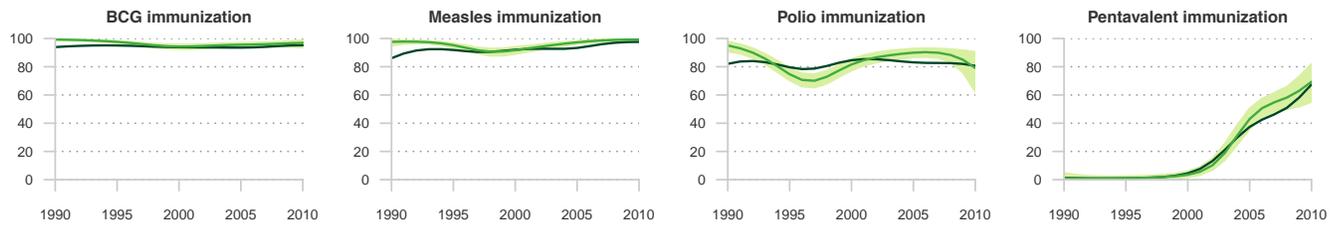
ITN ownership remained below 10% until 2004, after which coverage increased to 56% in 2009 (95% CI: 51%, 60%) and remained at 56% through 2010. This level of ITN ownership was lower than the national average of 62% for 2010.

ITN use by children under 5 years old rose to 44% in 2010 (95% CI: 38%, 50%), which was lower than the national average of 51%. The difference between ITN ownership and use (12 percentage points) in Chibombo was comparable to what was observed at the national level for 2010.

Chibombo formally implemented IRS activities in 2010, and reached 16% of households that year (95% CI: 11%, 22%). This was among the lowest levels of IRS coverage across the 54 districts that had IRS by 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rose to 70% in 2008 (95% CI: 60%, 80%). IPTp2 coverage slipped to 68% in 2010 (95% CI: 56%, 78%), equaling the national average for that year.

IMMUNIZATIONS



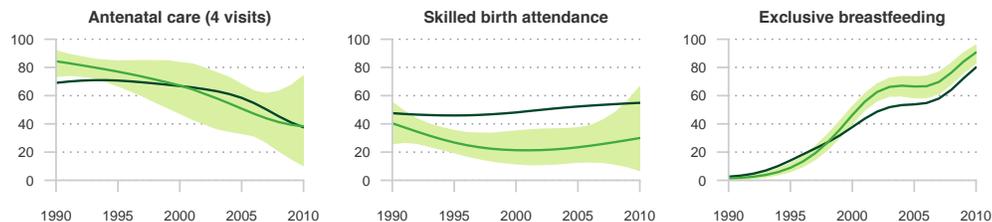
BCG coverage declined from 99% in the early 1990s to 94% in the early 2000s, but increased to 97% in 2009 (95% CI: 94%, 98%) and remained at 97% through 2010. This level of BCG coverage was higher than the national average of 95% for 2010.

Measles immunization decreased from 98% in the early 1990s to 91% in the late 1990s, after which coverage climbed to 99% in 2007 (95% CI: 98%, 99%) and remained at 99% through 2010. This level of measles coverage was slightly higher than the national average of 98% for 2010.

Coverage of polio immunization dropped from 95% in 1990 (95% CI: 91%, 98%) to 70% in 1997 (95% CI: 65%, 75%), but then rose to 90% in the mid-2000s. Polio coverage declined soon after, decreasing to 79% in 2010 (95% CI: 62%, 91%), slightly below the national average of 81%.

After the pentavalent vaccine was formally introduced in Chibombo in 2005, coverage increased to 51% in 2006 (95% CI: 44%, 57%) and 69% in 2010 (95% CI: 55%, 82%), slightly exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS

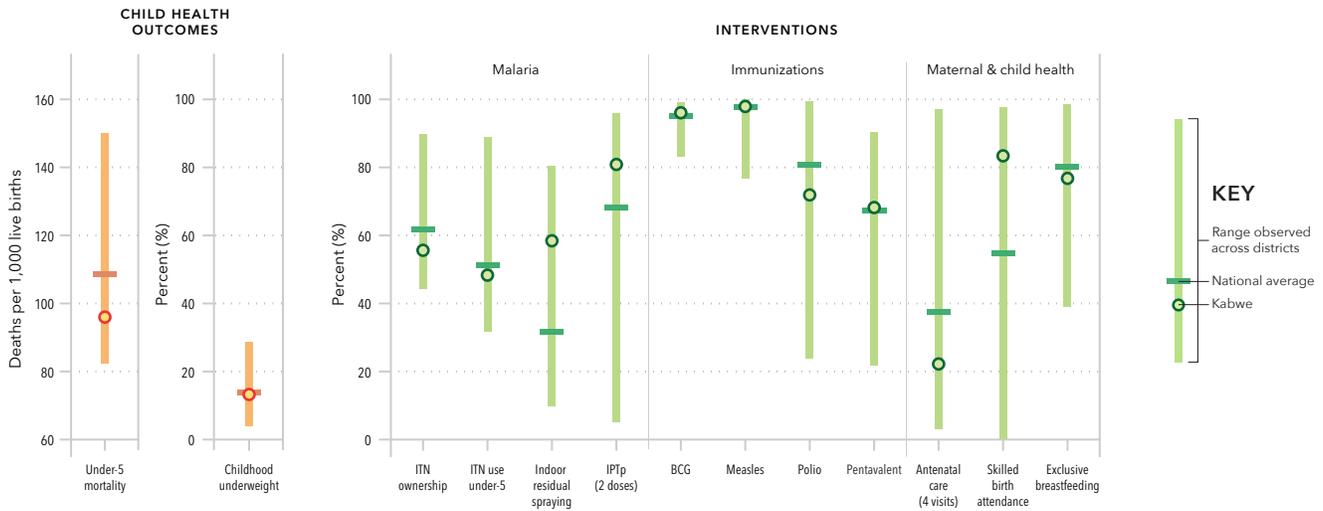


ANC4 coverage steadily fell from 84% in 1990 (95% CI: 74%, 92%) to 38% in 2010 (95% CI: 11%, 74%), which was comparable to the national average of 37% that year. The finding that Chibombo's levels of coverage fell more than 45 percentage points during this time is cause for concern.

Skilled birth attendance decreased from 40% in 1990 (95% CI: 26%, 55%) to 21% in the early 2000s, after which coverage slowly rose to 30% in 2010 (95% CI: 7%, 66%). This level of SBA coverage was below the national average of 55% for

2010, and Chibombo generally had lower SBA coverage than the national average from 1990 to 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage climbed to 67% in 2004 (95% CI: 60%, 73%). Gains in coverage stalled until 2008, after which exclusive breastfeeding increased to 91% in 2010 (95% CI: 83%, 96%), far exceeding the national average of 80%.



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Kabwe reduced its all-cause under-5 mortality, but the relative magnitude of the district’s progress was fairly low. While childhood underweight was comparable to the national average, Kabwe made minimal progress in reducing prevalence. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

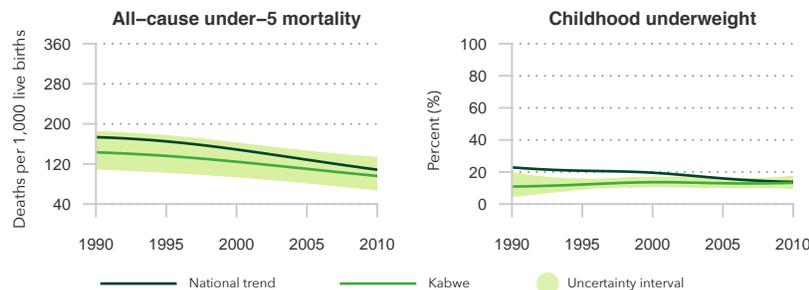
Kabwe increased IPTp2 coverage to well above the national average in 2010, and IRS coverage was among the highest in Zambia that year. The district made notable progress in increasing coverage of the pentavalent vaccine, and high levels of BCG and measles immunization were sustained during the 2000s. Exclusive breastfeeding rebounded from declines in coverage during the early 2000s. Skilled birth at-

tendance steadily increased over time, reaching some of the highest levels of coverage in the country.

However, amidst these gains, some troubling trends were identified and warrant further attention. Polio coverage declined in recent years, and alarmingly, ANC4 coverage decreased sharply from very high levels during the 1990s.

In 2010, Kabwe generally met or exceeded national levels across interventions, with the stark exception of ANC4 coverage. In comparison with the national average, Kabwe showed lower levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Kabwe recorded a reduction in all-cause under-5 mortality, dropping 33% from 143 deaths per 1,000 live births in 1990 (95% CI: 111, 184) to 96 in 2010 (95% CI: 69, 132); however, this decline was not statistically significant. In 2010, the district’s under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 10, 116).

The proportion of children who were underweight increased from 11% in the early 1990s to 14% in the early 2000s, after which underweight slightly declined to 13% in 2003 (95% CI: 11%, 16%) and remained at this level through 2010. Although childhood underweight was comparable to the national average of 14% for 2010, the district’s minimal progress is cause for concern.

MALARIA INTERVENTIONS



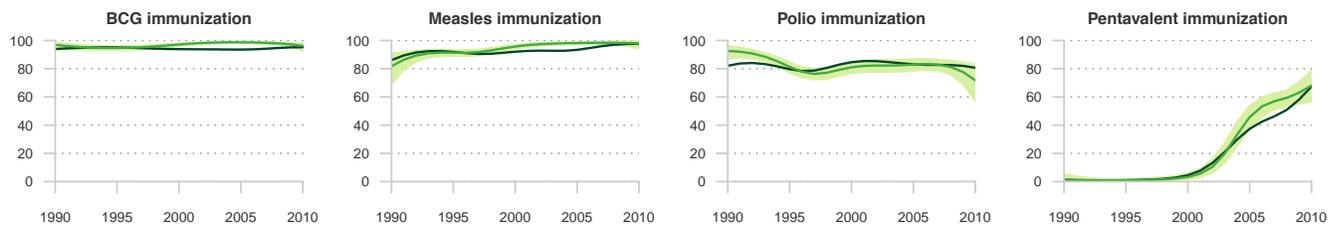
ITN ownership remained below 10% until 2001, after which coverage increased to 59% in 2008 (95% CI: 55%, 64%) but slipped to 56% in 2010 (95% CI: 50%, 61%). This level of ITN ownership was lower than the national average of 62% in 2010.

ITN use by children under 5 years old climbed to 48% in 2010 (95% CI: 42%, 55%), but remained slightly lower than the national average of 51% for that year. The difference between ITN ownership and use (8 percentage points) was slightly lower in Kabwe than what was observed at the national level (11 percentage points) for 2010.

Kabwe formally implemented IRS activities in 2003, and was one of the first 15 districts in Zambia to roll out IRS. IRS coverage peaked at 67% in 2008 (95% CI: 63%, 71%), after which coverage dropped to 58% in 2010 (95% CI: 52%, 64%). Nonetheless, Kabwe had one of the highest levels of IRS in Zambia in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 2009 at 81% (95% CI: 72%, 88%) and was maintained through 2010. This level of IPTp2 coverage was much higher than the national average of 68% for 2010.

IMMUNIZATIONS



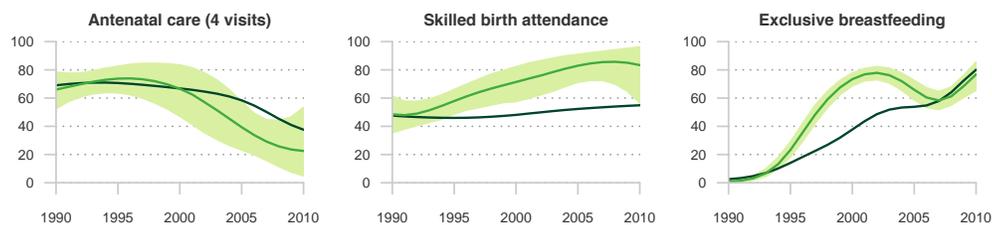
BCG coverage declined from 97% in 1990 (95% CI: 94%, 99%) to 95% in the early to mid-1990s, but increased to 99% in the mid-2000s. Coverage slipped to 96% in 2010 (95% CI: 93%, 98%), but remained slightly higher than the national average of 95%.

Measles immunization increased from 82% in 1990 (95% CI: 69%, 91%) to 98% in 2003 (95% CI: 97%, 99%), after which coverage was sustained at 98% through 2010, equaling the national average.

Coverage of polio immunization sharply declined from 93% in 1990 (95% CI: 87%, 96%) to 76% in 1997 (95% CI: 72%, 80%). Polio coverage hovered just above 80% from 2000 to 2008, after which immunization rates dropped to 72% in 2010 (95% CI: 57%, 83%), falling below the national average of 81%.

After the pentavalent vaccine was formally introduced in Kabwe in 2005, coverage increased to 53% in 2006 (95% CI: 46%, 60%) and 68% in 2010 (95% CI: 57%, 79%), which was comparable to the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 66% in 1990 (95% CI: 53%, 78%) to 74% in the mid-1990s, but dropped considerably to 23% in 2010 (95% CI: 5%, 53%), falling below the national average of 37%. The finding that Kabwe's levels of coverage fell 50 percentage points since the mid-1990s is worrisome.

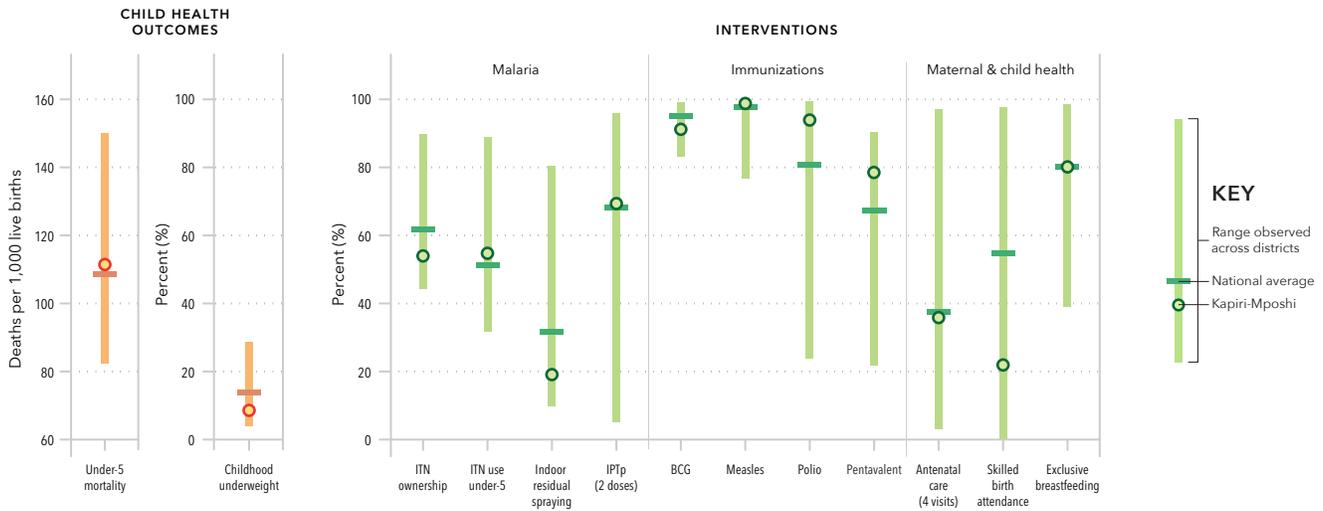
Skilled birth attendance steadily increased from 48% in 1990 (95% CI: 36%, 61%) to 86% in 2007 and 2008, after which coverage slipped to 83% in 2010 (95% CI: 57%, 96%). Despite

this decline, Kabwe's SBA coverage was among the highest in Zambia in 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage rapidly climbed to 78% in 2002 (95% CI: 73%, 82%). Exclusive breastfeeding then declined, dropping to 60% in 2006 (95% CI: 53%, 67%). Coverage rebounded to 77% in 2010 (95% CI: 66%, 85%), but remained slightly lower than the national average of 80%.



Kapiri-Mposhi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

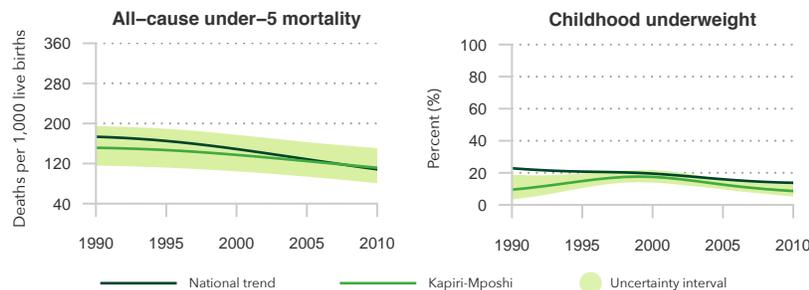
Kapiri-Mposhi reduced its all-cause under-5 mortality between 1990 and 2010, but the relative magnitude of the district's progress was low. After a period of increasing levels of underweight, the district reduced its prevalence to some of the lowest levels in Zambia. Prioritizing ways to further accelerate declines in child health outcomes, especially for under-5 mortality, should be considered.

The district successfully scaled up several interventions, ranging from IPTp2 to the pentavalent vaccine, to coverage levels equaling or exceeding the national average in 2010. High levels of measles coverage were maintained after increases in the 1990s, and polio coverage rose to among the highest in Zambia in 2010.

However, amidst these successes, some troubling trends were identified and warrant further attention. BCG coverage fell below the national average in 2010, and ITN ownership was among the lowest levels in Zambia. The district experienced substantial declines in ANC4 coverage and skilled birth attendance.

In 2010, Kapiri-Mposhi generally met or exceeded national levels for immunizations, and equaled or fell below national levels for maternal and child health interventions. For malaria interventions, the district had a more mixed performance. In comparison with the national average, Kapiri-Mposhi showed slightly higher levels of mortality and much lower levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Kapiri-Mposhi recorded a reduction in all-cause under-5 mortality, dropping 26% from 151 deaths per 1,000 live births in 1990 (95% CI: 118, 193) to 112 in 2010 (95% CI: 83, 149); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 9% in 1990 (95% CI: 4%, 18%) to a high of 18% in 1999 (95% CI: 15%, 21%), but then declined to 9% in 2009 (95% CI: 7%, 12%) and remained at 9% through 2010. This level of underweight was much lower than the national average of 14% in 2010 and among the lowest in Zambia.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage increased to 54% in 2010 (95% CI: 49%, 59%), falling well below the national average of 62% and among the lowest in Zambia that year.

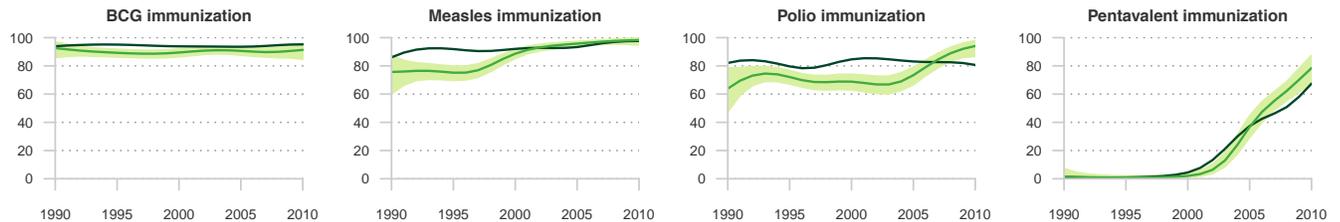
ITN use by children under 5 years old climbed to 57% in 2009 (95% CI: 52%, 62%), but slipped to 55% in 2010 (95% CI: 49%, 61%). This level of ITN use was slightly higher than the national average of 51% for 2010. ITN use was slightly higher than ITN ownership in Kapiri-Mposhi for 2010, which suggests that net use by children under 5 may be high among house-

holds that have ITNs.

Kapiri-Mposhi formally implemented IRS activities in 2008 and reached 19% of households in 2010 (95% CI: 16%, 23%). This scale-up of IRS was among the lowest among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage rapidly increased to 70% in 2010 (95% CI: 56%, 81%), slightly exceeding the national average of 68%.

IMMUNIZATIONS



BCG coverage declined from 93% in 1990 (95% CI: 86%, 97%) to 89% during the mid- to late 1990s. Coverage hovered around 90% in the 2000s, rising to 91% in 2010 (95% CI: 85%, 95%), which was lower than the national average of 95%.

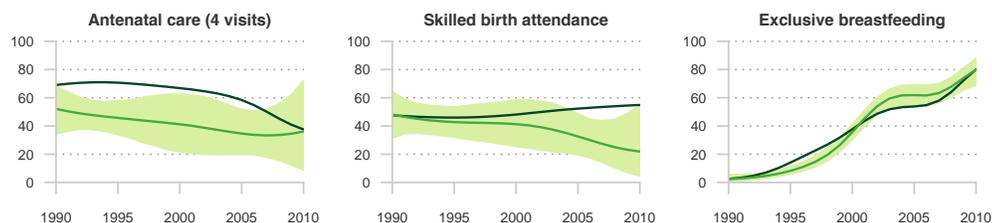
Measles immunization remained below 80% until 1998, after which coverage steadily climbed to 98% in 2008 (95% CI: 95%, 99%) and remained at this level through 2010, equaling the national average for that year.

Rising from a low of 64% in 1990 (95% CI: 48%, 79%), coverage of polio immunization largely hovered around 70%

until 2006, after which polio coverage climbed to 94% in 2010 (95% CI: 87%, 98%) and emerged as one of the highest levels in Zambia for that year. These gains are particularly notable given that the district's polio coverage was consistently lower than the national average until the mid-2000s.

After the pentavalent vaccine was formally introduced in Kapiri-Mposhi in 2005, coverage increased to 47% in 2006 (95% CI: 40%, 55%) and 78% in 2010 (95% CI: 68%, 88%), far exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage gradually declined from 52% in 1990 (95% CI: 34%, 68%) to 36% in 2010 (95% CI: 9%, 72%). While the district's ANC4 coverage was comparable to the national average of 37% in 2010, its levels of ANC4 remained quite low.

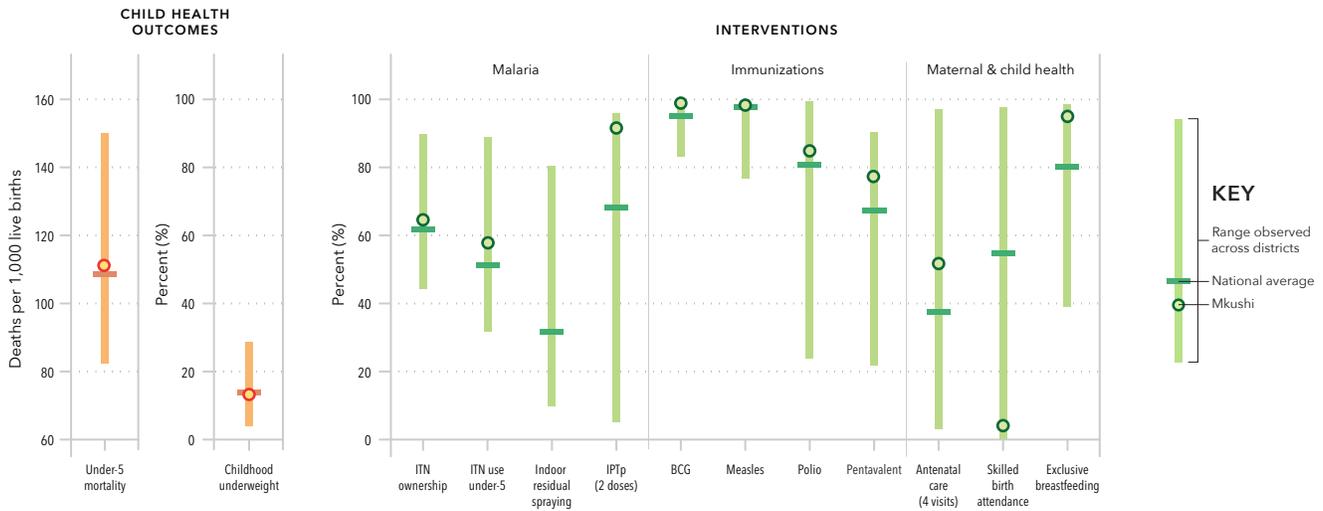
Skilled birth attendance decreased from 48% in 1990 (95% CI: 31%, 64%) to a low of 22% in 2010 (95% CI: 5%, 55%), falling below the national average of 55%. This trend of steady decline is cause for concern, directly contrasting with gradual

increases in SBA coverage observed at the national level.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage rapidly increased to 62% in 2004 (95% CI: 55%, 69%). Gains in coverage stalled through 2007, but exclusive breastfeeding climbed to 80% in 2010 (95% CI: 69%, 88%), equaling the national average.



Mkushi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Mkushi started IRS after 2010.

SUMMARY

Mkushi substantially reduced all-cause under-5 mortality from 1990 to 2010. Childhood underweight increased during the 1990s before decreasing in recent years. Prioritizing ways to further accelerate rates of progress in child health outcomes should be considered.

IPTp2 coverage reached some of the highest levels in Zambia in 2010, and ITN coverage consistently exceeded the national average. Pentavalent coverage was higher than the national average in 2010, and exclusive breastfeeding climbed to some of the highest levels in the country. BCG and measles coverage remained high during the 2000s, and polio coverage was comparable to the national average in 2010.

However, amidst these gains, some worrisome trends were identified and warrant further attention. ANC4 coverage declined after a period of steady gains during the 1990s. Skilled birth attendance gradually increased in the 1990s, but sharply dropped to very low levels in 2010. SBA coverage in Mkushi was among the lowest in Zambia for 2010.

In 2010, Mkushi generally met or exceeded national levels across interventions, with the clear exception of skilled birth attendance. In comparison with the national average, Mkushi showed similar levels of mortality and underweight.

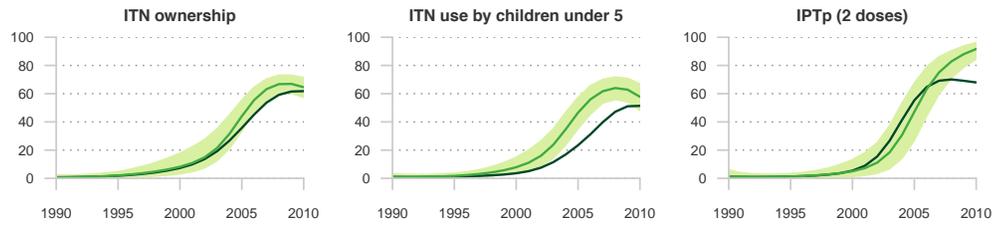
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mkushi recorded a significant reduction in all-cause under-5 mortality, dropping 34% from 169 deaths per 1,000 live births in 1990 (95% CI: 132, 213) to 111 in 2010 (95% CI: 82, 149). In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 17% in the early 1990s to a high of 21% in 1999 (95% CI: 17%, 25%), but then decreased to 13% in 2010 (95% CI: 10%, 18%). This level of underweight was comparable to the national average of 14% in 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which ITN ownership rapidly increased to 67% in 2008 (95% CI: 60%, 73%). Ownership slipped to 65% in 2010 (95% CI: 57%, 71%), remaining slightly above the national average of 62%.

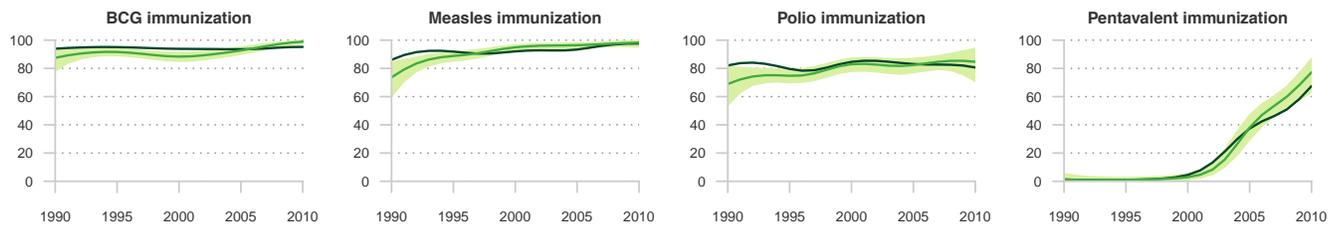
ITN use by children under 5 years old quickly rose to 64% in 2008 (95% CI: 56%, 72%), but declined to 58% in 2010 (95% CI: 48%, 67%). This level of ITN use remained higher than the national average of 51% for 2010. The difference between ITN ownership and use (7 percentage points) was lower in Mkushi

than what was observed at the national level (11 percentage points) for 2010.

IRS coverage trends are not included because Mkushi did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly climbed to 92% in 2010 (95% CI: 85%, 96%), far exceeding the national average of 68% and rising to among the highest levels in Zambia.

IMMUNIZATIONS



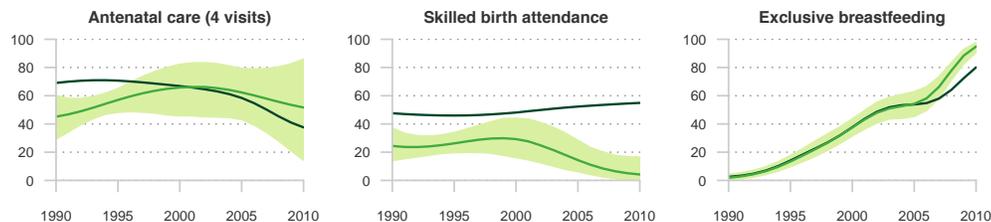
BCG coverage hovered around 90% until the mid-2000s, after which coverage climbed to 99% in 2010 (95% CI: 98%, 100%), which was among the highest levels of BCG coverage in Zambia for that year.

Measles immunization steadily increased from 74% in 1990 (95% CI: 60%, 84%) to 98% in 2008 (95% CI: 96%, 99%). This level of coverage was maintained through 2010, equaling the national average.

Coverage of polio immunization gradually rose from 69% in 1990 (95% CI: 54%, 81%) to 85% in 2007 (95% CI: 79%, 89%), which was maintained through 2010. This level of polio coverage was slightly higher than the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Mkushi in 2005, coverage increased to 47% in 2006 (95% CI: 39%, 55%) and 77% in 2010 (95% CI: 63%, 87%), rising above the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage gradually increased from 45% in 1990 (95% CI: 29%, 60%) to 66% in the early 2000s, but then declined to 52% in 2010 (95% CI: 14%, 86%). While ANC4 coverage in Mkushi stayed above the national average of 37% in 2010, its levels remained lower than optimal.

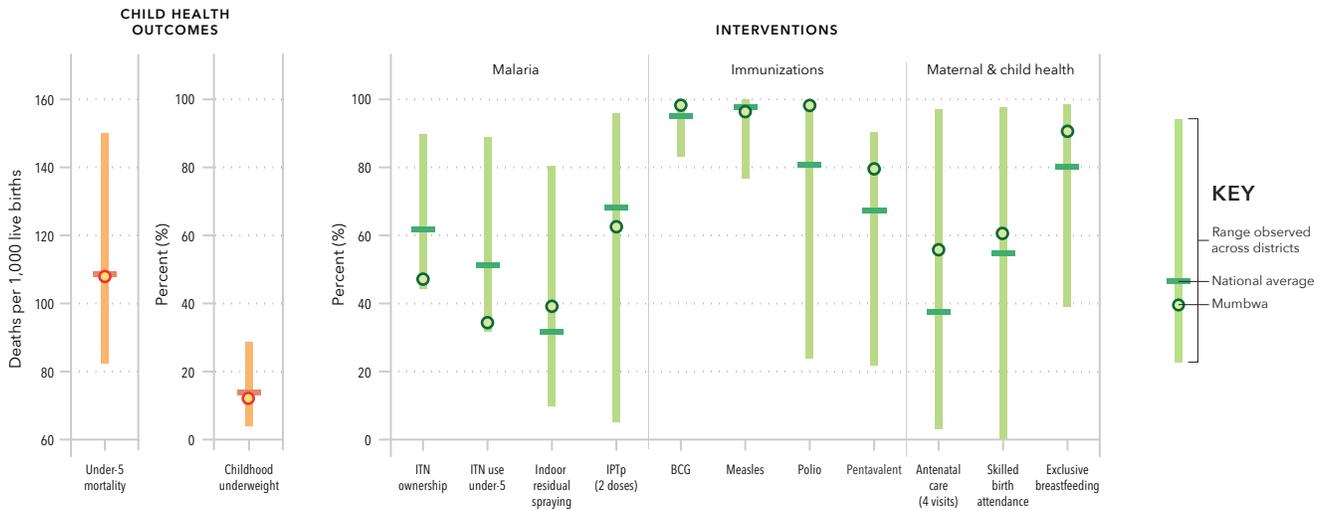
Skilled birth attendance slightly increased from 24% in the early 1990s to 30% in the late 1990s, but then dropped sharply to 4% in 2010 (95% CI: 0%, 16%), falling well below

the national average of 55% and among the lowest in Zambia for 2010. Mkushi's consistently low level of SBA coverage, paired with its recent decline, is cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which coverage rapidly increased to 95% in 2010 (95% CI: 91%, 98%), rising among the highest levels in Zambia for that year.



Mumbwa



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Mumbwa reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010, but the relative magnitude of the district's progress was fairly low. Prioritizing ways to accelerate gains for child health outcomes should be considered.

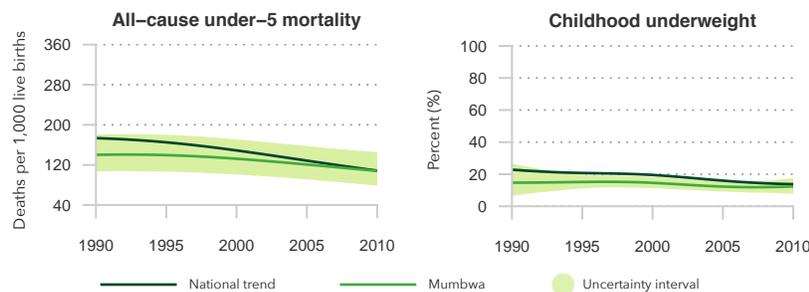
The district rapidly scaled up coverage of the pentavalent vaccine and exclusive breastfeeding, exceeding the national average for each in 2010. Mumbwa recorded some of the highest levels of polio coverage in the country, and experienced gradual gains in skilled birth attendance.

However, amidst these gains, some troubling trends were identified and warrant further attention. Mumbwa saw small declines in measles coverage in the late 2000s. While the dis-

trict was able to quickly scale up coverage of ITNs and IPTp2, coverage largely fell below the national average in 2010. Further, ITN ownership and use dropped to among the lowest levels in Zambia in 2010. Like in many districts, ANC4 coverage decreased after a period of increasing levels during the 1990s.

In 2010, Mumbwa generally met or exceeded national levels for immunizations and maternal and child health interventions, but fell below national averages for malaria interventions. In comparison with the national average, Mumbwa showed similar levels of mortality and slightly lower levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Mumbwa recorded a reduction in all-cause under-5 mortality, dropping 23% from 140 deaths per 1,000 live births in 1990 (95% CI: 109, 178) to 108 in 2010 (95% CI: 81, 144); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). It is important to note that before

2000, the under-5 mortality in Mumbwa was generally lower than the national trend.

The proportion of children who were underweight gradually decreased from 15% in the 1990s to 12% in 2005 (95% CI: 10%, 15%). Underweight remained at 12% through 2010, which was slightly lower than the national average of 14% for that year.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2002, after which coverage quickly increased to 50% in 2008 (95% CI: 44%, 56%). Ownership slipped to 47% in 2010 (95% CI: 41%, 53%), falling well below the national average of 62% and among the lowest levels in Zambia.

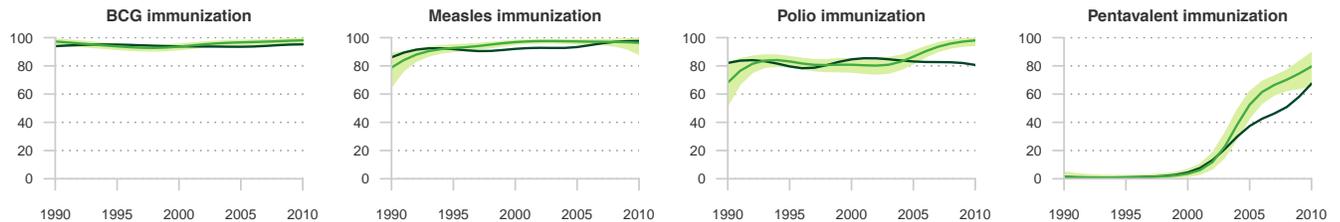
ITN use by children under 5 years old steadily rose to 35% in 2010 (95% CI: 28%, 42%), but this level of ITN use remained well below the national average of 51% and was among the lowest in the country. The difference between ITN ownership and use (12 percentage points) in Mumbwa was comparable

to what was observed at the national level for 2010.

Mumbwa formally implemented IRS activities in 2008, and reached 39% of households in 2010 (95% CI: 34%, 45%). This scale-up of IRS was about average among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 65% in 2008 (95% CI: 51%, 78%). IPTp2 coverage slipped to 62% in 2010 (95% CI: 49%, 75%), which was lower than the national average of 68%.

IMMUNIZATIONS



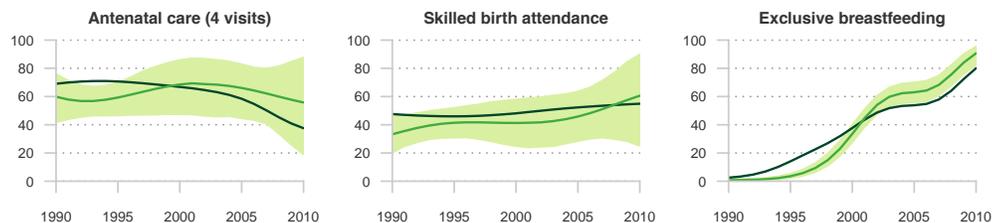
BCG coverage decreased from 97% in the early 1990s to 93% in the late 1990s, but increased to 98% in 2009 (95% CI: 96%, 99%) and remained at 98% through 2010. This level of BCG immunization exceeded the national average of 95% for 2010.

Measles immunization increased from a low of 79% in 1990 (95% CI: 65%, 89%) to 98% in 2002 (95% CI: 96%, 98%). Coverage remained at 98% through 2003, but decreased to 96% in 2010 (95% CI: 88%, 99%), falling slightly below the national average of 98%.

Coverage of polio immunization climbed from 68% in 1990 (95% CI: 52%, 82%) to 84% in the mid-1990s. Polio coverage hovered around 80% until 2004, after which coverage steadily increased to 98% in 2010 (95% CI: 95%, 100%), rising to among the highest in Zambia for that year.

After the pentavalent vaccine was formally introduced in Mumbwa in 2005, coverage increased to 61% in 2006 (95% CI: 54%, 69%) and 80% in 2010 (95% CI: 66%, 89%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage hovered around 60% during the early to mid-1990s and then increased to 69% in the early 2000s. ANC4 then decreased to 56% in 2010 (95% CI: 19%, 88%). While this level of ANC4 coverage was still higher than the national average of 37% for 2010, it remained lower than optimal.

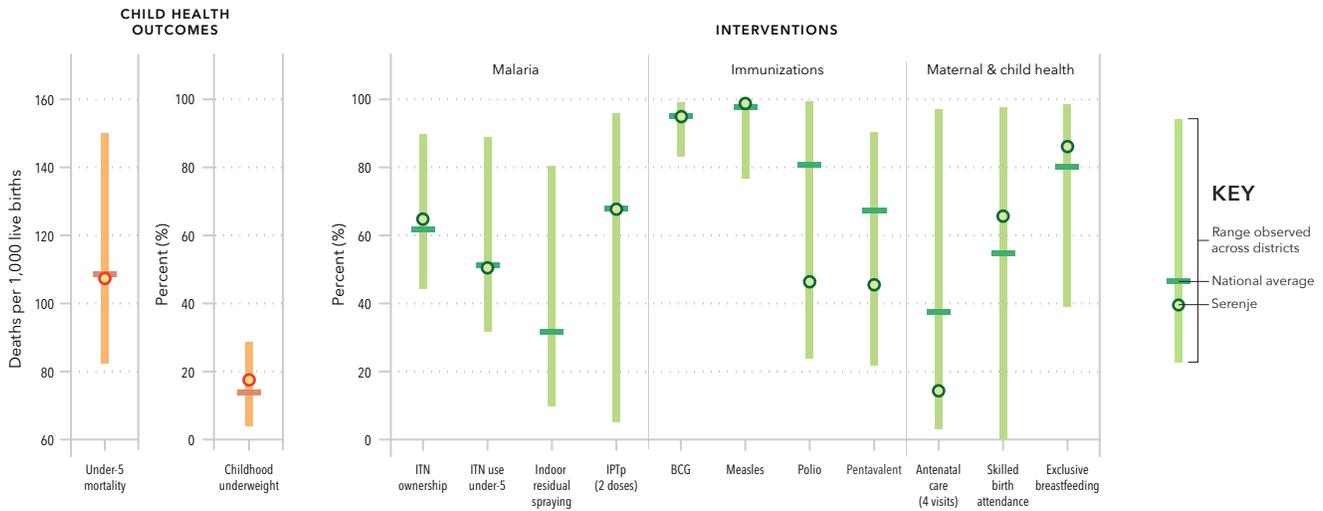
Skilled birth attendance gradually climbed from 33% in 1990 (95% CI: 20%, 47%) to 61% in 2010 (95% CI: 25%, 90%),

which was slightly higher than the national average of 55% for that year.

The proportion of children who were exclusively breastfed remained below 20% until 1999, after which coverage rose to 60% in 2003 (95% CI: 53%, 67%). Gains in coverage slowed until 2007 and then quickly climbed to 91% in 2010 (95% CI: 82%, 95%), far exceeding the national average of 80%.



Serenje



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Serenje started IRS after 2010.

SUMMARY

Serenje recorded substantial reductions in all-cause under-5 mortality and childhood underweight from 1990 to 2010, but its levels of underweight remained higher than the national average in 2010. Prioritizing ways to accelerate gains for child health outcomes should be considered.

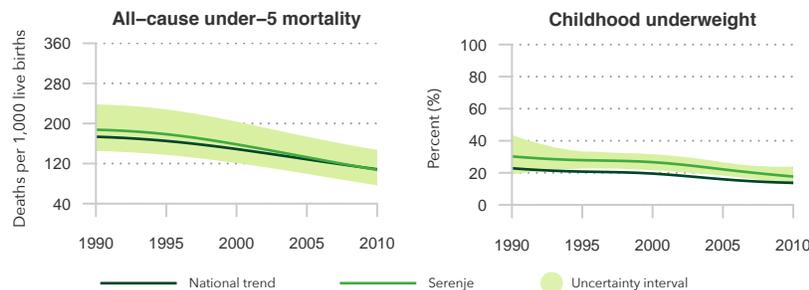
Malaria intervention coverage quickly increased in Serenje and was sustained through 2010. Serenje expanded coverage of BCG and measles immunization after declines in the early to mid-2000s, and the district saw substantial gains in skilled birth attendance after years of extremely low coverage. Exclusive breastfeeding also was higher than the national average in 2010.

At the same time, Serenje marginally scaled up the pen-

ta-valent vaccine, and polio coverage steeply fell in recent years. In 2010, the district recorded some of the lowest levels of coverage in Zambia for these two immunizations. ANC4 coverage dramatically decreased to among the lowest levels in the country. With its low levels of ANC4 in particular, Serenje will likely benefit from targeting these interventions for improvement.

In 2010, Serenje generally equaled or exceeded the national levels for malaria interventions and maternal and child health interventions (excluding ANC4). Serenje's performance across immunizations was more varied. In comparison with the national average, Serenje showed similar levels of mortality and higher levels of underweight.

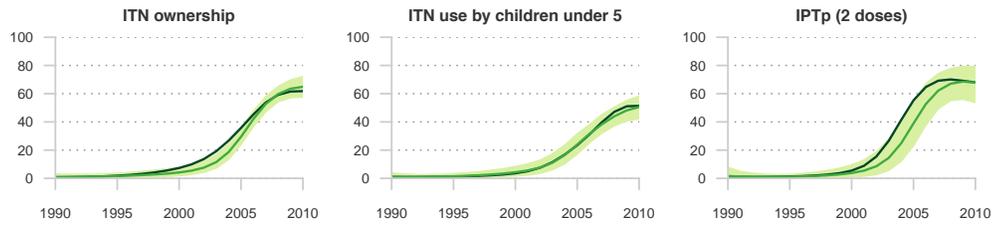
CHILD HEALTH OUTCOMES



From 1990 to 2010, Serenje recorded a significant reduction in all-cause under-5 mortality, dropping 43% from 188 deaths per 1,000 live births in 1990 (95% CI: 147, 236) to 107 in 2010 (95% CI: 78, 145). In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight steadily declined from 30% in 1990 (95% CI: 20%, 43%) to 18% in 2009 (95% CI: 14%, 23%), which was maintained through 2010. Despite this progress, Serenje's prevalence of childhood underweight remained higher than the national average of 14% for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage rapidly rose to 65% in 2010 (95% CI: 58%, 72%), slightly exceeding the national average of 62%.

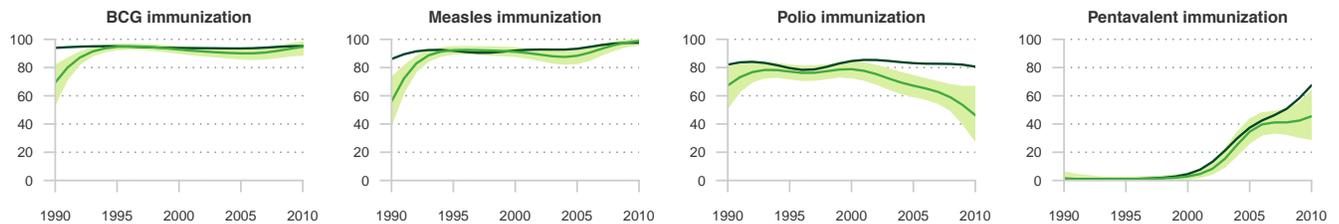
ITN use by children under 5 years old quickly increased to 51% in 2010 (95% CI: 42%, 58%), equaling the national average for that year. The difference between ITN ownership and use (14 percentage points) was slightly higher in Serenje than what was observed at the national level (11 percentage

points) for 2010.

IRS coverage trends are not included because Serenje did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage rapidly rose to 69% in 2009 (95% CI: 56%, 79%). IPTp2 coverage slipped to 68% in 2010 (95% CI: 54%, 79%), equaling the national average for 2010.

IMMUNIZATIONS



BCG coverage increased from 69% in 1990 (95% CI: 54%, 81%) to 95% in the mid-1990s, but fell to 90% during the mid-2000s. Coverage rebounded to 95% in 2010 (95% CI: 89%, 98%), equaling the national average for that year.

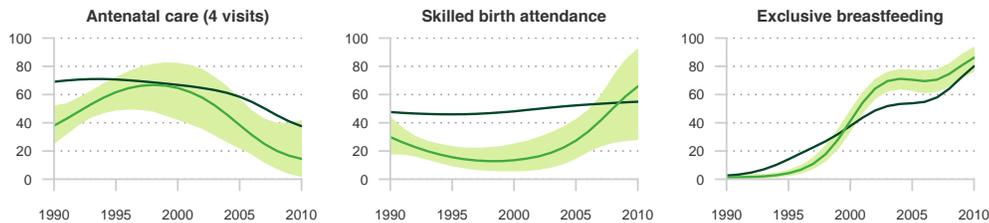
Measles immunization quickly rose from 56% in 1990 (95% CI: 40%, 73%) to 92% during the mid- to late 1990s. Measles coverage dipped below 90% during the mid-2000s before steadily rising to 99% in 2010 (95% CI: 96%, 100%), slightly exceeding the national average of 98% for that year.

After rising from 67% in 1990 (95% CI: 51%, 80%), coverage of polio immunization hovered around 77% until rising

to 79% in the late 1990s. Polio coverage then steadily declined, dropping to 46% in 2010 (95% CI: 28%, 66%) and falling well below the national average of 81%. This level of polio coverage was among the lowest in Zambia for 2010.

After the pentavalent vaccine was formally introduced in Serenje in 2005, coverage hovered around 40% through 2009, rising slightly to 45% in 2010 (95% CI: 29%, 63%). Serenje's level of pentavalent coverage was well below the national average of 67% for 2010, and was among the lowest in Zambia. The district's minimal scale-up of the pentavalent vaccine is cause for concern.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 38% in 1990 (95% CI: 26%, 52%) to 67% in 1998 (95% CI: 49%, 81%), but steadily declined thereafter, dropping to 14% in 2010 (95% CI: 2%, 41%) and falling below the national average of 37%. Alarmingly, Serenje's ANC4 coverage was among the lowest in Zambia for 2010.

Skilled birth attendance declined from 30% in 1990 (95% CI: 18%, 43%) to 13% in the late 1990s, but steadily rose to 66% in 2010 (95% CI: 28%, 92%), which was higher than the national average of 55% for that year. Serenje's progress in

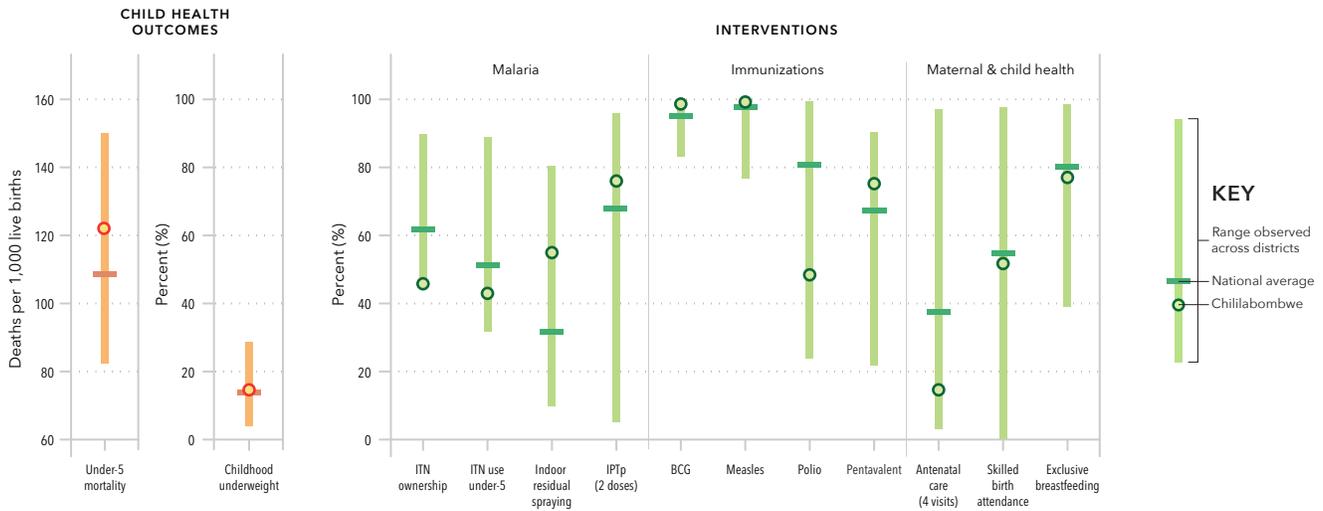
improving its SBA coverage is notable given that the district consistently recorded levels of coverage well below the national average until the late 2000s.

The proportion of children who were exclusively breastfed remained below 20% until 1999, after which coverage rapidly rose to 70% in 2003 (95% CI: 63%, 76%). Exclusive breastfeeding coverage remained around 70% until 2007, climbing to 86% in 2010 (95% CI: 77%, 93%) and exceeding the national average of 80%.

Copperbelt province



Chililabombwe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Chililabombwe had minimal reductions in its all-cause under-5 mortality and childhood underweight from 1990 to 2010; further, the district's levels of under-5 mortality remained higher than the national average in 2010. Prioritizing ways to accelerate gains for child health outcomes should be considered.

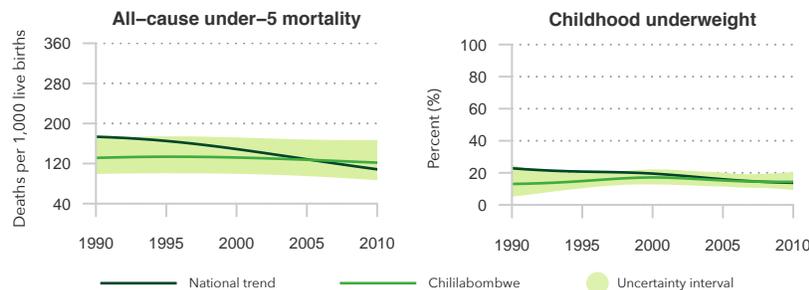
The district generally increased and maintained coverage of IRS and IPTp2, and rapidly scaled up the pentavalent vaccine. Chililabombwe sustained high levels of measles coverage over time, and brought up exclusive breastfeeding after a period of stalled gains. The district's BCG coverage in 2010 was among the highest in Zambia.

However, amidst these successes, some troubling trends were identified and warrant further attention. ITN coverage

was much lower than the national average, and polio immunization fell to one of the lowest levels in Zambia for 2010. ANC4 coverage steadily declined to very low levels in 2010, and alarmingly, skilled birth attendance fell from high levels of coverage in the 1990s.

In 2010, Chililabombwe generally met or exceeded national levels for immunizations (with the exception of polio), but fell below for maternal and child health interventions. The district had a more mixed performance for malaria interventions. In comparison with the national average, Chililabombwe showed higher levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES

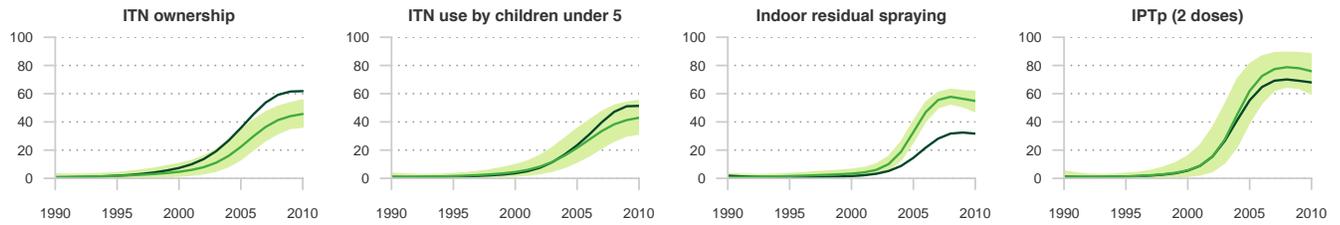


From 1990 to 2010, Chililabombwe recorded a small reduction in all-cause under-5 mortality, dropping 7% from 131 deaths per 1,000 live births in 1990 (95% CI: 101, 169) to 122 in 2010 (95% CI: 89, 165). This decline was not statistically significant. In 2010, the district's under-5 mortality was much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). This lack of progress is worrisome

given that the district's levels of under-5 mortality were far below the national trend during the 1990s.

The proportion of children who were underweight increased from 13% in the early 1990s to 17% in 1998 (95% CI: 13%, 21%), and remained at this level through 2002. Underweight then declined to 14% in the late 2000s, equaling the national average for 2010. Overall, the district showed marginal progress in reducing childhood underweight.

MALARIA INTERVENTIONS



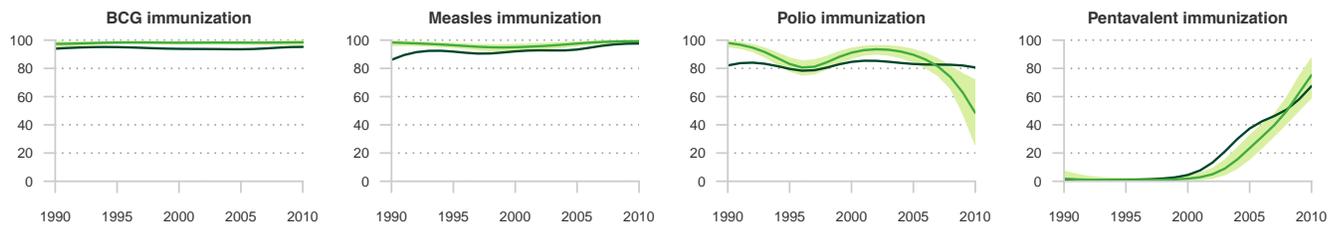
ITN ownership remained below 10% until 2003, after which coverage increased to 46% in 2010 (95% CI: 36%, 56%). This level of ITN ownership was well below the national average of 62% for 2010, and was among the lowest in Zambia.

ITN use by children under 5 years old rose to 43% in 2010 (95% CI: 31%, 55%), which was lower than the national average of 51%. In 2010, the difference between ITN ownership and ITN use was quite low, which suggests that net use by children under 5 may be high among households that have ITNs.

Chililabombwe formally implemented IRS activities in 2000, and was one of the first 15 districts in Zambia to roll out IRS. IRS coverage peaked at 58% in 2008 (95% CI: 53%, 63%), slightly decreasing to 55% in 2010 (95% CI: 47%, 61%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly rose to 79% in 2008 (95% CI: 65%, 89%). IPTp2 coverage slipped to 76% in 2010 (95% CI: 60%, 88%), but remained above the national average of 68%.

IMMUNIZATIONS



Rising from 97% in the early 1990s, BCG coverage remained at 98% through 2010, which exceeded the national average of 95% and was among the highest in the country.

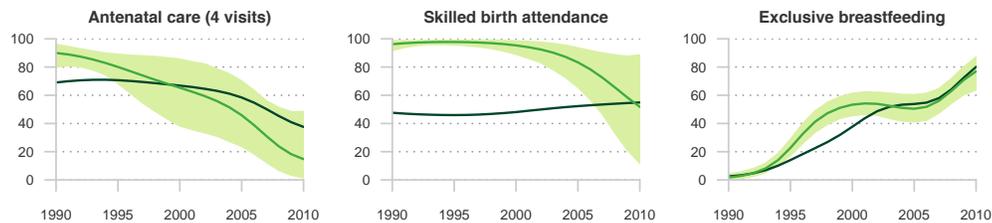
Measles immunization declined from 98% in the early 1990s to 95% during the late 1990s, but increased to 99% in 2007 (95% CI: 98%, 99%) and remained at 99% through 2010. This level of coverage was slightly higher than the national average of 98% for 2010.

Coverage of polio immunization dropped from 98% in 1990 (95% CI: 96%, 99%) to 81% in the mid-1990s, but climbed

to 94% in 2002 (95% CI: 90%, 96%). Polio coverage then declined sharply, dropping to 48% in 2010 (95% CI: 26%, 72%), among the lowest levels in Zambia. This decrease is cause for concern given that the district consistently recorded higher levels of coverage than the national trend prior to 2006.

After the pentavalent vaccine was formally introduced in Chililabombwe in 2005, coverage increased to 40% in 2007 (95% CI: 33%, 47%) and 75% in 2010 (95% CI: 60%, 87%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage dropped considerably from 90% in 1990 (95% CI: 80%, 96%) to 15% in 2010 (95% CI: 2%, 48%), falling below the national average of 37% for 2010. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Chililabombwe's levels of coverage fell 75 percentage points during this time is troubling.

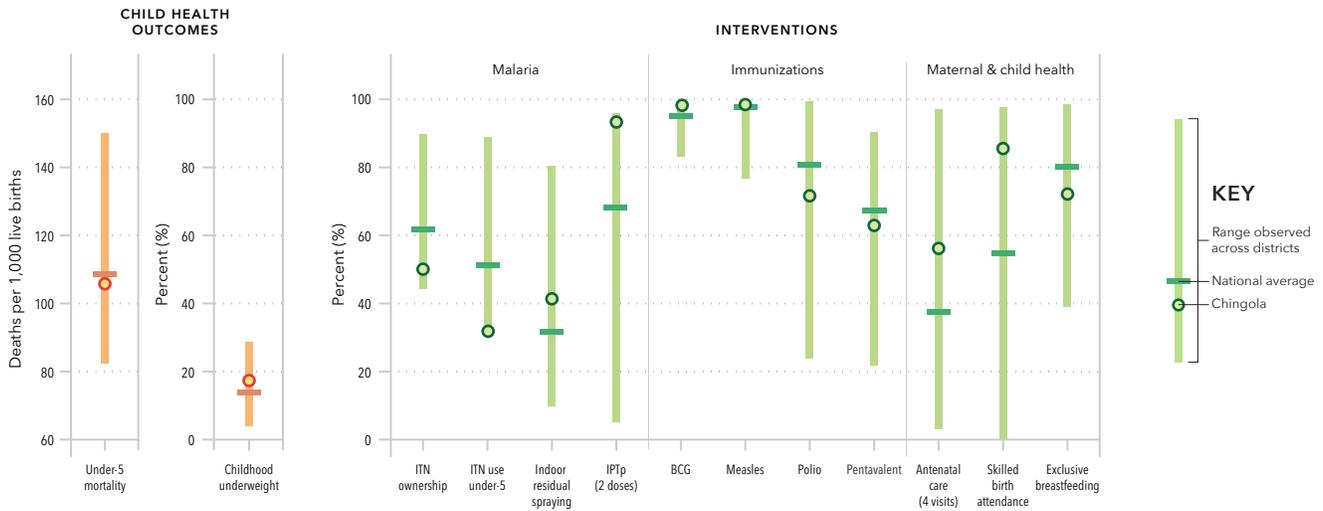
After rising to 98% in the mid-1990s, skilled birth attendance decreased to 52% in 2010 (95% CI: 12%, 88%), which was slightly lower than the national average of 55%. However,

this decline in SBA coverage during the 2000s is cause for concern given that its levels of coverage had previously exceeded the national trend by at least 40 percentage points.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage rose to 54% in 2001 (95% CI: 47%, 62%). Gains in coverage stalled until 2007, and exclusive breastfeeding then climbed to 77% in 2010 (95% CI: 64%, 87%). This level of coverage was slightly lower than the national average of 80% for 2010.



Chingola



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Chingola slightly reduced its all-cause under-5 mortality between 1990 and 2010. After a period of gradual declines, childhood underweight increased in Chingola, rising above the national average in 2010. Prioritizing ways to accelerate gains for child health outcomes should be considered.

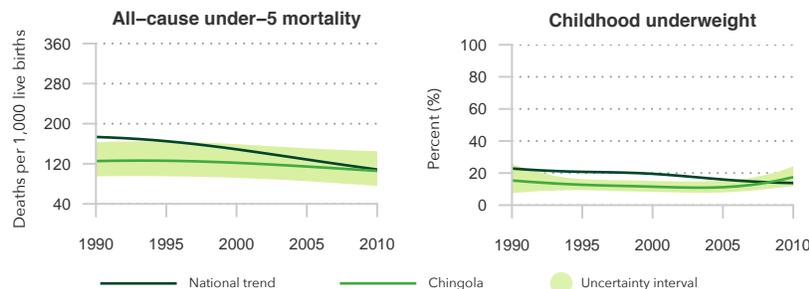
The district rapidly increased and maintained high coverage of IPTp2, and maintained fairly high levels of skilled birth attendance, bringing each to among the highest levels in Zambia for 2010. Chingola scaled up coverage of the pentavalent vaccine and sustained high levels of measles immunization. In 2010, the district's BCG coverage was among the highest in the country.

However, amidst these gains, some worrisome trends

were identified and warrant further attention. Chingola recorded substantial declines in polio immunization. Levels of IRS and ITN coverage decreased, with net ownership and use falling to among the lowest levels in Zambia. After maintaining very high levels of ANC4 during the 1990s, Chingola experienced an abrupt drop in coverage.

In 2010, Chingola did not perform consistently across any given group of interventions. For instance, the district met or exceeded the national averages for some immunizations (BCG and measles), but fell below the national averages for the pentavalent vaccine and polio coverage. In comparison with the national average, Chingola showed slightly lower levels of mortality and higher levels for underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Chingola recorded a small reduction in all-cause under-5 mortality, dropping 16% from 125 deaths per 1,000 live births in 1990 (95% CI: 97, 161) to 106 in 2010 (95% CI: 78, 143); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight declined from 15% in the early 1990s to 11% in the early 2000s. Underweight remained at 11% until 2005, after which prevalence steadily climbed to 17% in 2010 (95% CI: 12%, 24%), exceeding the national average of 14%. This upward trend in childhood underweight is cause for concern.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage increased to 52% in 2008 (95% CI: 46%, 57%). Ownership slipped to 50% in 2010 (95% CI: 44%, 57%), which was among the lowest in Zambia.

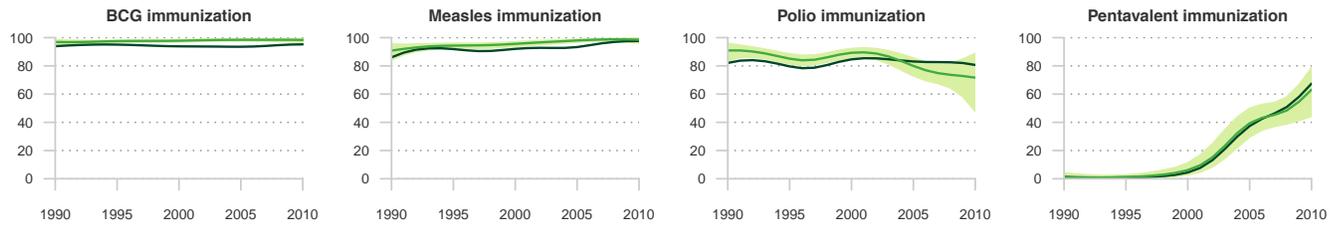
ITN use by children under 5 years old rose to 42% in 2007 (95% CI: 33%, 50%), but fell to 32% in 2010 (95% CI: 25%, 40%). Similar to ITN ownership, ITN use in Chingola also was among the lowest in Zambia for 2010. The difference between ITN ownership and use (18 percentage points) was higher in Chingola than what was observed at the national level (11

percentage points) for 2010.

Chingola formally implemented IRS activities in 2000, and was one of the first 15 districts in Zambia to roll out IRS. IRS coverage peaked at 45% in 2008 (95% CI: 41%, 49%), slightly decreasing to 41% in 2010 (95% CI: 36%, 47%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly rose to 93% in 2009 (95% CI: 88%, 96%) and remained at 93% through 2010. This level of IPTp2 coverage was among the highest in Zambia for 2010.

IMMUNIZATIONS



After remaining at 97% through the mid-1990s, BCG coverage climbed to 98% in 1995 (95% CI: 97%, 98%) and stayed at this level through 2010, exceeding the national average of 95% and rising among the highest in Zambia.

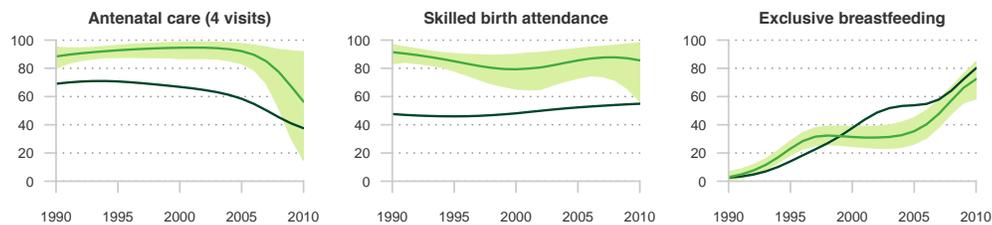
Measles immunization steadily increased from 91% in 1990 (95% CI: 84%, 95%) to 99% in 2007 (95% CI: 98%, 99%), and remained at 99% through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization dropped from 91% in the

early 1990s to 84% in the mid-1990s, after which coverage slightly increased and hovered around 90% until the mid-2000s. Polio coverage then steadily decreased, declining to 72% in 2010 (95% CI: 48%, 89%) and falling below the national average of 81%.

After the pentavalent vaccine was formally introduced in Chingola in 2005, coverage increased to 43% in 2006 (95% CI: 35%, 53%) and 63% in 2010 (95% CI: 44%, 79%), which was slightly lower than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased 88% in 1990 (95% CI: 80%, 95%) to 95% in the early 2000s. Coverage remained above 90% until 2007, after which ANC4 steeply fell to 56% in 2010 (95% CI: 15%, 92%). Despite this decline, this level of coverage remained higher than the national average of 37% in 2010. Nevertheless, the finding that Chingola's levels of coverage fell nearly 40 percentage points in eight years is troubling.

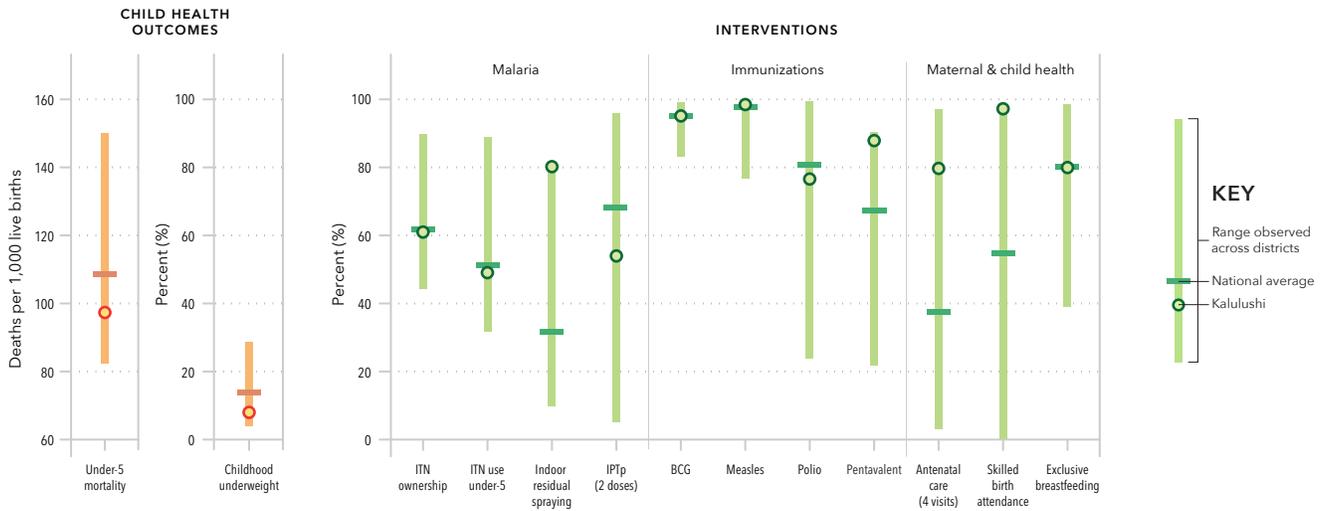
Skilled birth attendance declined from 91% in 1990 (95% CI: 84%, 96%) to 79% in 2000 (95% CI: 65%, 90%), but then

gradually rose to 88% in the late 2000s. SBA coverage slipped to 86% in 2010 (95% CI: 57%, 98%), but still was among the highest levels in Zambia.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage increased to 32% in the late 1990s. Exclusive breastfeeding hovered around 30% through 2004, but quickly climbed to 72% in 2010 (95% CI: 58%, 85%). Nonetheless, this level of coverage was lower than the national average of 80% for 2010.



Kalulushi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

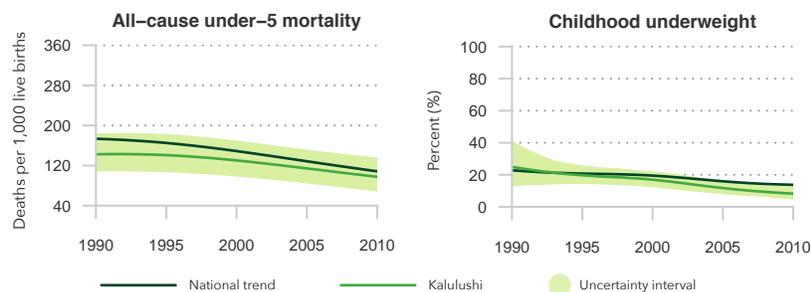
Kalulushi reduced its all-cause under-5 mortality between 1990 and 2010, but the magnitude of its progress was fairly low. Childhood underweight substantially declined, falling among the lowest levels in Zambia. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

The district scaled up ITN coverage and recorded some of the highest levels of IRS in Zambia for 2010. Kalulushi rapidly scaled up coverage of the pentavalent vaccine and maintained high coverage of BCG and measles immunization. Exclusive breastfeeding coverage rebounded after a period of declines. Impressively, skilled birth attendance increased to extremely high levels in the early 2000s and remained high through 2010, rising to among the highest in Zambia.

However, amidst these gains, some worrisome trends were identified and warrant further attention. IPTp2 coverage declined from its peak in 2007, and ANC4 coverage decreased during the late 2000s. Polio immunization dropped after consistently remaining well above the national average during the 1990s and early 2000s.

In 2010, Kalulushi generally met or exceeded the national average across child health interventions, with the exceptions being IPTp2 coverage and polio immunization. In comparison with the national average, Kalulushi showed lower levels of mortality and underweight.

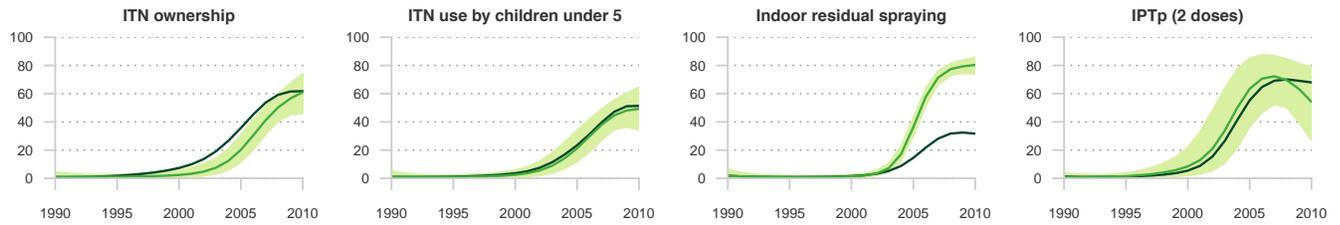
CHILD HEALTH OUTCOMES



From 1990 to 2010, Kalulushi recorded a reduction in all-cause under-5 mortality, dropping 32% from 143 deaths per 1,000 live births in 1990 (95% CI: 110, 182) to 98 in 2010 (95% CI: 70, 134); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 25% in 1990 (95% CI: 13%, 40%) to 8% in 2010 (95% CI: 5%, 12%), which was well below the national average of 14% and among the lowest in Zambia.

MALARIA INTERVENTIONS



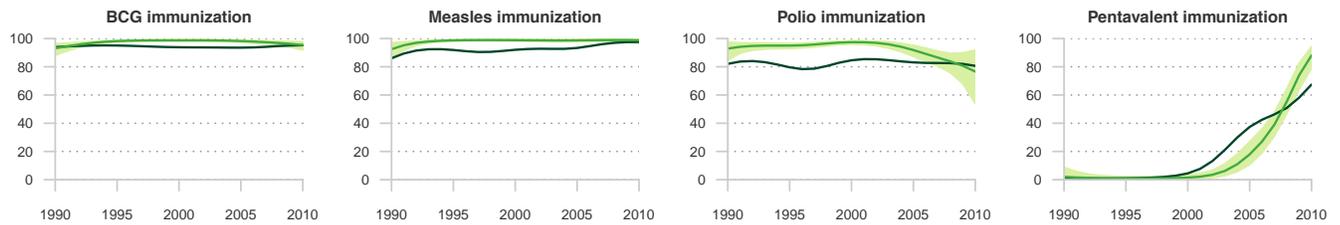
ITN ownership remained below 10% until 2004, after which coverage rapidly increased to 61% in 2010 (95% CI: 46%, 74%). This level of ITN ownership was comparable to the national average of 62% in 2010.

ITN use by children under 5 years old quickly rose to 49% in 2010 (95% CI: 34%, 65%), but was slightly lower than the national average of 51%. The difference between ITN ownership and use (12 percentage points) in Kalulushi was comparable to that observed at the national level for 2010.

Kalulushi formally implemented IRS activities in 2004, and was one of the first 15 districts in Zambia to roll out IRS. Spraying coverage reached 80% in 2010 (95% CI: 74%, 86%), which was among the highest in Zambia.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 72% in 2007 (95% CI: 52%, 87%). IPTp2 coverage then decreased to 54% in 2010 (95% CI: 27%, 79%), falling below the national average of 68%.

IMMUNIZATIONS



BCG coverage increased from 93% in 1990 (95% CI: 88%, 96%) to 99% in 1997 (95% CI: 98%, 99%). Coverage remained at 99% through 2004, after which immunization rates declined to 95% in 2010 (95% CI: 92%, 98%), equaling the national average.

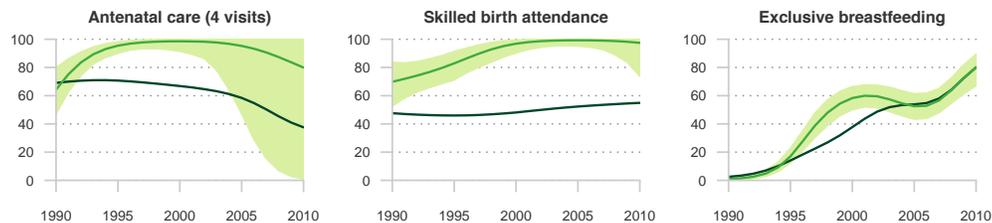
Measles immunization climbed from 92% in 1990 (95% CI: 85%, 97%) to 99% in 1995 (95% CI: 98%, 99%), after which coverage was maintained at 99% through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization steadily increased from 93% in 1990 (95% CI: 85%, 97%) to 97% in the late 1990s.

Polio coverage remained at 97% until 2003, dropping to 77% in 2010 (95% CI: 54%, 92%) and falling slightly below the national average of 81%. This decline in polio immunization is cause for concern given that the district sustained high levels of coverage through the early 2000s.

After the pentavalent vaccine was formally introduced in Kalulushi in 2005, coverage increased to 39% in 2007 (95% CI: 31%, 48%) and then jumped to 88% in 2010 (95% CI: 79%, 94%), far exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS

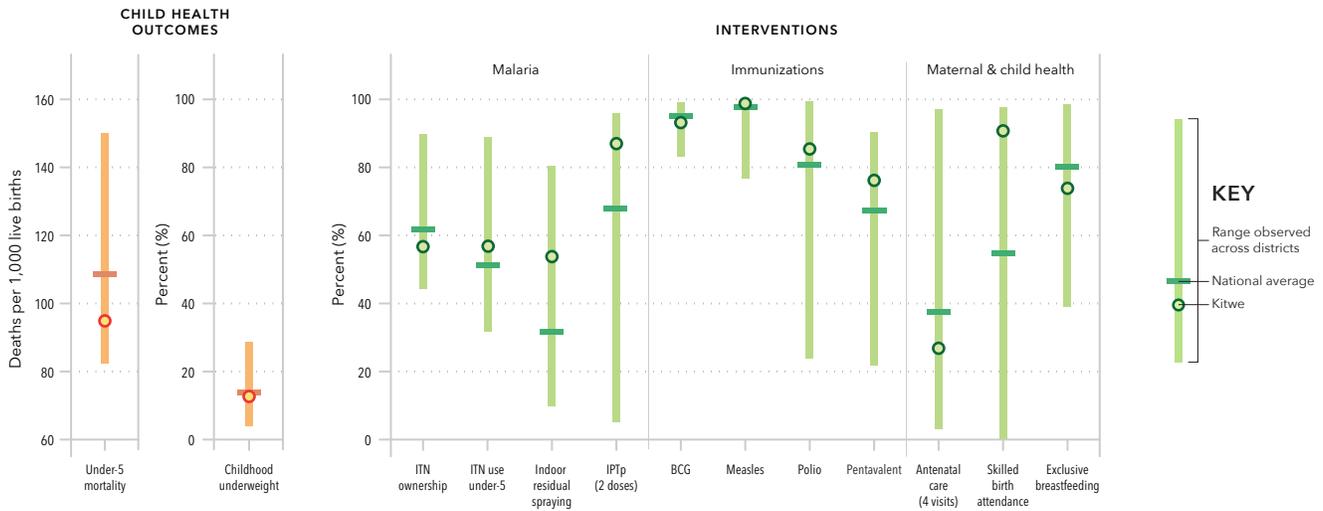


ANC4 coverage climbed from 64% in 1990 (95% CI: 47%, 80%) to a high of 99% in 2000 (95% CI: 92%, 100%). Coverage remained at 98% in the early 2000s, but decreased thereafter, dropping to 80% in 2010 (95% CI: 1%, 100%). Despite this decline, Kalulushi's level of ANC4 exceeded the national average of 37% in 2010 and was among the highest in Zambia.

Skilled birth attendance steadily increased from 70% in 1990 (95% CI: 53%, 84%) to 99% in 2002 (95% CI: 94%, 100%). SBA coverage remained at 99% until 2009, slipping to 97%

in 2010 (95% CI: 74%, 100%). This level of coverage far exceeded the national average of 55% in 2010 and was among the highest in Zambia.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage rapidly rose to 60% in 2001 (95% CI: 52%, 67%). Gains in coverage stalled for several years, with exclusive breastfeeding coverage falling to 53% before rebounding to 80% in 2010 (95% CI: 67%, 89%), which equaled the national average.



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

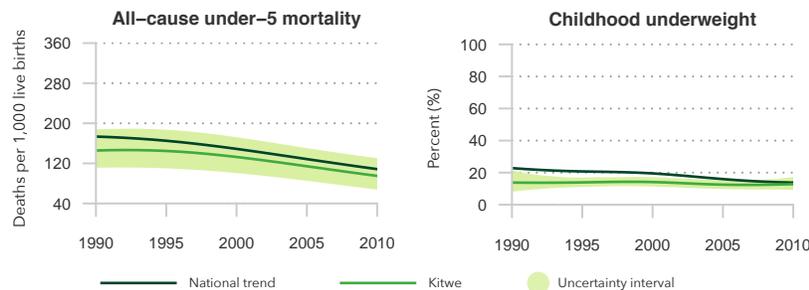
Kitwe reduced its all-cause under-5 mortality between 1990 and 2010, bringing its mortality levels below the national average in 2010. Less progress was made for childhood underweight, as prevalence generally stagnated in Kitwe over time. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

High levels of IRS and IPTp2 coverage were achieved in 2010, and ITN use was consistently higher than the national average. Kitwe rapidly scaled up coverage of the pentavalent vaccine, and levels of routine immunizations generally met or exceeded the national average in 2010. Skilled birth attendance was consistently well above the national trend, and Kitwe's levels of SBA coverage were among the highest in Zambia for 2010.

However, amidst these successes, some troubling trends were identified and warrant further attention. Despite gains in coverage during the late 2000s, exclusive breastfeeding remained below the national average in 2010. ANC4 coverage dropped sharply in recent years, which is particularly alarming given that Kitwe's levels of ANC4 were quite high prior to the mid-2000s.

In 2010, Kitwe generally met or exceeded the national average for malaria interventions and immunizations, but fell below for maternal and child health interventions; the district's high level of skilled birth attendance was the stark exception. In comparison with the national average, Kitwe showed lower levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Kitwe recorded a significant reduction in all-cause under-5 mortality, dropping 35% from 146 deaths per 1,000 live births in 1990 (95% CI: 113, 186) to 95 in 2010 (95% CI: 70, 128). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight remained at 14% from 1990 to 2002, after which underweight decreased to 12% during the mid-2000s before rising to 13% in 2009 (95% CI: 10%, 16%) and remaining at 13% through 2010. This level of underweight was comparable to the national average of 14% for 2010, but Kitwe's minimal progress in reducing childhood underweight is cause for concern.

MALARIA INTERVENTIONS



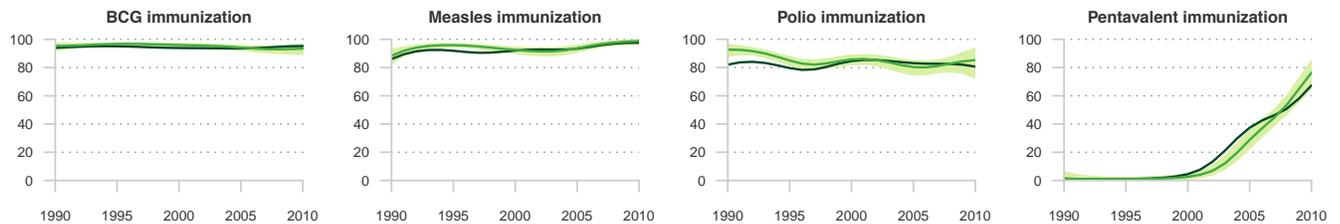
ITN ownership remained below 10% until 1999, after which coverage rapidly increased to 57% in 2010 (95% CI: 52%, 61%), falling slightly below the national average of 62%.

ITN use by children under 5 years old quickly rose to 57% in 2010 (95% CI: 51%, 62%), exceeding the national average of 51%. In 2010, ITN use equaled ownership in Kitwe, which suggests that net use by children under 5 may be high among households that have ITNs.

Kitwe formally implemented IRS activities in 2003 and was one of the first 15 districts in Zambia to roll out IRS. IRS coverage reached its peak of 61% in 2008 (95% CI: 58%, 64%), slipping to 54% in 2010 (95% CI: 49%, 58%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, but rapidly rose to 87% in 2010 (95% CI: 80%, 92%), far exceeding the national average of 68%.

IMMUNIZATIONS



BCG coverage increased from 95% in the early 1990s to 97% in the mid-1990s, but fell to 93% in 2007 (95% CI: 91%, 95%) and remained at 93% through 2010. This level of BCG coverage was lower than the national average of 95% for 2010.

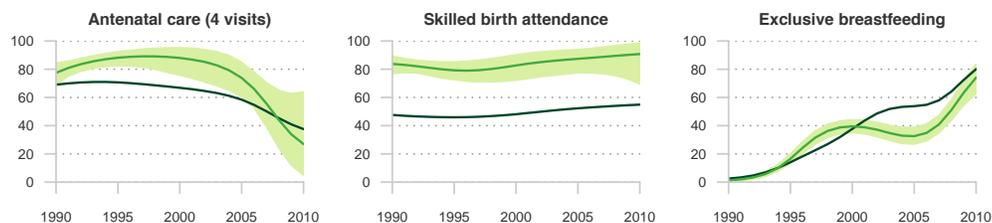
Measles immunization rose from 88% in 1990 (95% CI: 83%, 93%) to 96% in the mid-1990s before declining to 91% in the early 2000s. Measles coverage rebounded, reaching 99% in 2010 (95% CI: 97%, 100%) and slightly exceeding the national average of 98%.

Coverage of polio immunization in the district fell from

93% in the early 1990s to 82% in 1997 (95% CI: 79%, 85%), but then increased to 86% in the early 2000s. Polio coverage briefly slipped to 80% during the mid-2000s before rising to 85% in 2010 (95% CI: 73%, 94%), which was slightly higher than the national average of 81%.

After the pentavalent vaccine was formally introduced in Kitwe in 2005, coverage increased to 37% in 2006 (95% CI: 31%, 43%) and 76% in 2010 (95% CI: 66%, 85%), which was higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 77% in 1990 (95% CI: 69%, 84%) to 89% in the mid- and late 1990s, but then steadily dropped to 27% in 2010 (95% CI: 5%, 64%), falling below the national average of 37%. The finding that Kitwe's levels of coverage fell more than 60 percentage points since 1999 is particularly worrisome.

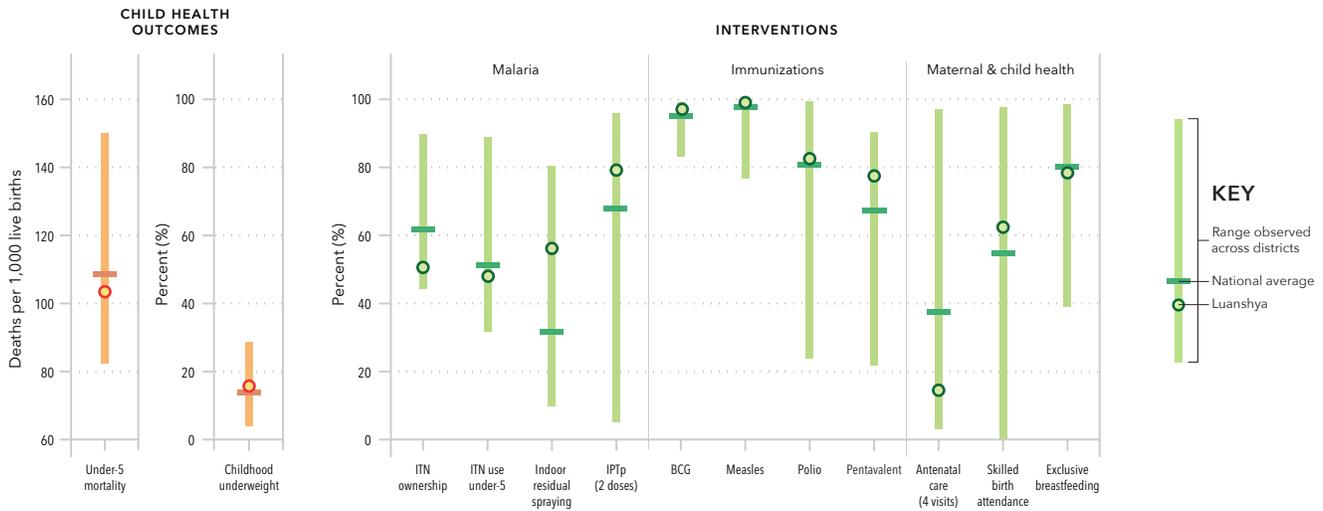
Skilled birth attendance declined from 84% in 1990 (95% CI: 77%, 89%) to 79% in the mid-1990s, after which coverage steadily rose to 91% in 2010 (95% CI: 70%, 99%), far

exceeding the national average of 55%. This level of SBA coverage was among the highest in Zambia for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage increased to 40% in 2000 (95% CI: 35%, 44%). Gains in coverage stalled, with exclusive breastfeeding dropping to 33% in the mid-2000s before rebounding to 74% in 2010 (95% CI: 63%, 84%). This level of coverage remained below the national average of 80% for 2010.



Luanshya



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Luanshya slightly reduced its all-cause under-5 mortality from 1990 to 2010, and worryingly, childhood underweight generally increased during this time. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

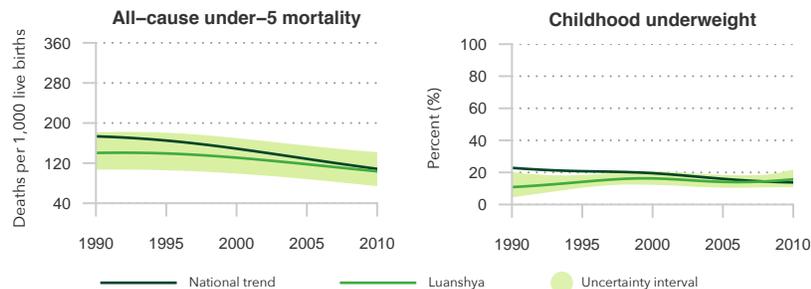
The district rapidly increased coverage of the pentavalent vaccine, and sustained high levels of BCG and measles immunization. Coverage of IRS was among the highest in Zambia for 2010, and levels of IPTp2 exceeded the national average in 2010. After a period of stalled progress, exclusive breastfeeding nearly reached the national average in 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. ITN ownership was

quite low, and skilled birth attendance steadily decreased over time. Alarming, after maintaining high levels of ANC4 coverage during the 1990s and early 2000s, ANC4 declined steeply to among the lowest levels in Zambia.

In 2010, Luanshya generally met or exceeded the national average across immunizations, but fell below for maternal and child health interventions (with the exception of skilled birth attendance). The district's performance for malaria interventions was more mixed. In comparison with the national average, Luanshya showed slightly lower levels of mortality and higher levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Luanshya recorded a reduction in all-cause under-5 mortality, dropping 26% from 140 deaths per 1,000 live births in 1990 (95% CI: 109, 179) to 104 in 2010 (95% CI: 76, 140); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 11% in the early 1990s to 16% in 1997 (95% CI: 13%, 19%), and remained at 16% through 2001. Underweight declined to 14% during the mid-2000s, but climbed to 16% in 2010 (95% CI: 11%, 21%), exceeding the national average of 14%. This overall trend of rising levels of underweight is cause for concern.

MALARIA INTERVENTIONS



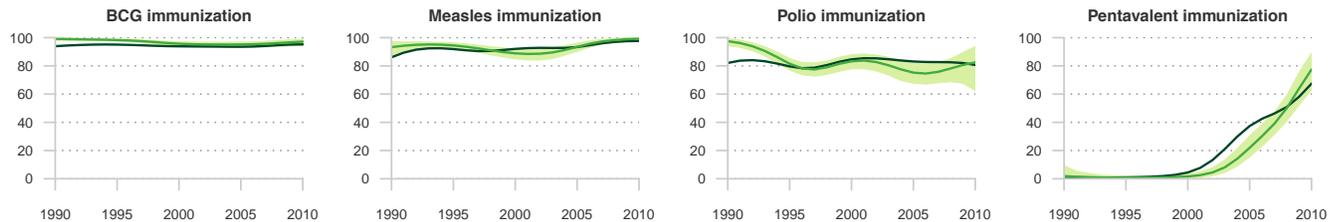
ITN ownership remained below 10% until 2002, after which coverage quickly increased to 55% in 2008 (95% CI: 50%, 61%). Ownership slipped to 51% in 2010 (95% CI: 44%, 57%), which was among the lowest in Zambia for that year.

ITN use by children under 5 years old climbed to 48% in 2009 (95% CI: 41%, 56%) and remained at this level through 2010, which was slightly lower than the national average of 51%. In 2010, the difference between ITN ownership and ITN use was quite low in Luanshya, which suggests that net use by children under 5 may be high among households that have ITNs.

Luanshya formally implemented IRS activities in 2006, and was one of the first 15 districts in Zambia to roll out IRS. Spraying coverage peaked at 64% in 2008 (95% CI: 60%, 68%), slipping to 56% in 2010 (95% CI: 50%, 62%). Nonetheless, IRS coverage remained among the highest in Zambia for 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 84% in 2007 (95% CI: 73%, 92%). IPTp2 coverage dropped to 79% in 2010 (95% CI: 67%, 89%), but remained higher than the national average of 68%.

IMMUNIZATIONS



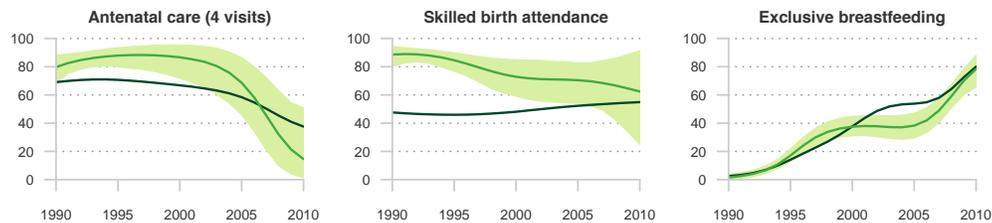
BCG coverage declined from 99% in the early 1990s to 95% in the early and mid-2000s, but rose to 97% in 2009 (95% CI: 94%, 98%) and remained at 97% through 2010. This level of coverage was higher than the national average of 95% for 2010.

Measles immunization decreased from 95% in the early 1990s to 88% in 2001 (95% CI: 84%, 92%), but then steadily climbed to 99% in 2009 (95% CI: 98%, 100%). Measles coverage stayed at 99% through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization fell from 98% in 1990 (95% CI: 95%, 99%) to 77% in 1997 (95% CI: 73%, 82%) before rising above 80% in the early 2000s. Coverage dropped to 75% in the mid-2000s but rose to 82% in 2010 (95% CI: 63%, 93%), which was comparable to the national average of 81%.

After the pentavalent vaccine was formally introduced in Luanshya in 2005, coverage increased to 39% in 2007 (95% CI: 32%, 47%) and then escalated to 77% in 2010 (95% CI: 63%, 89%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 80% in 1990 (95% CI: 69%, 88%) to 88% in the mid- and late 1990s, but then steeply declined to 15% in 2010 (95% CI: 2%, 51%), falling to among the lowest levels in Zambia. Since 1999, Luanshya's levels of ANC4 coverage fell more than 70 percentage points, which is quite worrisome.

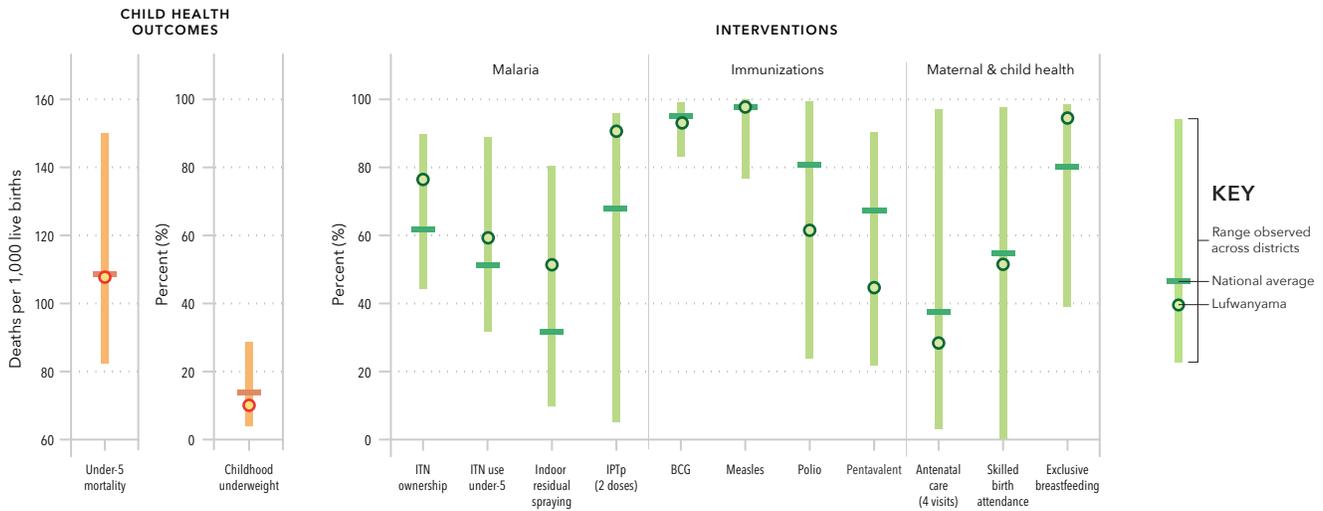
Skilled birth attendance slowly decreased from 89% in 1990 (95% CI: 81%, 94%) to 62% in 2010 (95% CI: 25%, 91%), which was slightly higher than the national average of 55%.

Nonetheless, Luanshya's declines in SBA coverage over time warrant further attention.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage increased to 38% in the early 2000s. Gains in coverage slowed until 2006, with exclusive breastfeeding coverage rising to 78% in 2010 (95% CI: 66%, 88%) and falling slightly lower than the national average of 80%.



Lufwanyama



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

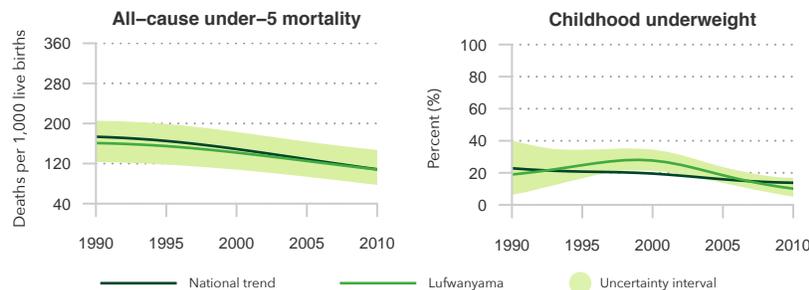
Lufwanyama substantially reduced all-cause under-5 mortality from 1990 to 2010. After a period of rising levels of childhood underweight, prevalence dramatically decreased during the 2000s. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

IPTp2 coverage increased to some of the highest levels in Zambia, and ITN ownership and IRS were well above the national averages in 2010. The district maintained high levels of BCG and measles immunization. After many years of exceedingly low coverage, skilled birth attendance steadily increased. Exclusive breastfeeding rose to among the highest levels in Zambia for 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. The district had a minimal scale-up of the pentavalent vaccine, and polio immunization dropped after consistently exceeding the national average for 15 years. ANC4 coverage abruptly fell in the late 2000s, which is particularly concerning given its very high levels of coverage during the 1990s and early 2000s.

In 2010, Lufwanyama generally met or exceeded the national average for malaria interventions and key maternal and child health interventions (with the exception of ANC4), but was much less consistent for immunizations. In comparison with the national average, Lufwanyama showed similar levels of mortality and lower levels of underweight.

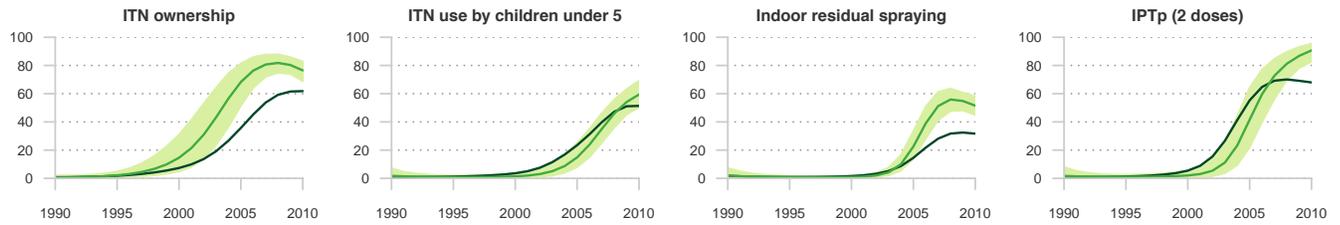
CHILD HEALTH OUTCOMES



From 1990 to 2010, Lufwanyama recorded a significant reduction in all-cause under-5 mortality, dropping 33% from 161 deaths per 1,000 live births in 1990 (95% CI: 125, 204) to 108 in 2010 (95% CI: 79, 145). In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 19% in 1990 (95% CI: 7%, 39%) to 28% in the late 1990s, but then substantially decreased to 10% in 2010 (95% CI: 6%, 16%), falling below the national average of 14%. The district's recent progress in reducing underweight is quite laudable.

MALARIA INTERVENTIONS



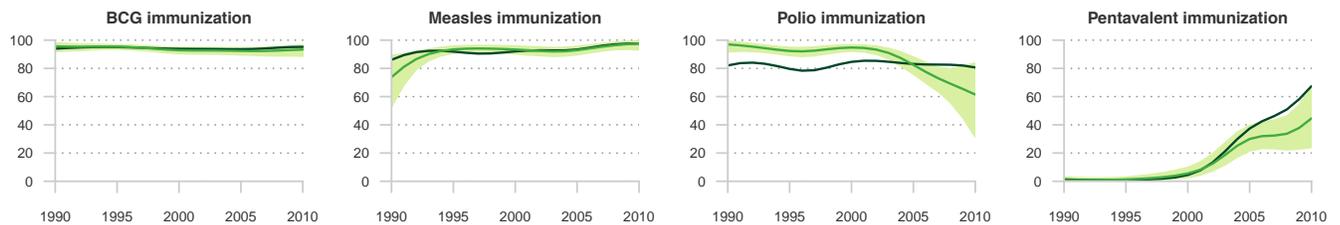
ITN ownership remained below 10% until 1999, after which coverage rapidly increased to 82% in 2008 (95% CI: 75%, 88%). Ownership slipped to 76% in 2010 (95% CI: 69%, 83%), but remained much higher than the national average of 62%.

ITN use by children under 5 quickly rose to 59% in 2010 (95% CI: 50%, 69%), which was above the national average of 51%. The difference between ITN ownership and use (17 percentage points) was higher in Lufwanyama than what was observed at the national level (11 percentage points) for 2010.

Lufwanyama formally implemented IRS activities in 2008 and reached 56% of households that year (95% CI: 48%, 64%). IRS coverage fell slightly to 52% in 2010 (95% CI: 45%, 58%), but this level of IRS remained on the higher end among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage rapidly rose to 91% in 2010 (95% CI: 83%, 96%). This level of IPTp2 coverage was among the highest in Zambia for 2010.

IMMUNIZATIONS



BCG coverage gradually declined from 96% in 1990 (95% CI: 92%, 98%) to 92% in the mid-2000s, after which coverage slightly increased to 93% in 2008 (95% CI: 89%, 95%). This level of BCG coverage was maintained through 2010, falling slightly lower than the national average of 95%.

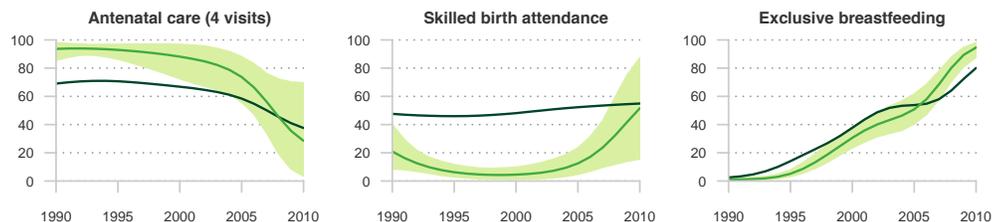
Measles immunization increased from 74% in 1990 (95% CI: 53%, 89%) to 94% in the mid- and late 1990s, but slipped to 92% in the mid-2000s. Measles coverage then steadily climbed to 98% in 2010 (95% CI: 93%, 100%), equaling the national average.

Coverage of polio immunization gradually decreased from 97% in 1990 (95% CI: 92%, 99%) to 91% in 2003 (95% CI:

87%, 94%), after which the rate of decline accelerated. Polio coverage dropped to 61% in 2010 (95% CI: 31%, 84%), falling well below the national average of 81%. This recent decline in polio coverage is worrisome given that the district recorded immunization rates exceeding 90% until 2004.

After the pentavalent vaccine was formally introduced in Lufwanyama in 2005, coverage increased to 32% in 2006 (95% CI: 23%, 42%) and 45% in 2010 (95% CI: 24%, 66%), which was well below the national average of 67%. The district documented a fairly minimal scale-up of the vaccine, with its coverage falling to among the lowest in Zambia for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 94% in the early 1990s to 28% in 2010 (95% CI: 4%, 69%), falling below the national average of 37%. ANC4 coverage in Lufwanyama had consistently remained higher than the national average from 1990 to 2005, which makes its abrupt drop during the late 2000s even more troubling.

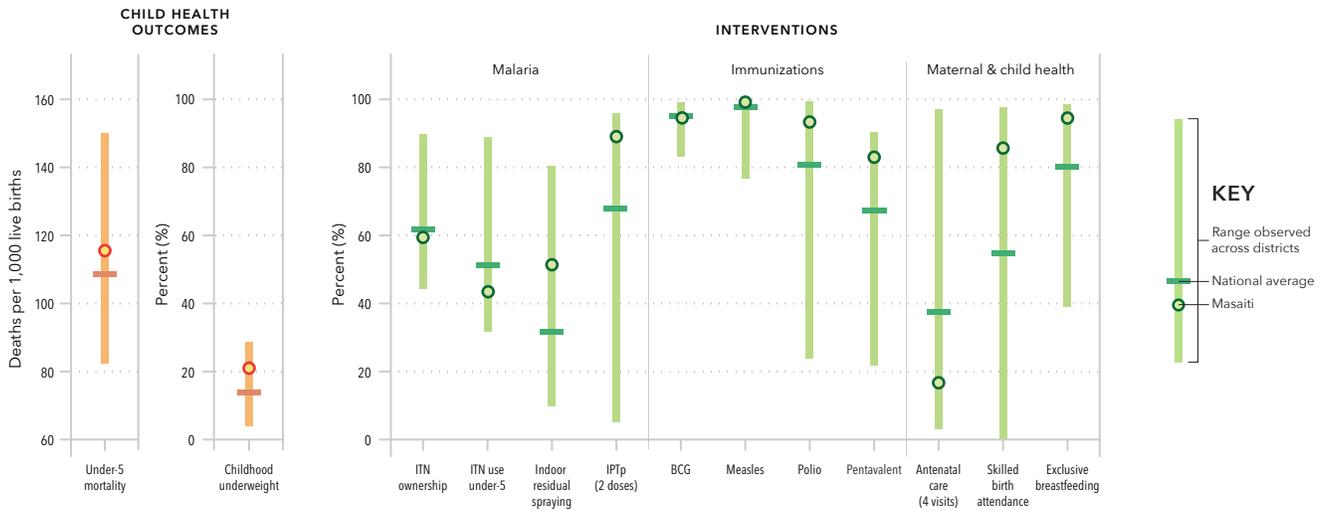
Skilled birth attendance fell below 10% from 1994 to 2004, after which coverage steadily increased to 52% in 2010 (95%

CI: 16%, 87%). This level of SBA coverage was slightly lower than the national average of 55% for 2010, which is notable given that coverage had been extremely low for more than a decade.

The proportion of children who were exclusively breastfed remained below 20% until 1999, after which coverage rapidly climbed to 95% in 2010 (95% CI: 88%, 98%). This level of exclusive breastfeeding was among the highest in Zambia for 2010.



Masaiti



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Masaiti reduced its all-cause under-5 mortality between 1990 and 2010, but its levels of mortality remained higher than the national average in 2010. After recording steady declines in childhood underweight from 1990 to 2002, the district's levels of underweight increased through 2010 and were among the highest in Zambia for that year. Prioritizing efforts to accelerate gains for child health outcomes, especially childhood underweight, should be considered.

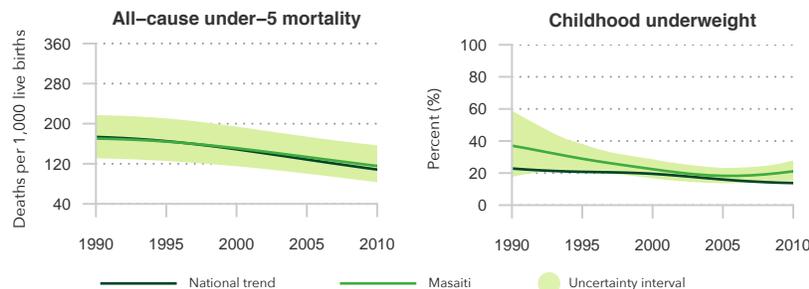
Masaiti scaled up and maintained coverage of malaria interventions through 2010, especially for IPTp2. The district recorded rapid gains in pentavalent coverage, and polio immunization coverage exceeded the national average in 2010. Exclusive breastfeeding reached some of the highest levels in Zambia in 2010, and skilled birth attendance rebounded

from very low coverage during the early 2000s to among the highest in the country in 2010. Much could be learned from the district's success in improving its levels of skilled birth attendance.

However, amidst these gains, ANC4 coverage dropped sharply in Masaiti. This finding is particularly worrisome given that the district recorded high levels of coverage during the 1990s. Masaiti would likely benefit from targeting ANC4 for improvement.

In 2010, Masaiti generally met or exceeded the national average across all interventions, with the clear exception of ANC4 coverage. In comparison with the national average, Masaiti showed higher levels of mortality and underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Masaiti recorded a significant reduction in all-cause under-5 mortality, dropping 32% from 170 deaths per 1,000 live births in 1990 (95% CI: 133, 215) to 116 in 2010 (95% CI: 85, 155). In 2010, the district's under-5 mortality still remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104 to 116).

The proportion of children who were underweight steadily decreased from 37% in 1990 (95% CI: 18%, 58%) to 18% in

the mid-2000s, after which underweight increased to 21% in 2010 (95% CI: 16%, 27%). This level of childhood underweight was much higher than the national average of 14% and was among the highest in Zambia for 2010. Although Masaiti's overall progress is notable, the district's recent rise in prevalence and continued high levels of underweight are cause for concern.

MALARIA INTERVENTIONS



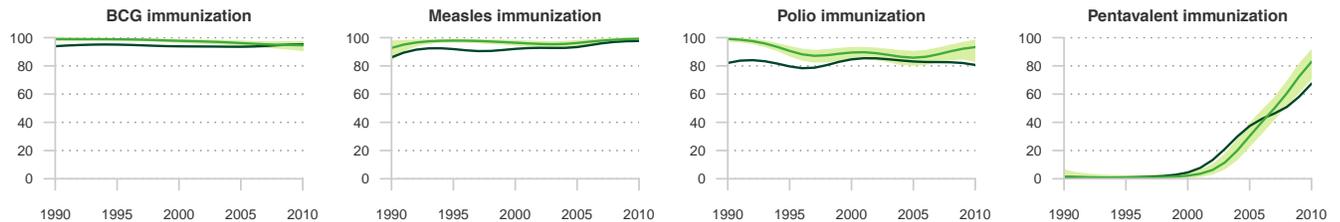
ITN ownership remained below 10% until 2003, after which coverage rapidly increased to 60% in 2010 (95% CI: 52%, 66%). This level of ITN ownership was slightly lower than the national average of 62% for 2010.

ITN use by children under 5 climbed to 43% in 2009 (95% CI: 37%, 50%) and remained at 43% through 2010, which was much lower than the national average of 51%. The difference between ITN ownership and use (17 percentage points) was higher in Masaiti than what was observed at the national level (11 percentage points) for 2010.

Masaiti formally implemented IRS activities in 2008 and reached 51% of households in 2010 (95% CI: 45%, 58%). Masaiti's scale-up of IRS by 2010 was on the higher end among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 89% in 2010 (95% CI: 82%, 94%), far exceeding the national average of 68% and rising to among the highest levels in Zambia.

IMMUNIZATIONS



BCG coverage gradually declined from 99% in the 1990s to 95% in 2007 (95% CI: 93%, 97%) and remained at this level through 2010, equalling the national average.

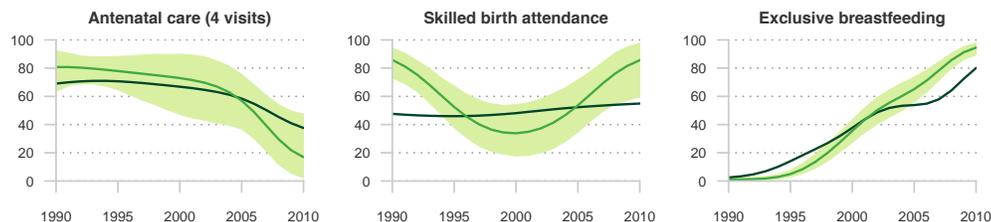
Measles immunization increased from 93% in 1990 (95% CI: 84%, 97%) to 98% in the mid-1990s, but then declined to 95% in 2003 (95% CI: 93%, 97%). Measles coverage rebounded, rising to 99% in 2009 (95% CI: 97%, 100%), which was maintained through 2010. This level of measles coverage was slightly higher than the national average of 98% in 2010.

Coverage of polio immunization fell from 99% in the early

1990s to 87% in 1997 (95% CI: 83%, 91%), after which coverage hovered around 90% through 2008. Polio coverage climbed to 93% in 2010 (95% CI: 84%, 98%), which was much higher than the national average of 81% and among the highest in Zambia for that year.

After the pentavalent vaccine was formally introduced in Masaiti in 2005, coverage increased to 50% in 2007 (95% CI: 43%, 57%) and 83% in 2010 (95% CI: 71%, 91%), far exceeding the national average of 67% and rising to among the highest levels in Zambia.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage dropped from 81% in the early 1990s to 17% in 2010 (95% CI: 3%, 47%), falling below the national average of 37%. ANC4 decreased throughout Zambia from 1990 to 2010, and the finding that Masaiti's levels of coverage fell more than 60 percentage points during this time is troubling.

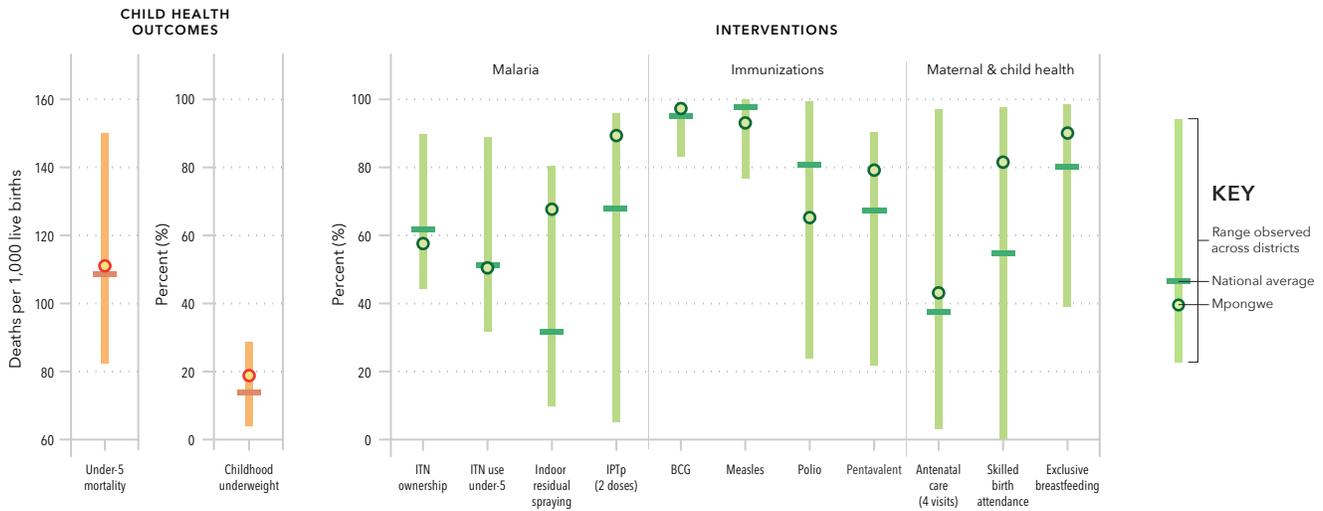
Skilled birth attendance declined sharply from 86% in 1990 (95% CI: 73%, 94%) to 34% in 1999 (95% CI: 19%, 53%), but rebounded to 86% in 2010 (95% CI: 60%, 98%). This level

of SBA coverage was well above the national average of 55% for 2010 and was among the highest in Zambia.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage steadily climbed to 95% in 2010 (95% CI: 90%, 98%). This level of exclusive breastfeeding far exceeded the national average of 80% and was among the highest in the country for 2010.



Mpongwe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Mpongwe reduced its all-cause under-5 mortality, but the relative magnitude of the district's progress was fairly low. The proportion of children who were underweight in Mpongwe decreased between 1990 and 1995, but then stagnated at levels above the national average. Prioritizing ways to accelerate gains for child health outcomes should be considered.

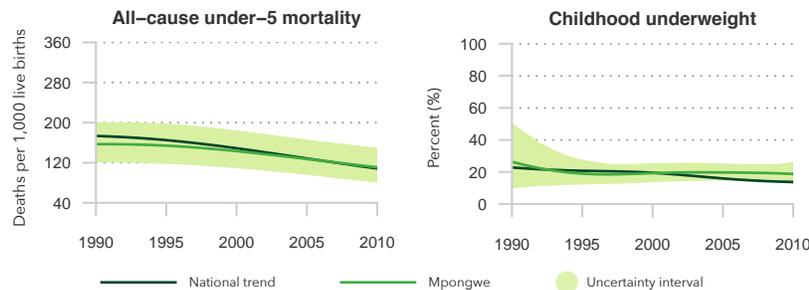
Mpongwe recorded some of the highest levels of IRS and IPTp2 in Zambia for 2010, and the district quickly expanded coverage of the pentavalent vaccine. High levels of BCG coverage were maintained over time, and exclusive breastfeeding exceeded the national average in 2010. Skilled birth attendance rebounded from substantial declines in coverage

during the 1990s, rising to among the highest levels in Zambia.

However, amidst these gains, some troubling trends were identified and warrant further attention. Measles coverage fell well below the national average in 2010, and the district experienced steep declines in ANC4 coverage in recent years.

In 2010, Mpongwe generally met or exceeded the national average across malaria interventions and maternal and child health interventions, but recorded less consistent results for immunizations. In comparison with the national average, Mpongwe showed slightly higher levels of mortality and much higher levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Mpongwe recorded a reduction in all-cause under-5 mortality, dropping 29% from 157 deaths per 1,000 live births in 1990 (95% CI: 123, 199) to 111 in 2010 (95% CI: 82, 148); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 26% in 1990 (95% CI: 10%, 50%) to 19% in the mid-1990s. Underweight hovered around 20% for several years before declining to 19% again in 2008 (95% CI: 15%, 24%), and remaining at 19% through 2010. This level of childhood underweight was much higher than the national average of 14% in 2010, and the district's minimal progress during the 2000s is cause for concern.

MALARIA INTERVENTIONS



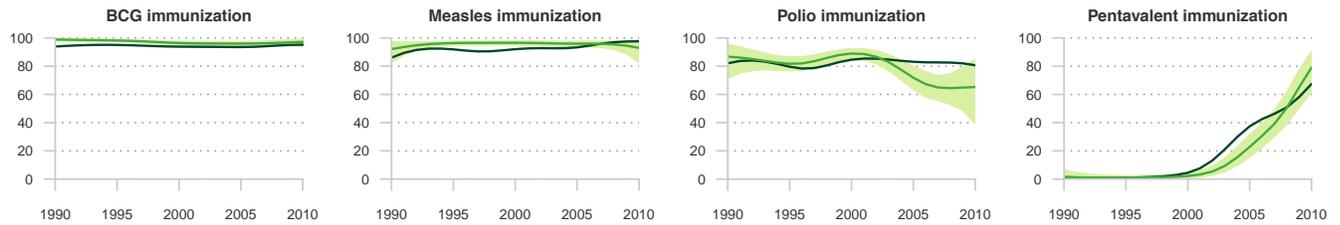
ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 61% in 2008 (95% CI: 53%, 68%). Ownership slipped to 57% in 2010 (95% CI: 48%, 67%), which was lower than the national average of 62%.

ITN use by children under 5 years old rose to 52% in 2009 (95% CI: 43%, 60%), but slipped to 50% in 2010 (95% CI: 41%, 60%). This level of ITN use was comparable to the national average of 51% for 2010. The difference between ITN ownership and use (7 percentage points) was lower than what was observed nationally (11 percentage points) for 2010.

Mpongwe formally implemented IRS activities in 2008 and reached 69% of households that year (95% CI: 59%, 77%). Coverage dipped to 67% in 2010 (95% CI: 60%, 75%), but remained among the highest levels in Zambia for 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly rose to 89% in 2010 (95% CI: 82%, 95%). This level of IPTp2 coverage far exceeded the national average of 68% for 2010 and was among the highest in Zambia.

IMMUNIZATIONS



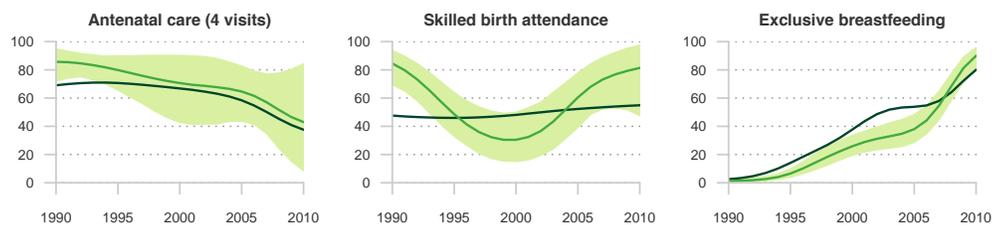
BCG coverage declined from 99% in the early 1990s to 96% in 2000 (95% CI: 95%, 97%) and remained at 96% through 2007. BCG immunization increased to 97% in 2008 (95% CI: 94%, 98%) and stayed at 97% through 2010, exceeding the national average of 95%.

Measles immunization climbed from 92% in 1990 (95% CI: 83%, 97%) to 97% in the mid-1990s. Coverage remained at 97% through 2001, but fell to 93% in 2010 (95% CI: 83%, 98%). This level of measles coverage was below the national average of 98% for 2010.

Coverage of polio immunization decreased from 87% in 1990 (95% CI: 71%, 95%) to 82% in the mid-1990s, after which coverage increased to 89% in early 2000s. Polio coverage then dropped to 65% in 2009 (95% CI: 49%, 79%) and remained at 65% through 2010. This level of polio coverage was much lower than the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Mpongwe in 2005, coverage increased to 39% in 2007 (95% CI: 30%, 49%) and 79% in 2010 (95% CI: 62%, 90%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage continuously decreased from 86% in 1990 (95% CI: 72%, 95%) to 43% in 2010 (95% CI: 9%, 84%). While coverage in Mpongwe was higher than the national average of 37% in 2010, its levels remained quite low.

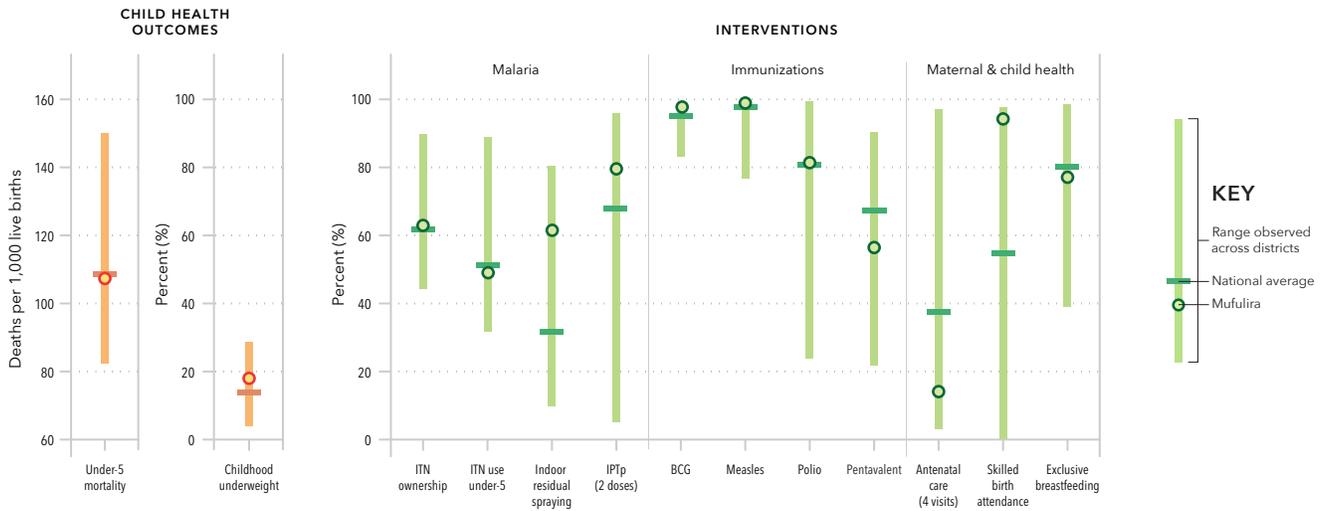
Skilled birth attendance decreased sharply from 85% in 1990 (95% CI: 70%, 93%) to a low of 30% in 1999 (95% CI: 16%, 49%), but rebounded to 81% in 2010 (95% CI: 48%, 97%),

rising to among the highest levels in Zambia. Mpongwe's recent gains are particularly notable given the district's low levels of coverage during the 2000s.

The proportion of children who were exclusively breastfed remained below 20% until 1999, after which coverage steadily increased to 90% in 2010 (95% CI: 81%, 96%), exceeding the national average of 80%.



Mufulira



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Mufulira recorded a moderate decline in all-cause under-5 mortality between 1990 and 2010. On the other hand, levels of childhood underweight remained high and relatively unchanged during this time. Prioritizing ways to accelerate gains for child health outcomes should be considered.

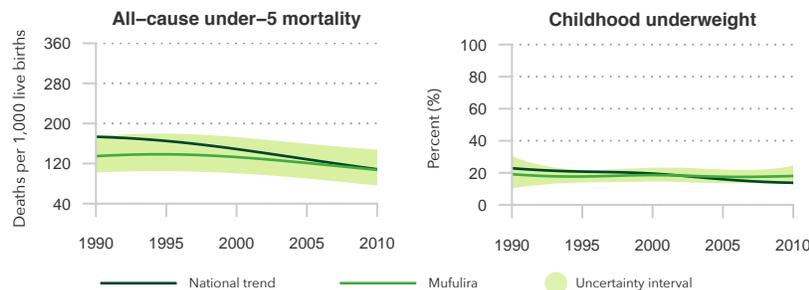
IPTp2 and IRS coverage increased substantially by 2010, with IRS rising to among the highest levels in Zambia. Skilled birth attendance increased to even higher levels, registering among the highest in Zambia for 2010. Exclusive breastfeeding neared the national average in 2010 after rebounding from a period of declines, and levels of BCG and measles immunization remained high over time.

However, amidst these gains, some troubling trends were

identified and warrant further attention. Polio coverage recently fell from very high levels of coverage. ANC4 coverage dropped to some of the lowest levels in Zambia, which is particularly worrisome given the district's high levels of ANC4 during the 1990s.

In 2010, Mufulira generally met or exceeded the national average across malaria and routine immunizations (with the exception of the pentavalent vaccine), but had widely variable results for maternal and child health interventions. In comparison with the national average, Mufulira showed similar levels of mortality and higher levels of underweight.

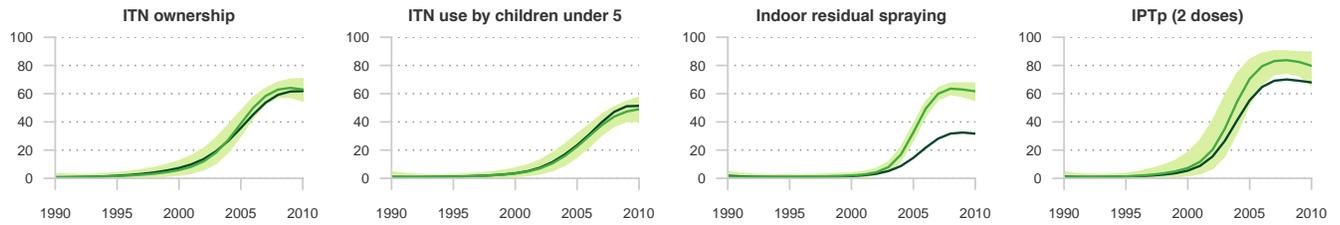
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mufulira recorded a reduction in all-cause under-5 mortality, dropping 20% from 135 deaths per 1,000 live births in 1990 (95% CI: 104, 173) to 107 in 2010 (95% CI: 78, 146); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 19% in 1990 (95% CI: 11%, 30%) to 17% in the mid-2000s, but increased to 18% in 2008 (95% CI: 14%, 22%) and remained at 18% through 2010. This level of childhood underweight was higher than the national average of 14% in 2010, and the district's minimal progress during the 1990s is cause for concern.

MALARIA INTERVENTIONS



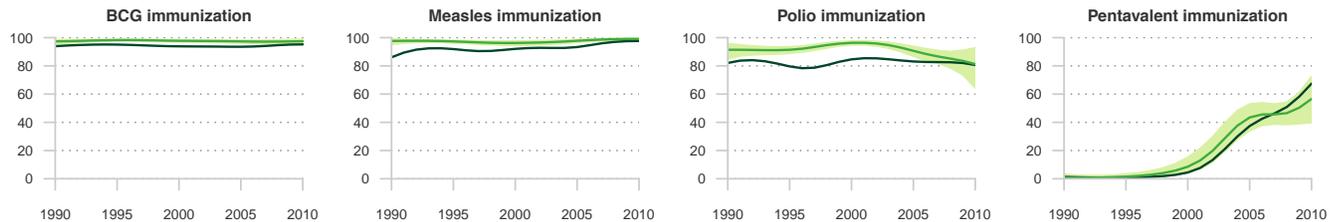
ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 64% in 2009 (95% CI: 58%, 70%). Ownership slipped to 63% in 2010 (95% CI: 55%, 71%), which was comparable to the national average of 62%.

ITN use by children under 5 years old rose to 49% in 2010 (95% CI: 40%, 57%), falling slightly lower than the national average of 51%. The difference between ITN ownership and use (14 percentage points) was slightly higher than what was observed nationally (11 percentage points) for 2010.

Mufulira formally implemented IRS activities in 2004 and was one of the first 15 districts in Zambia to roll out IRS. IRS coverage peaked at 64% in 2008 (95% CI: 59%, 67%), slipping to 62% in 2010 (95% CI: 55%, 67%). Nonetheless, Mufulira had one of the highest levels of IRS in the country for 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 84% in 2008 (95% CI: 75%, 90%). IPTp2 coverage decreased to 80% in 2010 (95% CI: 66%, 90%), but still exceeded the national average of 68% for that year.

IMMUNIZATIONS



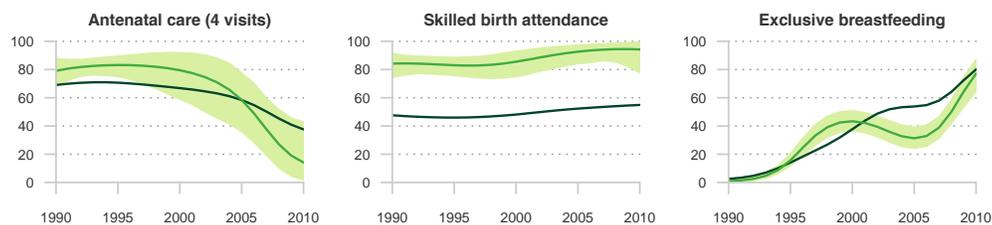
BCG coverage increased from 97% in 1990 (95% CI: 96%, 99%) to 98% one year later and remained at 98% through 2003. Coverage slipped to 97% in 2004 (95% CI: 96%, 98%) and stayed at 97% through 2010, far exceeding the national average of 95%.

Measles immunization remained at 98% through the mid-1990s, after which coverage declined to 96% during the late 1990s and early 2000s. Measles coverage climbed to 99% in 2007 (95% CI: 98%, 99%) and stayed at 99% through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization rose from 91% in the early and mid-1990s to 96% in the early 2000s, after which polio coverage dropped to 81% in 2010 (95% CI: 64%, 93%), equaling the national average.

After the pentavalent vaccine was formally introduced in Mufulira in 2005, coverage hovered around 46% through 2008 and then increased to 57% in 2010 (95% CI: 40%, 72%), falling below the national average of 67%. This level of pentavalent coverage was among the lowest in Zambia for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased to 83% in the mid-1990s and remained around 80% until 2001, after which coverage dropped sharply to 14% in 2010 (95% CI: 2%, 43%). This level of ANC4 was among the lowest in Zambia in 2010, and the finding that ANC4 fell nearly 70 percentage points since 1997 is quite troubling.

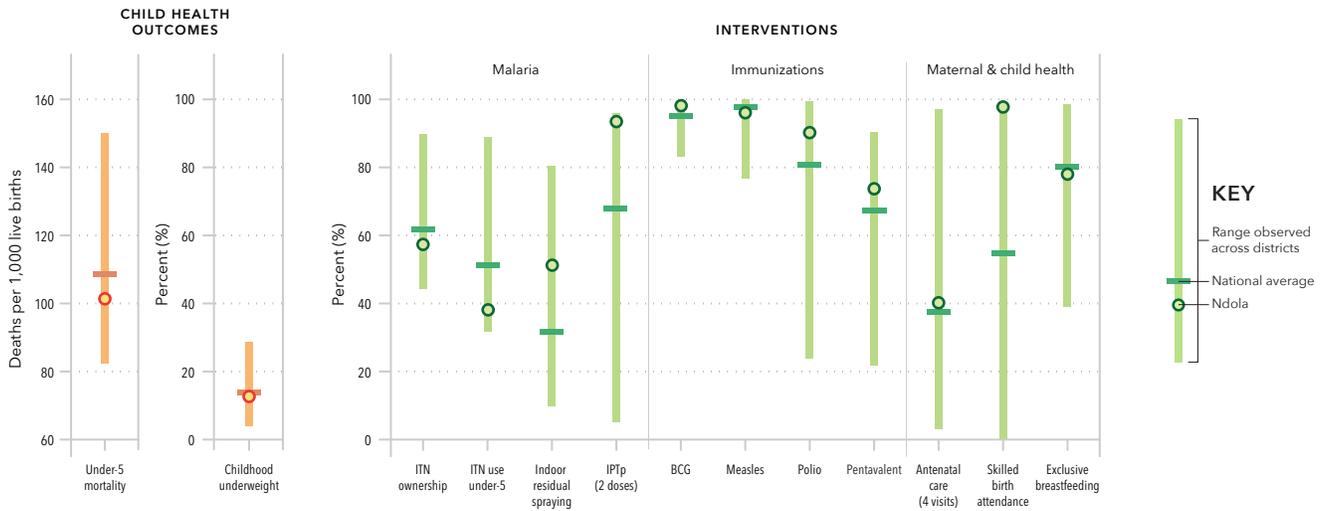
Skilled birth attendance gradually climbed from 84% in the early 1990s to 95% in 2009 (95% CI: 82%, 99%). SBA coverage fell slightly to 94% in 2010 (95% CI: 78%, 99%), but was

nonetheless among the highest levels in the country for that year.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage rose to 43% in 2000 (95% CI: 37%, 51%). Gains in coverage were reversed, with exclusive breastfeeding falling to 31% in 2005 (95% CI: 24%, 39%), but coverage rebounded to 77% in 2010 (95% CI: 65%, 87%). This level of exclusive breastfeeding was slightly lower than the national average of 80% for 2010.



Ndola



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

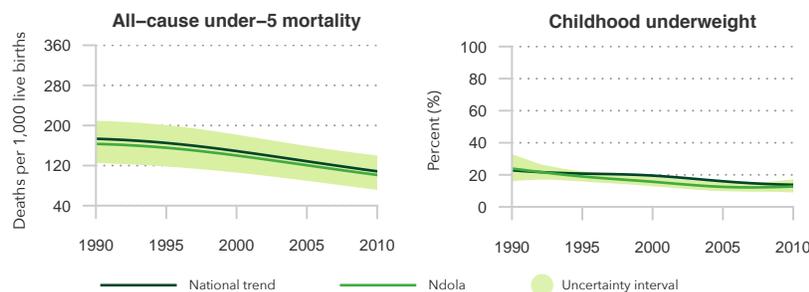
Ndola substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010; however, most progress in reducing underweight occurred in the 1990s. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

IRS coverage far exceeded the national average in 2010, and Ndola's levels of IPTp2 were among the highest in Zambia for that year. The district increased levels of the pentavalent vaccine, with coverage exceeding the national average in 2010. Coverage of BCG immunization remained high over time, and Ndola steadily increased skilled birth attendance to among the highest levels in the country.

However, amidst these successes, some worrisome trends were identified and warrant further attention. ITN coverage remained consistently lower than national levels, and spraying coverage actually peaked in 2008. Measles coverage fell to among the lowest levels in Zambia for 2010. ANC4 dropped sharply during the late 2000s, which is troubling given the district's gains in coverage in the 1990s.

In 2010, Ndola generally met or exceeded the national average across routine immunizations and maternal and child health interventions, but performed less consistently for malaria interventions. In comparison with the national average, Ndola showed lower levels of mortality and similar levels of underweight.

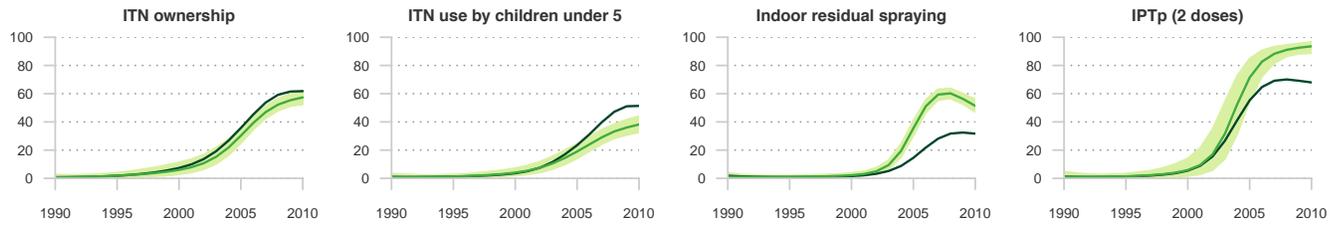
CHILD HEALTH OUTCOMES



From 1990 to 2010, Ndola recorded a significant reduction in all-cause under-5 mortality, dropping 38% from 163 deaths per 1,000 live births in 1990 (95% CI: 127, 207) to 101 in 2010 (95% CI: 73, 138). In 2010, the district's under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 24% in 1990 (95% CI: 17%, 32%) to 12% in 2005 (95% CI: 10%, 15%). Underweight remained at 12% through 2009, after which prevalence slightly increased to 13% in 2010 (95% CI: 10%, 17%), which was comparable to the national average of 14%.

MALARIA INTERVENTIONS



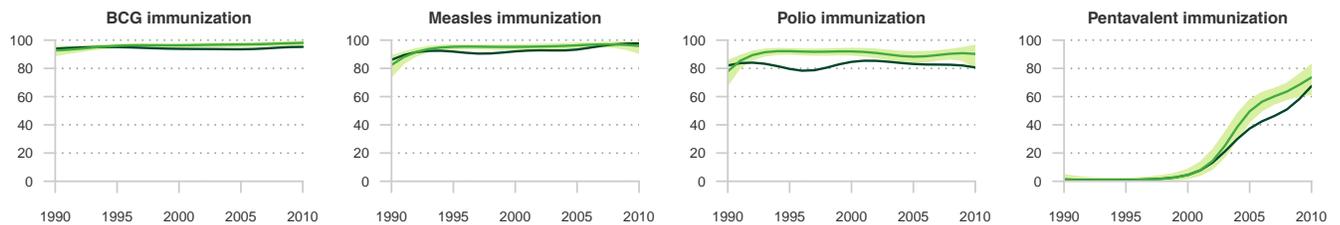
Levels of ITN ownership were below 10% until 2002, after which coverage rose to 57% in 2010 (95% CI: 52%, 62%), falling short of the national average of 62%.

ITN use by children under 5 gradually climbed to 38% in 2010 (95% CI: 33%, 44%), which was well below the national average of 51% and among the lowest in Zambia. The difference between ITN ownership and use (19 percentage points) was higher in Ndola than what was observed at the national level (11 percentage points) for 2010.

Ndola formally implemented IRS activities in 2003 and was one of the first 15 districts in Zambia to roll out IRS. Spraying peaked at 60% in 2008 (95% CI: 57%, 64%), after which coverage declined to 51% in 2010 (95% CI: 47%, 56%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rose rapidly to 94% in 2010 (95% CI: 89%, 97%). This level of IPTp2 coverage far exceeded the national average of 68% for 2010 and was among the highest in the country.

IMMUNIZATIONS



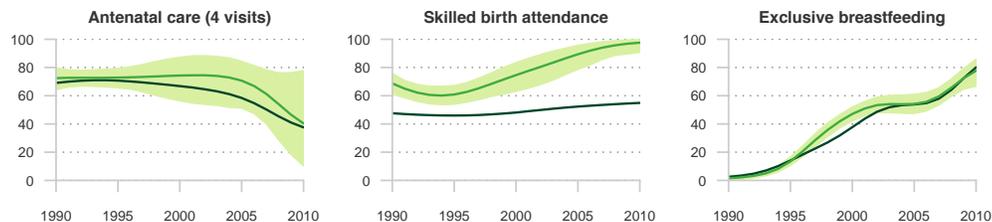
BCG coverage steadily increased from 93% in 1990 (95% CI: 89%, 95%) to 98% in 2008 (95% CI: 96%, 98%). BCG coverage remained at 98% through 2010, exceeding the national average of 95%.

Measles immunization climbed from 82% in 1990 (95% CI: 74%, 89%) to 97% in the mid-2000s, which was maintained until coverage dipped to 96% in 2010 (95% CI: 91%, 99%). This level of measles coverage was lower than the national average of 98% for 2010.

Coverage of polio immunization increased to 92% in 1994 (95% CI: 90%, 94%) and remained at 92% until 2001. Polio coverage wavered around 90% after 2001, and remained at 90% in 2010 (95% CI: 81%, 96%). This level of polio coverage exceeded the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Ndola in 2005, coverage increased to 60% in 2007 (95% CI: 55%, 66%) and 74% in 2010 (95% CI: 62%, 83%), surpassing the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage slightly increased from 72% in 1990 (95% CI: 64%, 80%) to 75% in 2002 (95% CI: 54%, 88%), but then fell to 40% in 2010 (95% CI: 10%, 78%). ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and while coverage in Ndola was slightly higher than the national average of 37% in 2010, its levels remained quite low.

Skilled birth attendance steadily rose from 60% in 1994 (95% CI: 54%, 67%) to 98% in 2010 (95% CI: 91%, 100%), far exceeding the national average of 55%. This level of SBA cov-

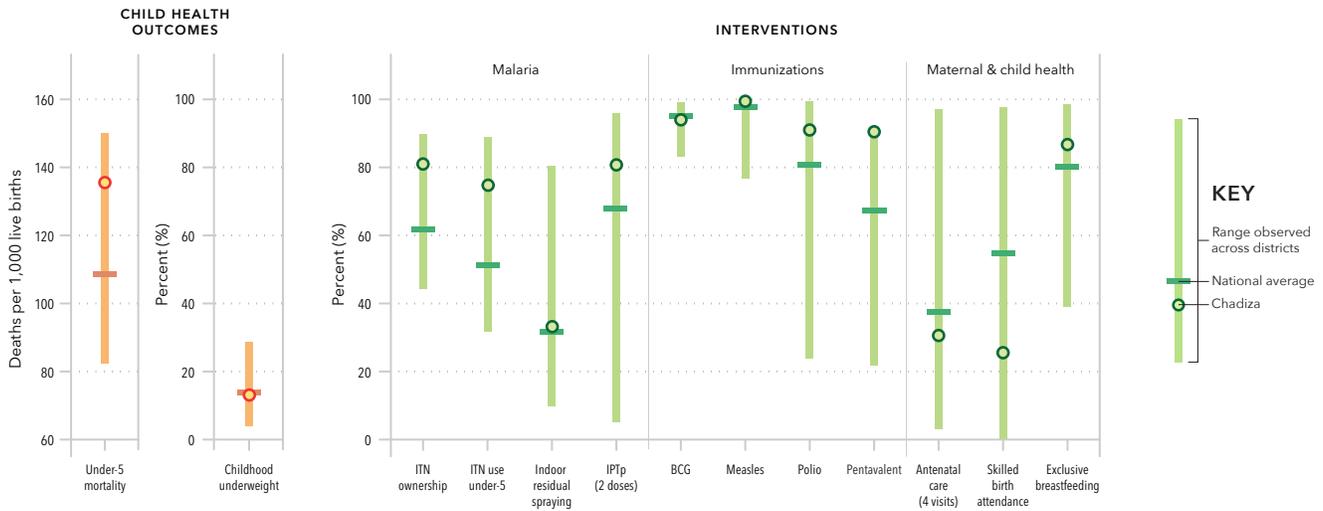
erage was among the highest in Zambia for 2010, which is particularly laudable given that coverage remained at moderate levels during the 1990s.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage climbed to 54% in 2003 (95% CI: 48%, 60%). Gains in coverage stalled for several years, but exclusive breastfeeding increased to 78% in 2010 (95% CI: 67%, 86%), falling slightly below the national average of 80%.

Eastern province



Chadiza



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Chadiza reduced its all-cause under-5 mortality between 1990 and 2010, but the relative magnitude of the district's progress was fairly low. Further, the district's levels of under-5 mortality remained among the highest in Zambia for 2010. Childhood underweight decreased by 2010, but only after its prevalence increased during the 1990s. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

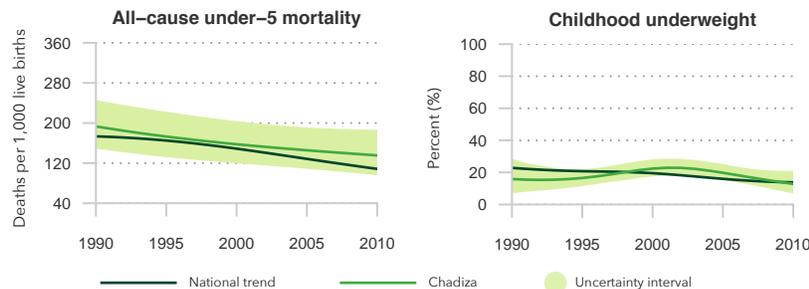
Chadiza had some of the highest levels of ITN coverage in Zambia in 2010, and IPTp2 coverage exceeded the national average after lagging behind national trends. The district had some of the highest levels of measles immunization coverage

in the country, and very quickly expanded coverage of the pentavalent vaccine.

However, ANC4 and skilled birth attendance remained very low from 1990 to 2010. Chadiza would likely benefit from targeting these interventions for improvement.

In 2010, Chadiza generally met or exceeded the national average across malaria interventions and immunizations, but fell below national levels for maternal and child health interventions (with the exception of exclusive breastfeeding). In comparison with the national average, Chadiza showed much higher levels of under-5 mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Chadiza recorded a reduction in all-cause under-5 mortality, dropping 30% from 193 deaths per 1,000 live births in 1990 (95% CI: 151, 244) to 135 in 2010 (95% CI: 98, 184); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was well above the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia.

The proportion of children who were underweight in Chadiza steadily increased between 1990 and 2001, from 16% (95% CI: 8%, 28%) to 23% (95% CI: 19%, 28%), respectively. After remaining at 23% through 2002, childhood underweight declined to a low of 13% in 2010 (95% CI: 8%, 20%), which was close to that year's national average of 14%.

MALARIA INTERVENTIONS



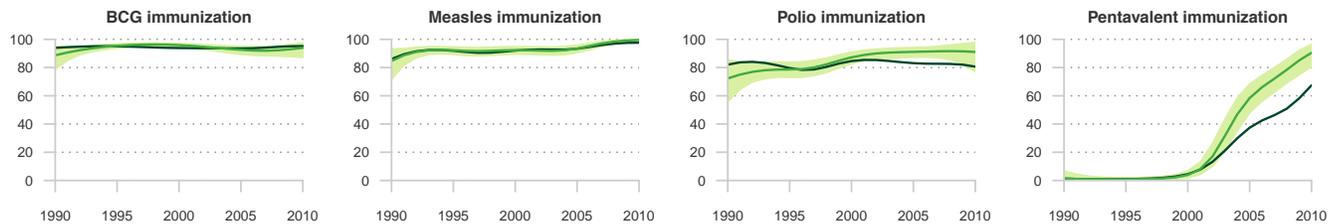
ITN ownership remained below 10% until 2002, after which coverage rapidly rose to 81% in 2010 (95% CI: 73%, 88%), among the highest in Zambia.

ITN use by children under 5 years old quickly increased to 75% in 2010 (95% CI: 66%, 82%), which was among the highest in the country. In 2010, the difference between ITN ownership and ITN use was quite low, which suggests that net use by children under 5 may be high among households that have ITNs.

Chadiza formally implemented IRS activities in 2010, and reached 33% of households that year (95% CI: 25%, 42%). Chadiza had an above-average scale-up of IRS coverage compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2004, but rapidly increased to 81% in 2010 (95% CI: 69%, 90%), far exceeding the national average of 68%.

IMMUNIZATIONS



After 1990, BCG coverage remained above 90% through 2010. The district's highest levels of coverage (96%) were attained between 1996 and 2000. Chadiza held BCG immunization at 94% in 2010 (95% CI: 87%, 98%), which was comparable to the national average of 95%.

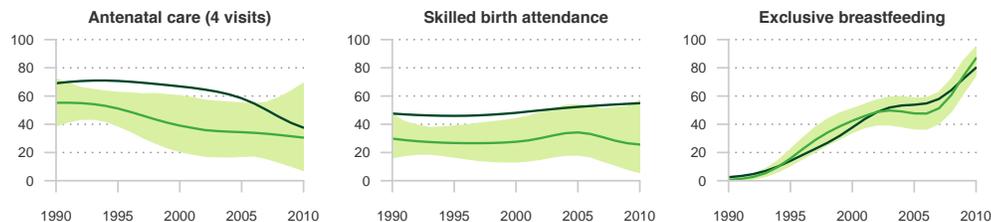
After remaining at 92% coverage between 1995 and 2004, measles immunization steadily increased to 100% in 2010 (95% CI: 98%, 100%). This level of coverage was among the highest in the country for 2010.

Coverage of polio immunization increased from 72% in

1990 (95% CI: 56%, 85%) to 92% in 2007 (95% CI: 87%, 95%). Coverage remained at this level through 2009, after which levels slipped to 91% in 2010 (95% CI: 77%, 98%). Nonetheless, the district's coverage exceeded the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Chadiza in 2005, coverage increased to 72% in 2007 (95% CI: 63%, 80%) and 90% in 2010 (95% CI: 81%, 96%), which far surpassed the national average of 67%. This level of pentavalent coverage was one of the highest in Zambia for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 55% in 1990 (95% CI: 39%, 72%) to 31% in 2010 (95% CI: 7%, 69%), which was slightly lower than the national average of 37%. While the district did not experience the same magnitude of decline in coverage as was observed at the national level, Chadiza's levels of ANC4 remained quite low.

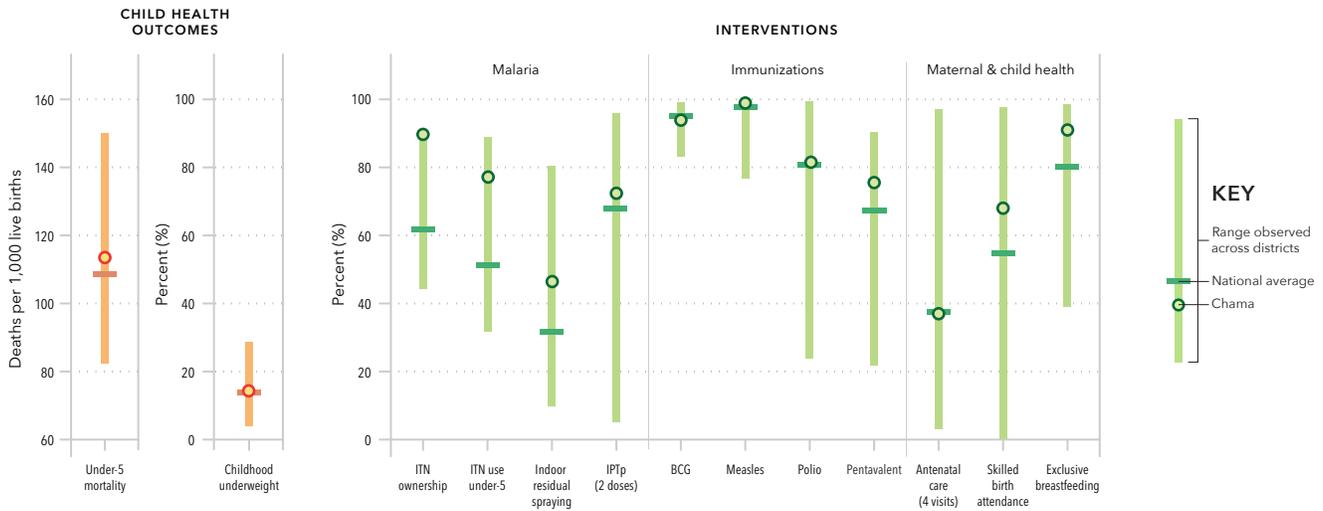
Skilled birth attendance hovered around 30% between 1990 and 2010, eventually coming in at 26% in 2010 (95% CI: 6%, 57%). These levels of skilled birth attendance were con-

sistently lower than the national average (in 2010, national SBA coverage reached 55%), and contrasted with the gradual gains experienced at the national level.

The proportion of children who were exclusively breastfed steadily increased to 42% in 2000 (95% CI: 34%, 51%). Gains in coverage stalled through 2006, with coverage hovering around 50%. Exclusive breastfeeding then rebounded, reaching 87% in 2010 (95% CI: 75%, 95%) and exceeding the national average of 80% for 2010.



Chama



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Chama substantially reduced all-cause under-5 mortality, though its levels still exceeded the national average in 2010. Childhood underweight decreased in more recent years in Chama. The district could benefit from considering ways to further accelerate gains for child health outcomes.

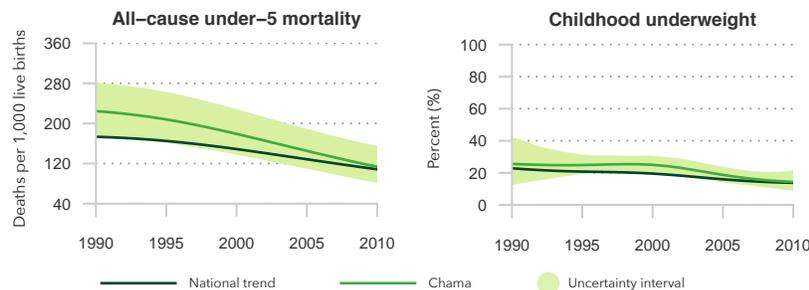
Chama had some of the highest levels of ITN ownership and ITN use in Zambia in 2010, and IPTp2 coverage reached the national average after lagging behind the national trend for many years. The district increased and maintained high levels of BCG and measles coverage. Polio immunization slipped in recent years, but its overall levels of coverage remained quite high. In 2010, coverage of the pentavalent

vaccine and exclusive breastfeeding exceeded national levels.

However, amidst these gains, ANC4 coverage declined substantially. Many districts in Zambia also saw dramatic reductions in ANC4 levels and, like them, Chama will likely benefit from prioritizing this intervention for improvement.

In 2010, Chama generally met or exceeded the national average for all interventions, especially for malaria interventions. In comparison with the national average, Chama showed higher levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES

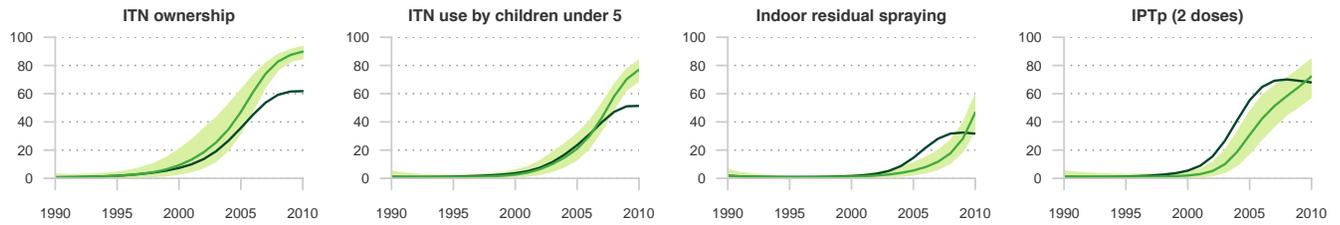


From 1990 to 2010, Chama recorded a significant reduction in all-cause under-5 mortality, dropping 49% from 225 deaths per 1,000 live births in 1990 (95% CI: 178, 279) to 114 in 2010 (95% CI: 83, 153). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). It is important to note that Chama's levels of under-5 mortality were among the highest

in 1990, but the district was quite successful in reducing these levels closer to the national average by 2010.

The proportion of children who were underweight remained at 25% from 1991 to 2000, after which childhood underweight steadily declined to 14% in 2010 (95% CI: 9%, 21%), equaling the national average.

MALARIA INTERVENTIONS



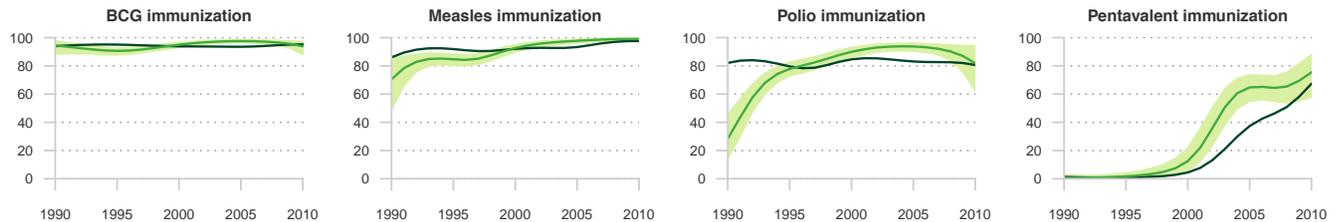
ITN ownership remained below 10% until 2001, after which coverage rapidly climbed to 90% in 2010 (95% CI: 85%, 93%), rising to among the highest in Zambia.

ITN use by children under 5 years old rapidly increased to 77% in 2010 (95% CI: 69%, 84%). Chama's level of ITN use was much higher than the national average of 51% for 2010 and again was among the highest in the country. The difference between ITN ownership and use (13 percentage points) was slightly higher in Chama than what was observed at the national level (11 percentage points).

Chama formally implemented IRS activities in 2010, reaching 47% of households in that same year (95% CI: 34%, 59%). Chama had an above-average scale-up of IRS coverage compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage rapidly rose to 58% in 2008 (95% CI: 45%, 71%). Coverage reached 72% in 2010 (95% CI: 58%, 84%), which was slightly higher than the national average of 68%.

IMMUNIZATIONS



BCG coverage remained above 90% from 1990 to 2010, with a peak of 98% in 2005 (95% CI: 96%, 99%). In 2010, BCG coverage was at 94% (95% CI: 88%, 97%), which was comparable to the national average of 95%.

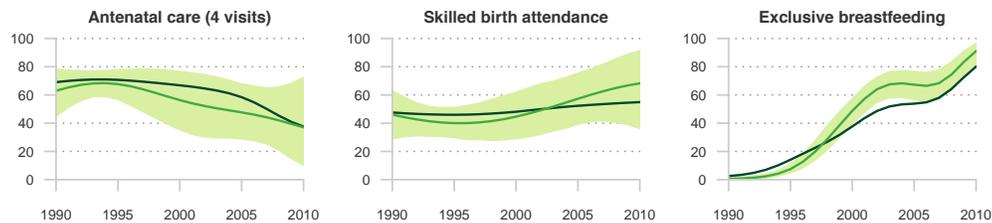
Measles immunization steadily increased from 70% in 1990 (95% CI: 49%, 85%) to 99% in 2007 (95% CI: 98%, 99%). This level of coverage was sustained through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization dramatically increased

from 28% in 1990 (95% CI: 14%, 45%) to 94% in 2003 (95% CI: 91%, 96%). This level of coverage was maintained through 2005, after which polio immunization fell to 82% in 2010 (95% CI: 62%, 94%), which was comparable to the national average of 81%.

After the pentavalent vaccine was formally introduced in Chama in 2005, coverage hovered around 65% through 2008 and then climbed to 75% in 2010 (95% CI: 58%, 88%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage declined from 68% in the mid-1990s to 37% in 2010 (95% CI: 10%, 72%), which equaled the national average. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Chama's levels of coverage fell more than 30 percentage points in 15 years is cause for concern.

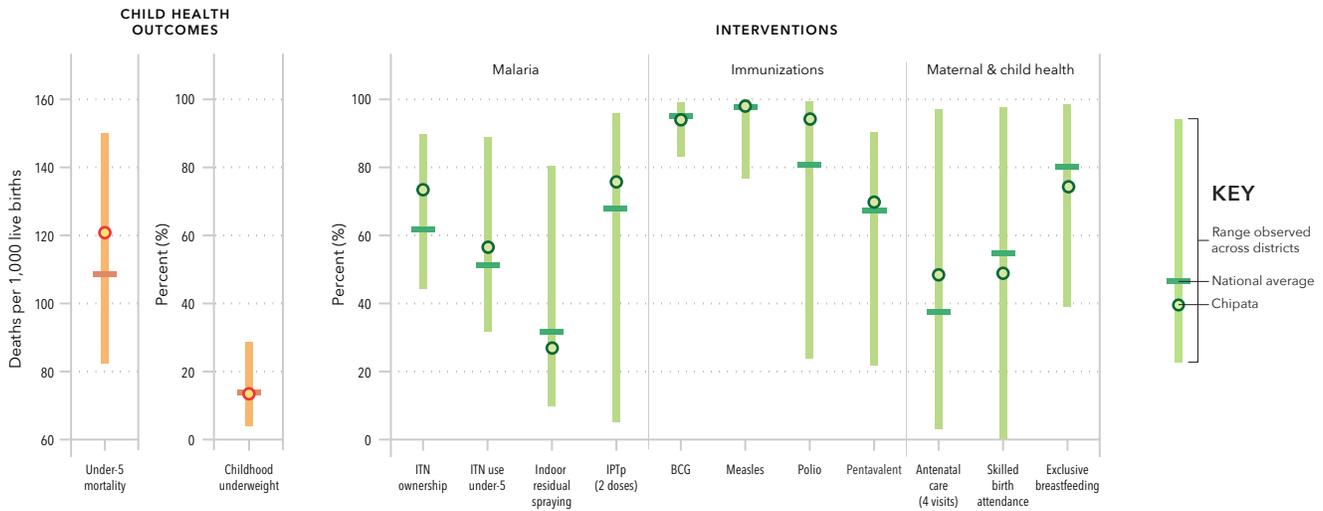
Skilled birth attendance gradually increased from 40% in the mid-1990s to 68% in 2010 (95% CI: 36%, 91%). The dis-

trict's SBA coverage was higher than the national average of 55% in 2010, but remained lower than optimal.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which coverage rose to 68% in 2003 (95% CI: 58%, 76%) and remained at this level through 2007. Coverage increased again in 2008, eventually rising to 91% in 2010 (95% CI: 81%, 97%) and far exceeding the national average of 80%.



Chipata



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

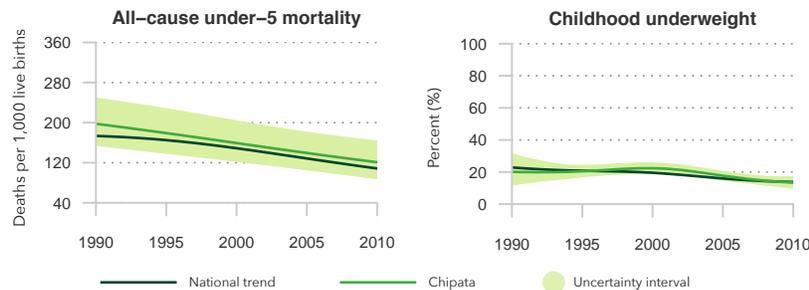
Between 1990 and 2010, Chipata substantially reduced all-cause under-5 mortality, though its mortality levels still exceeded the national average in 2010. Childhood underweight decreased in more recent years in Chipata. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

The district successfully scaled up ITNs and IPTp2 coverage, and did the same for pentavalent vaccine in more recent years. Chipata sustained high levels of routine immunizations, and increased polio coverage to among the highest levels in Zambia.

However, amidst these gains, some troubling trends were identified and warrant further attention. Minimal progress was made in expanding IRS coverage in Chipata, and levels of skilled birth attendance largely stagnated over time. Exclusive breastfeeding coverage was lower than the national average since the mid-2000s, and Chipata recorded declines in ANC4 coverage.

In 2010, Chipata generally met or exceeded the national average for immunizations and malaria interventions, but fell below for maternal and child health interventions. In comparison with the national average, Chipata showed higher levels of mortality and similar levels of underweight.

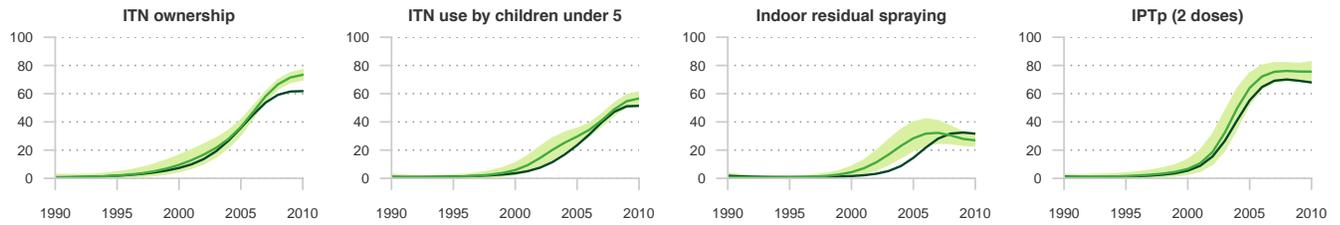
CHILD HEALTH OUTCOMES



From 1990 to 2010, Chipata recorded a significant reduction in all-cause under-5 mortality, dropping 39% from 198 deaths per 1,000 live births in 1990 (95% CI: 156, 248) to 121 in 2010 (95% CI, 89, 163). In 2010, the district's under-5 mortality remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight remained around 20% between the early 1990s and early 2000s, but declined to 13% in 2010 (95% CI: 10%, 17%), which was comparable to the national average of 14%.

MALARIA INTERVENTIONS



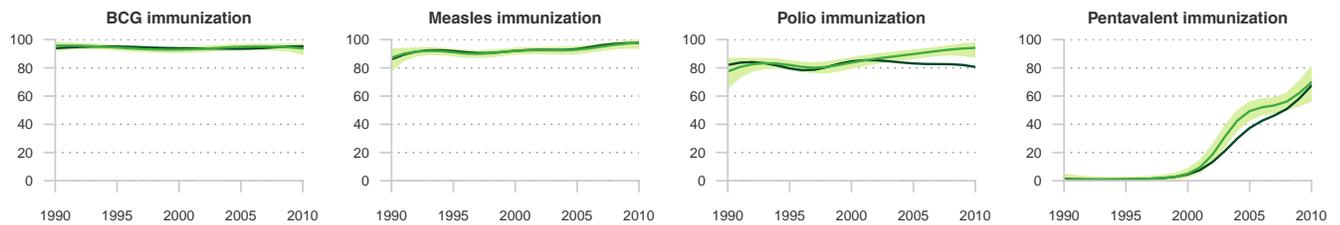
ITN ownership remained below 10% until 2000, after which coverage rapidly rose to 73% in 2010 (95% CI: 70%, 77%) and far exceeded the national average of 62%.

ITN use by children under 5 years old steadily increased to 57% in 2010 (95% CI: 52%, 61%), which was higher than the national average of 51%. The difference between ITN ownership and use (16 percentage points) was higher in Chipata than what was observed at the national level (11 percentage points).

Chipata formally implemented IRS activities in 2008, reaching 31% of households that year (95% CI: 25%, 37%) and 27% in 2010 (95% CI: 23%, 31%). Chipata's scale-up of IRS by 2010 was on the lower end among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 76% in 2007 (95% CI: 68%, 82%). Coverage was sustained at 76% through 2010, which was higher than the national average of 68%.

IMMUNIZATIONS



BCG coverage remained above 92% from 1990 to 2010, vacillating between 93% and 96% during that time. In 2010, BCG coverage was 94% (95% CI: 90%, 97%), which was comparable to the national average of 95%.

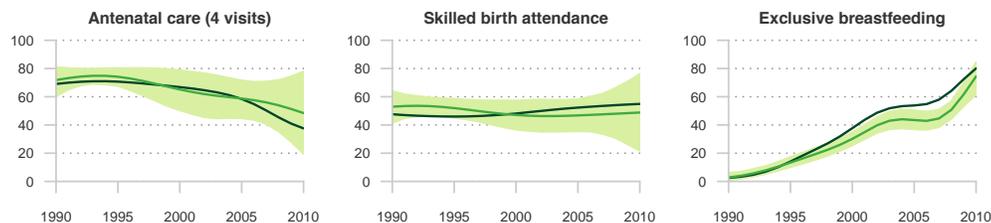
Measles immunization steadily increased from 87% in 1990 (95% CI: 78%, 93%) to 98% in 2010 (95% CI: 94%, 99%). This level of measles coverage equaled the national average for 2010.

Rising from a low of 77% in 1990 (95% CI: 66%, 87%), coverage of polio immunization exceeded 90% in 2006 and

increased to 94% in 2009 (95% CI: 89%, 97%). This level of coverage was maintained through 2010, far surpassing the national average of 81%. Further, the district's polio coverage was among the highest in Zambia for 2010.

After the pentavalent vaccine was formally introduced in Chipata in 2005, coverage increased to 52% in 2006 (95% CI: 47%, 58%) and 70% in 2010 (95% CI: 57%, 81%), which was slightly higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage declined from 75% in the mid-1990s to 48% in 2010 (95% CI: 20%, 78%). ANC4 levels dramatically decreased throughout Zambia from 1990 to 2010, and while coverage in Chipata was higher than the national average of 37% in 2010, its levels remained low.

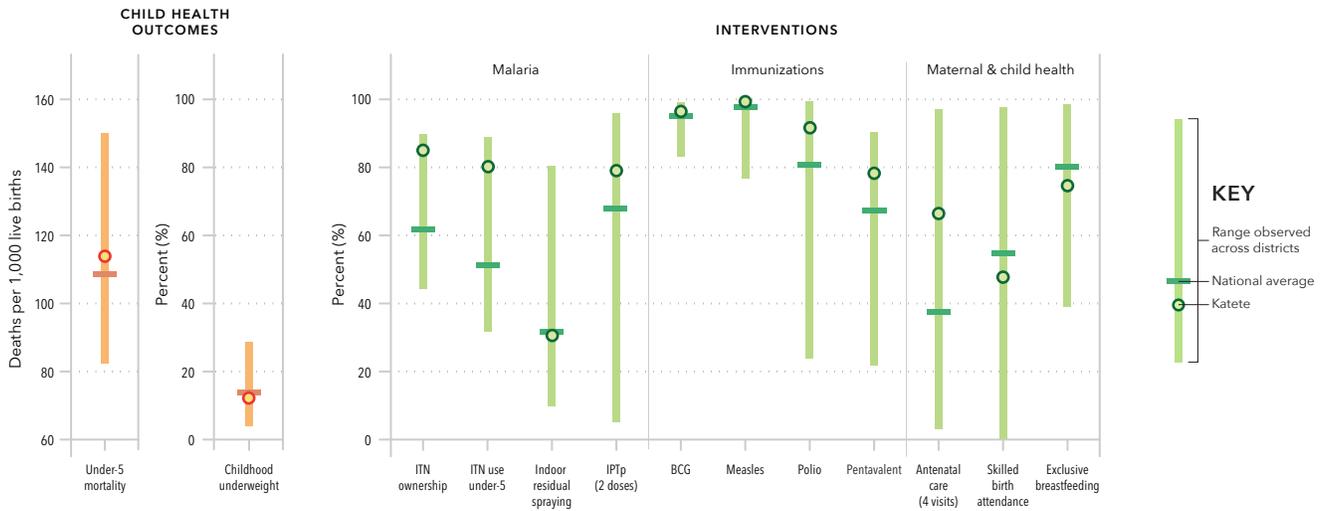
Skilled birth attendance hovered around 50% between 1990 and 2010, with a high of 54% in 1992 (95% CI: 46%, 61%) and low of 46% during the mid-2000s. In 2010, SBA coverage

in Chipata was 49% (95% CI: 22%, 76%), which was slightly lower than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage rose to 40% in 2002 (95% CI: 34%, 46%). Coverage stalled around 44% until 2007, after which levels climbed to 74% in 2010 (95% CI: 62%, 85%), but still remained lower than the national average of 80%.



Katete



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Katete substantially reduced all-cause under-5 mortality and childhood underweight; however, under-5 mortality remained higher than the national average. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

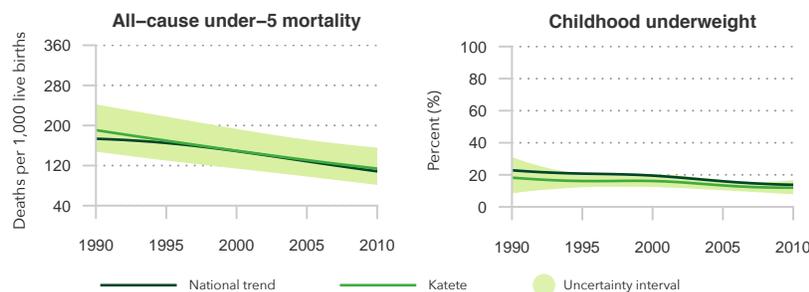
The district rapidly scaled up IPTp2 coverage well beyond the national average, and ITN coverage climbed to among the highest levels in the country. Katete generally maintained or increased levels of routine immunizations, and was able to quickly expand coverage of the pentavalent vaccine. Unlike the rest of the country, levels of ANC4 coverage remained at moderately high levels over time.

However, amidst these gains, some worrisome trends

were identified and warrant further attention. Spraying was not scaled up as quickly as other malaria interventions. Gains in exclusive breastfeeding lagged well behind the national average, and Katete had consistently low levels of skilled birth attendance.

In 2010, Katete generally met or exceeded national levels for malaria interventions and immunizations, but fell below for maternal and child health interventions (with the exception of ANC4). In comparison with the national average, Katete showed higher levels of mortality and slightly lower levels of underweight.

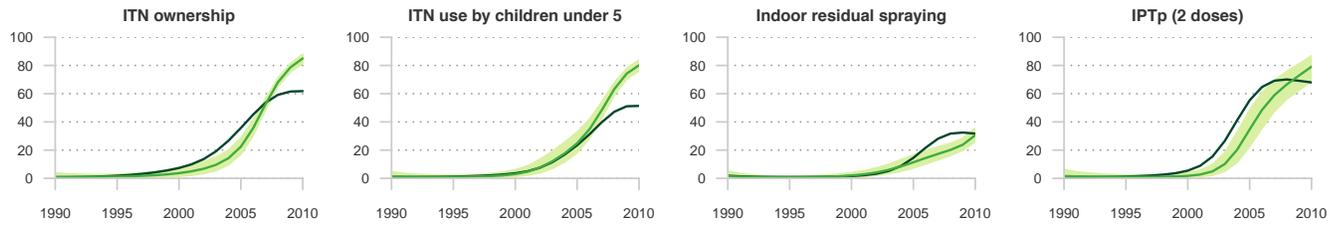
CHILD HEALTH OUTCOMES



From 1990 to 2010, Katete recorded a significant reduction in all-cause under-5 mortality, dropping 40% from 191 deaths per 1,000 live births in 1990 (95% CI: 150, 240) to 114 in 2010 (95% CI: 83, 154). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight gradually decreased from 18% in 1990 (95% CI: 9%, 30%) to 12% in 2007 (95% CI: 10%, 15%). This level of childhood underweight was maintained through 2010 and was slightly below the national average of 14%.

MALARIA INTERVENTIONS



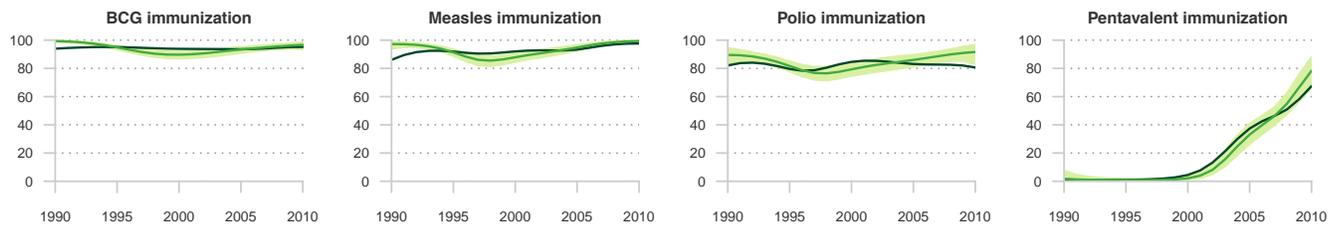
ITN ownership remained below 10% until 2003, after which coverage rapidly climbed to 85% in 2010 (95% CI: 81%, 88%) and was among the highest in Zambia.

ITN use by children under 5 years old quickly increased to 80% in 2010 (95% CI: 76%, 84%), which again was among the highest in the country. In 2010, the difference between ITN ownership and ITN use was quite low, suggesting that net use by children under 5 may be high among households that have ITNs.

Katete formally implemented IRS activities in 2008, reaching 20% of households that year (95% CI: 16%, 25%) and 31% in 2010 (95% CI: 26%, 35%). Katete's scale-up of IRS by 2010 was on the lower end among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, but rapidly rose to 67% in 2008 (95% CI: 56%, 76%). Coverage reached 79% in 2010 (95% CI: 69%, 87%), which exceeded the national average of 68%.

IMMUNIZATIONS



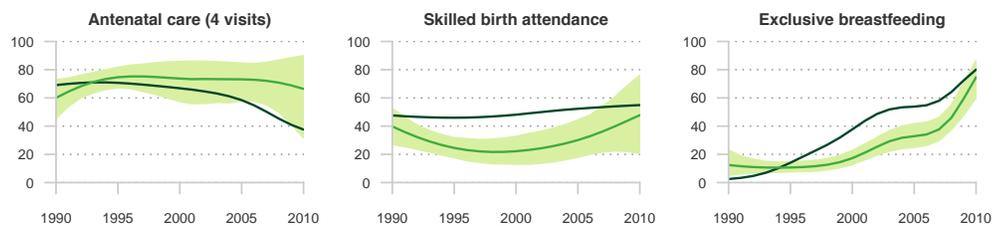
BCG coverage declined from 99% in the early 1990s to 90% during the late 1990s and early 2000s, but rebounded to 97% in 2010 (95% CI: 93%, 99%), exceeding the national average of 95%.

Measles immunization fell from 97% in the early 1990s to 85% in 1998 (95% CI: 82%, 89%), but increased to 99% in 2008 (95% CI: 97%, 99%). This level of coverage was sustained through 2010, slightly exceeding the national average of 98%.

Polio coverage declined from 90% in 1990 (95% CI: 82%, 95%) to 76% in 1998 (95% CI: 71%, 81%), but recovered to 92% in 2010 (95% CI: 83%, 97%), far exceeding the national average of 81%.

After the pentavalent vaccine was formally introduced in Katete in 2005, coverage increased to 40% in 2006 (95% CI: 33%, 47%) and 78% in 2010 (95% CI: 66%, 88%), surpassing the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 60% in 1990 (95% CI: 46%, 73%) to 75% in the late 1990s, but declined to 66% in 2010 (95% CI: 32%, 90%). Katete did not experience the same magnitude of decreasing ANC4 coverage that was observed at the national level, and the district's level of ANC4 was higher than the national average of 37% in 2010. Nonetheless, the district's ANC4 coverage was considered fairly moderate.

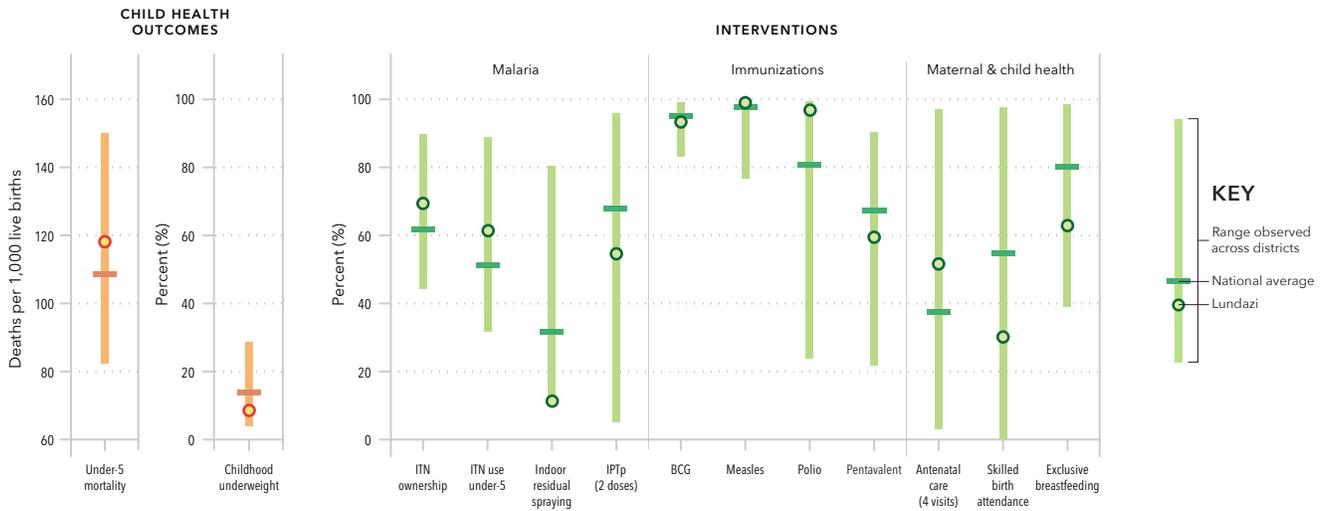
Skilled birth attendance declined from 40% in 1990 (95% CI: 27%, 53%) to 22% in 1997 (95% CI: 14%, 30%). This low level of coverage was maintained through 2000, after which

SBA increased to 48% in 2010 (95% CI: 21%, 76%) but was still lower than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 2001, after which coverage rapidly rose to 75% in 2010 (95% CI: 60%, 86%). Katete's levels of exclusive breastfeeding were lower than the national average of 80% for 2010; however, it is important to note that the difference in Katete's levels of coverage and the national trend was much larger in the early 2000s.



Lundazi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Lundazi substantially reduced all-cause under-5 mortality. Childhood underweight dramatically decreased, bringing the district's prevalence well under the national average in 2010. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

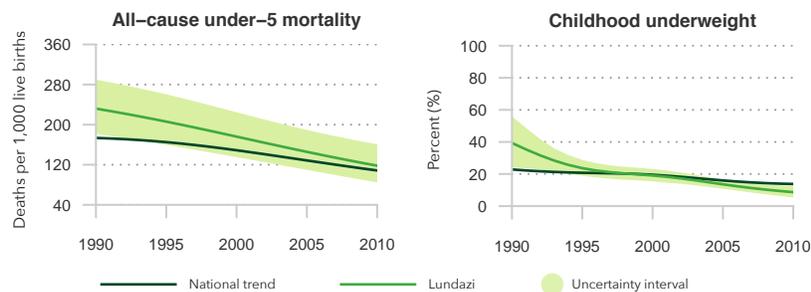
Lundazi scaled up ITNs over time and generally maintained high levels or increased coverage of routine immunizations. The district's coverage of polio immunization climbed to some of the highest levels in Zambia for 2010.

However, amidst these gains, several troubling trends were identified and warrant further attention. Lundazi was not as successful in expanding IPTp2 coverage and spraying as it

was for ITNs. Exclusive breastfeeding continually lagged behind the national trend and was among the lowest in Zambia in 2010. Progress in further scaling up the pentavalent vaccine stalled in recent years. ANC4 dropped substantially during the late 1990s, and levels of skilled birth attendance remained very low.

In 2010, Lundazi generally met or exceeded the national average for immunizations, but fell below for maternal and child health interventions (except for ANC4). The district's performance was less consistent for malaria interventions. In comparison with the national average, Lundazi showed higher levels of mortality and lower levels of underweight.

CHILD HEALTH OUTCOMES

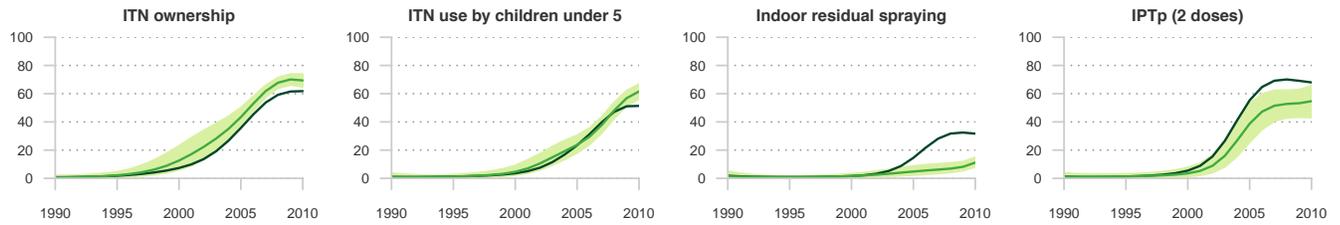


From 1990 to 2010, Lundazi recorded a significant reduction in all-cause under-5 mortality, dropping 49% from 232 deaths per 1,000 live births in 1990 (95% CI: 184, 288) to 118 in 2010 (95% CI: 87, 159). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). It is important to note that under-5 mortality in Lundazi was among the highest in Zambia in 1990, but the district was quite successful in decreasing its

levels closer to the national average in 2010.

The proportion of children who were underweight drastically fell from 39% in 1990 (95% CI: 25%, 55%) to 9% in 2009 and 2010, which was lower than the national average of 14%. The district's progress in reducing childhood underweight is particularly notable given how high prevalence was in the early 1990s.

MALARIA INTERVENTIONS



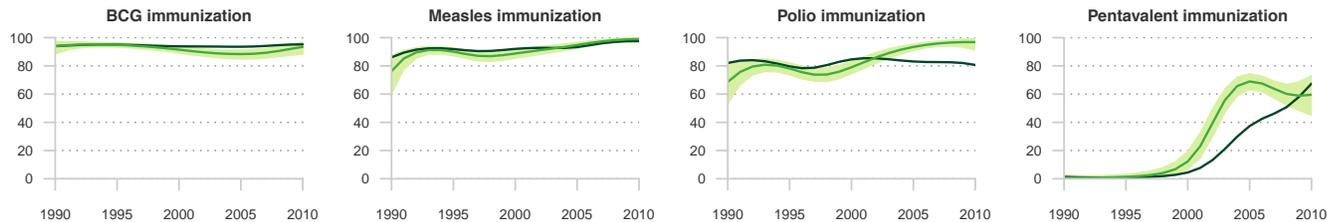
ITN ownership remained below 10% until 2000, after which coverage rapidly rose to 70% in 2009 (95% CI: 66%, 74%). ITN ownership slightly slipped to 69% in 2010 (95% CI: 65%, 74%), but was still much higher than the national average of 62%.

ITN use by children under 5 years old increased to 62% in 2010 (95% CI: 56%, 67%), which was much higher than the national average of 51%. In 2010, the difference between ITN ownership and use (7 percentage points) was lower in Lundazi than what was observed at the national level (11 percentage points).

Lundazi formally implemented IRS activities in 2010, and reached 11% of households that year (95% CI: 8%, 15%). Lundazi's scale-up of IRS was on the lower end in comparison with other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, but rose to 51% in 2007 (95% CI: 41%, 62%). However, gains in coverage stalled through 2010, with IPTp2 levels only increasing to 55% in 2010 (95% CI: 43%, 66%). This level of IPTp2 coverage was much lower than the national average of 68% in 2010.

IMMUNIZATIONS



While BCG immunization largely remained above 90% from 1990 to 2010, coverage fell below 90% from 2003 to 2007 before rising to 93% in 2010 (95% CI: 88%, 97%). This level of coverage was below the national average of 95% for 2010.

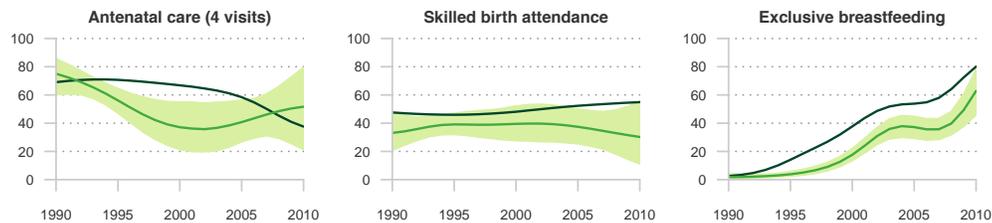
Measles immunization steadily increased from 76% in 1990 (95% CI: 61%, 87%) to 99% in 2009 (95% CI: 97%, 100%). This level of coverage was sustained through 2010, slightly exceeding the national average of 98%.

Polio immunization coverage largely varied for many

years, rising above and falling below 80% through 2001, before steadily increasing to 97% in 2008 (95% CI: 94%, 98%). This level of polio immunization was sustained through 2010, which was among the highest in Zambia.

After the pentavalent vaccine was formally introduced in Lundazi in 2005, coverage increased to 69% that year (95% CI: 63%, 74%). However, gains stalled and coverage dropped to 60% in 2010 (95% CI: 45%, 73%), which was slightly lower than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage declined sharply from 75% in 1990 (95% CI: 60%, 86%) to 36% in the early 2000s, after which coverage levels gradually increased to 52% in 2010 (95% CI: 21%, 79%). Lundazi's ANC4 coverage in 2010 was higher than the national average of 37%, and the district's recent gains contrasted with the national trend of continuous declines. Nonetheless, the district's level of coverage remained relatively low.

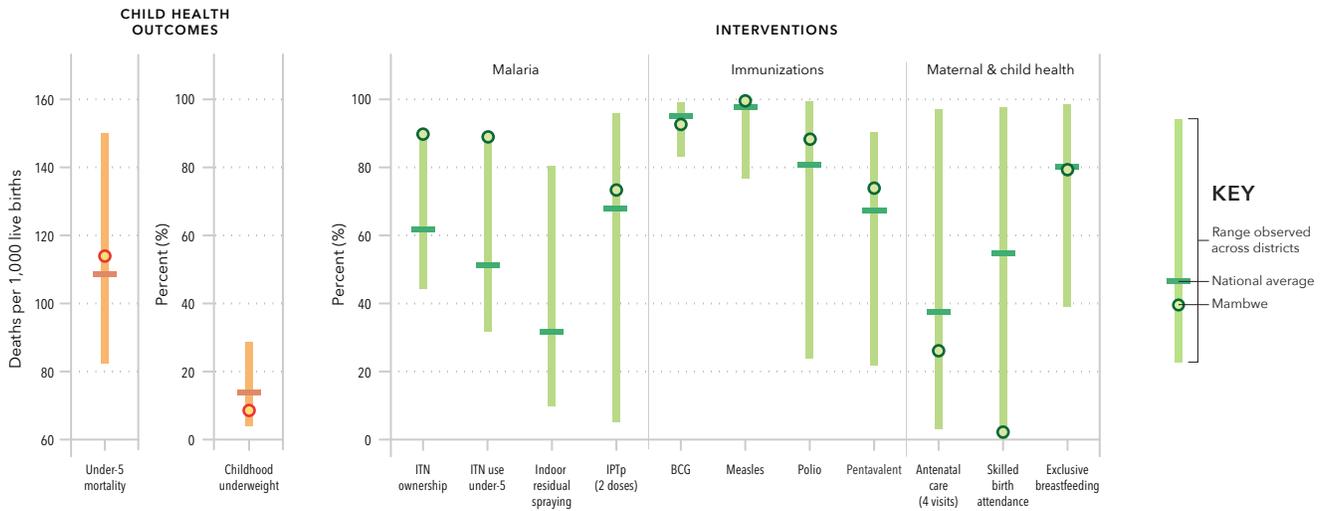
Skilled birth attendance gradually increased from 33% in 1990 (95% CI: 21%, 47%) to 40% in the early 2000s. However,

SBA coverage then dropped to 30% in 2010 (95% CI: 11%, 56%), falling below the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 2001, after which coverage rose to 36% in 2003 (95% CI: 29%, 43%). Coverage stagnated around 40% through 2008 and then increased to 63% in 2010 (95% CI: 46%, 78%). Nonetheless, this level of exclusive breastfeeding was among the lowest in Zambia.



Mambwe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Mambwe started IRS after 2010.

SUMMARY

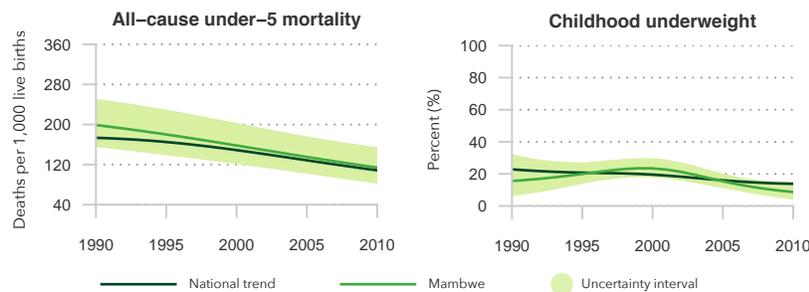
Mambwe substantially reduced all-cause under-5 mortality between 1990 and 2010, but the district's level of mortality remained higher than the national average in 2010. Childhood underweight increased during the 1990s, but the district dramatically reduced prevalence to among the lowest levels in Zambia in 2010. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

The district rapidly increased ITN ownership and use to some of the highest levels in the country, while its trends in IPTp2 coverage closely followed national levels. Mambwe quickly scaled up coverage of the pentavalent vaccine, but experienced minimal gains in exclusive breastfeeding until recently. High levels of immunization coverage were generally maintained, with measles coverage rising to among the highest in Zambia.

However, amidst these gains, some troubling trends were identified and warrant further attention. ANC4 stagnated at very low levels from 1990 to 2010. In 2010, skilled birth attendance in Mambwe dropped to some of the lowest levels in Zambia. Given these trends, Mambwe would likely benefit from targeting these interventions for improvement.

In 2010, Mambwe generally met or exceeded national levels for malaria interventions and immunizations, but fell below for maternal and child health interventions (not including exclusive breastfeeding). In comparison with the national averages, Mambwe showed higher levels of mortality and lower levels of underweight.

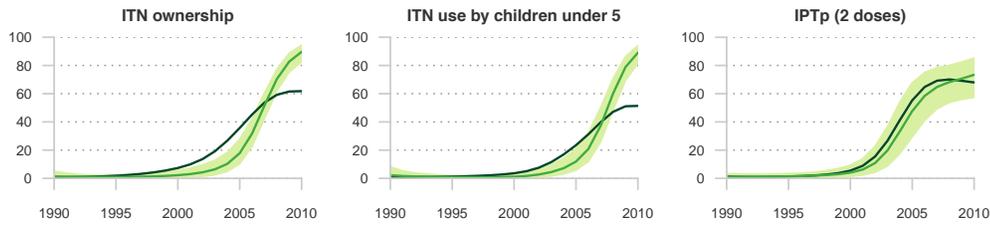
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mambwe recorded a significant reduction in all-cause under-5 mortality, dropping 43% from 199 deaths per 1,000 live births in 1990 (95% CI: 157, 249) to 114 in 2010 (95% CI: 84, 153). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased between 1990 and 1999, rising from 16% in 1990 (95% CI: 7%, 32%) to 24% in 1999 (95% CI: 19%, 29%). In 2000, levels of childhood underweight began decreasing, dropping to 9% in 2010 (95% CI: 5%, 15%) and falling among the lowest in Zambia that year.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2004, after which coverage climbed to 90% in 2010 (95% CI: 83%, 94%), rising to among the highest in Zambia. Mambwe's scale-up of ITN ownership is notable given that the district's levels of coverage lagged behind the national trend until 2007.

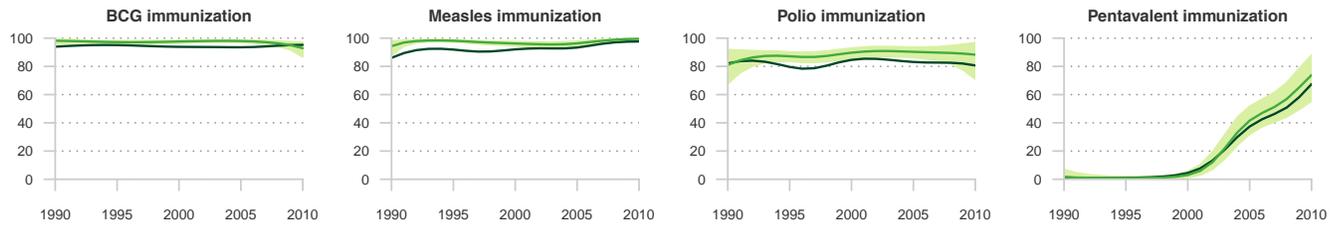
ITN use by children under 5 years old quickly increased to 89% in 2010 (95% CI: 81%, 94%), which was among the highest in the country. In 2010, household ownership of ITNs in Mambwe essentially equaled ITN use by children under 5;

this finding suggests that, among households with ITNs, net use by children under 5 is likely to be high.

IRS coverage trends are not included because Mambwe did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly rose to 73% in 2010 (95% CI: 57%, 85%), which was slightly higher than the national average of 68%.

IMMUNIZATIONS



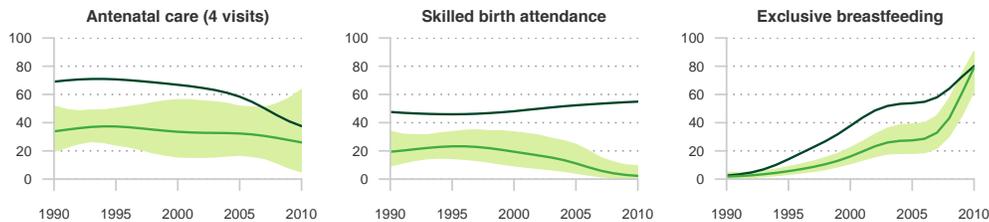
BCG coverage remained between 97% and 98% from 1990 to 2007, but dropped to 93% in 2010 (95% CI: 87%, 97%), falling below the national average of 95%.

Measles immunization remained between 96% and 98% from 1991 to 2007, after which coverage increased to 99% in 2008 (95% CI: 98%, 100%) and was sustained at this level through 2010. This level of coverage was slightly higher than the national average of 98%.

Coverage of polio immunization steadily increased from 81% in 1990 (95% CI: 68%, 92%) to 91% in 2002 (95% CI: 87%, 94%). This level of coverage was maintained through 2004, after which polio immunization slipped to 88% in 2010 (95% CI: 71%, 97%), remaining above the national average of 81%.

After the pentavalent vaccine was formally introduced in Mambwe in 2005, coverage increased to 47% in 2006 (95% CI: 37%, 57%) and 74% in 2010 (95% CI: 55%, 88%), slightly exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage remained between 33% and 37% from 1990 to 2004, after which coverage dropped to 26% in 2010 (95% CI: 5%, 63%) and fell below the national average of 37%. The district's consistently low levels of ANC4 are worrisome.

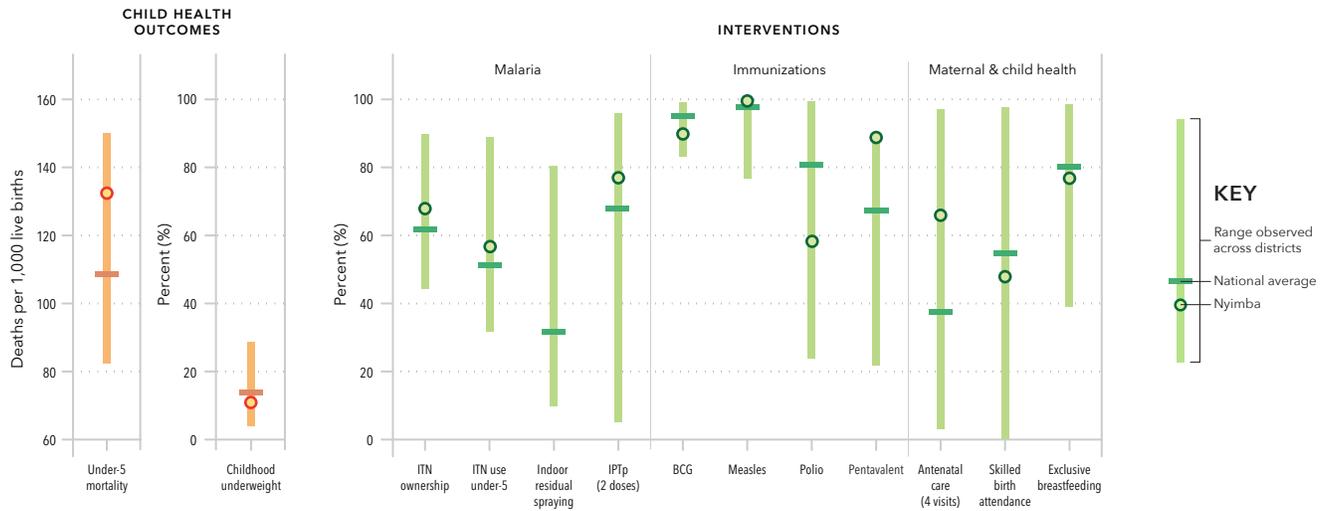
Skilled birth attendance hovered around 20% from 1990 to 2002, but dropped below 10% in 2006 and fell to 2% in 2010 (95% CI: 0%, 9%). This level of skilled birth attendance was drastically lower than the national average of 55% for 2010 and was among the lowest in Zambia. Mambwe's ex-

ceedingly low levels of SBA coverage, especially in recent years, are cause for concern.

The proportion of children who were exclusively breastfed in the district remained below 20% until 2001. Coverage gradually increased, rising to 43% in 2008 (95% CI: 31%, 57%), but then rapidly climbed to 79% in 2010 (95% CI: 62%, 90%), nearly equaling the national average of 80%.



Nyimba



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Nyimba started IRS after 2010.

SUMMARY

Between 1990 and 2010, Nyimba substantially reduced all-cause under-5 mortality, though its mortality rates still remained among the highest in Zambia for 2010. Childhood underweight decreased in more recent years. Prioritizing ways to accelerate gains for child health outcomes should be considered.

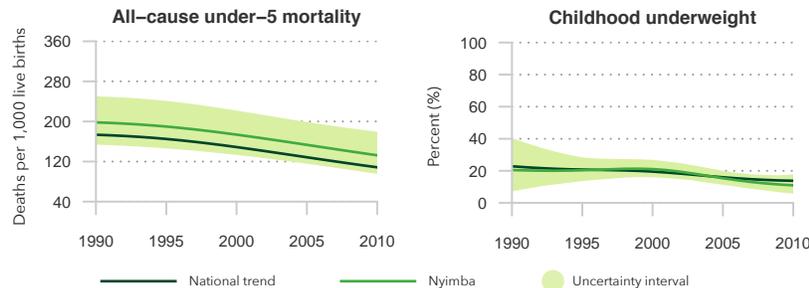
The district scaled up and maintained levels of ITNs and IPTp2 through 2010. Nyimba also sustained high levels of measles immunization, bringing its coverage to some of the highest levels in Zambia, and expanded coverage of the pentavalent vaccine to among the highest in the country in 2010. Nyimba's ANC4 coverage was generally higher than the national trend.

On the other hand, the district's gradual gains in skilled

birth attendance did not offset its consistently low levels of coverage. Further, BCG coverage dropped and levels of polio immunization declined sharply in recent years, with each falling among the lowest in Zambia for 2010. Given these worrisome trends, Nyimba will likely benefit from targeting these interventions for improvement.

In 2010, Nyimba generally exceeded the national averages for malaria interventions, but fell below for maternal and child health interventions (with the exception of ANC4). For immunizations, the district's performance was more mixed. In comparison with the national average, Nyimba showed much higher levels of mortality and lower levels of underweight.

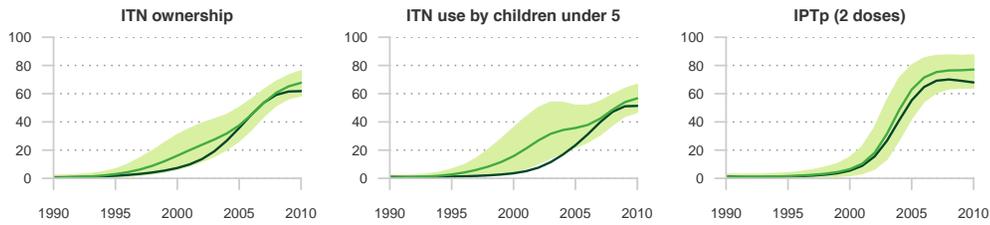
CHILD HEALTH OUTCOMES



From 1990 to 2010, Nyimba recorded a significant reduction in all-cause under-5 mortality, dropping 33% from 198 deaths per 1,000 live births in 1990 (95% CI: 156, 248) to 133 in 2010 (95% CI: 98, 177). In 2010, the district's under-5 mortality remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia.

The proportion of children who were underweight remained around 20% until 2002, after which levels fell to 11% in 2009 (95% CI: 7%, 17%) and stayed at this level through 2010. Underweight in Nyimba was lower than the national average of 14% in 2010.

MALARIA INTERVENTIONS



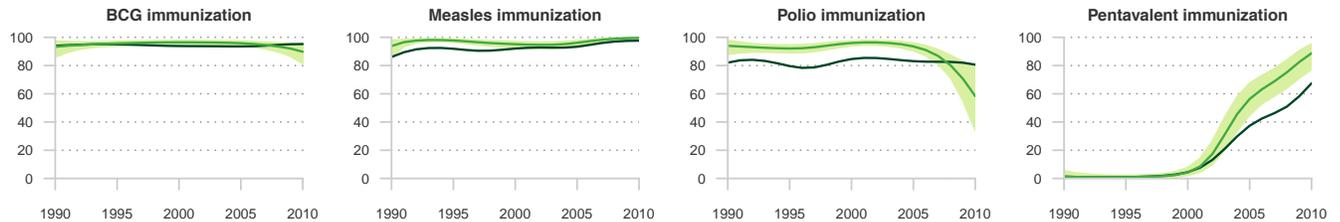
ITN ownership remained below 10% until 1999, after which coverage increased to 68% in 2010 (95% CI: 59%, 76%) and slightly exceeded the national average of 62%.

ITN use by children under 5 years old steadily increased to 57% in 2010 (95% CI: 47%, 66%), which was slightly higher than the national average of 51%. In 2010, the difference between ITN ownership and use (11 percentage points) in Nyimba equaled what was observed at the national level.

IRS coverage trends are not included because Nyimba did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 75% in 2007 (95% CI: 61%, 87%). Coverage slightly increased to 77% in 2009 (95% CI: 64%, 87%) and remained at 77% through 2010, which was higher than the national average of 68% in 2010.

IMMUNIZATIONS



BCG coverage remained between 93% and 96% from 1990 to 2005, but dropped to 90% in 2010 (95% CI: 81%, 95%). This level of coverage was lower than the national average of 95% and was among the lowest in Zambia for 2010.

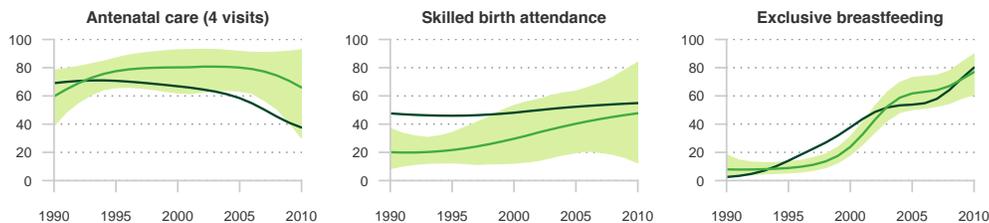
Measles immunization coverage slightly decreased from 98% in the mid-1990s to 95% during the early 2000s, but steadily increased to 100% in 2010 (95% CI: 99%, 100%) and was among the highest in Zambia for that year.

Coverage of polio immunization was consistently higher

than the national trend between 1990 and 2005, ranging between 92% and 96% coverage, but dropped to 58% in 2010 (95% CI: 34%, 79%), among the lowest in Zambia.

After the pentavalent vaccine was formally introduced in Nyimba in 2005, coverage increased to 63% in 2006 (95% CI: 53%, 73%) and 89% in 2010 (95% CI: 77%, 95%). Nyimba achieved a much higher level of pentavalent coverage than the national average of 67% in 2010 and recorded one of the highest levels of coverage in Zambia for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steadily increased from 60% in 1990 (95% CI: 39%, 78%) to 81% in 2002 (95% CI: 63%, 93%). This level of ANC4 coverage was sustained through 2004, after which coverage declined to 66% in 2010 (95% CI: 30%, 93%). This level of coverage was higher than the national average of 37%, but remained lower than optimal.

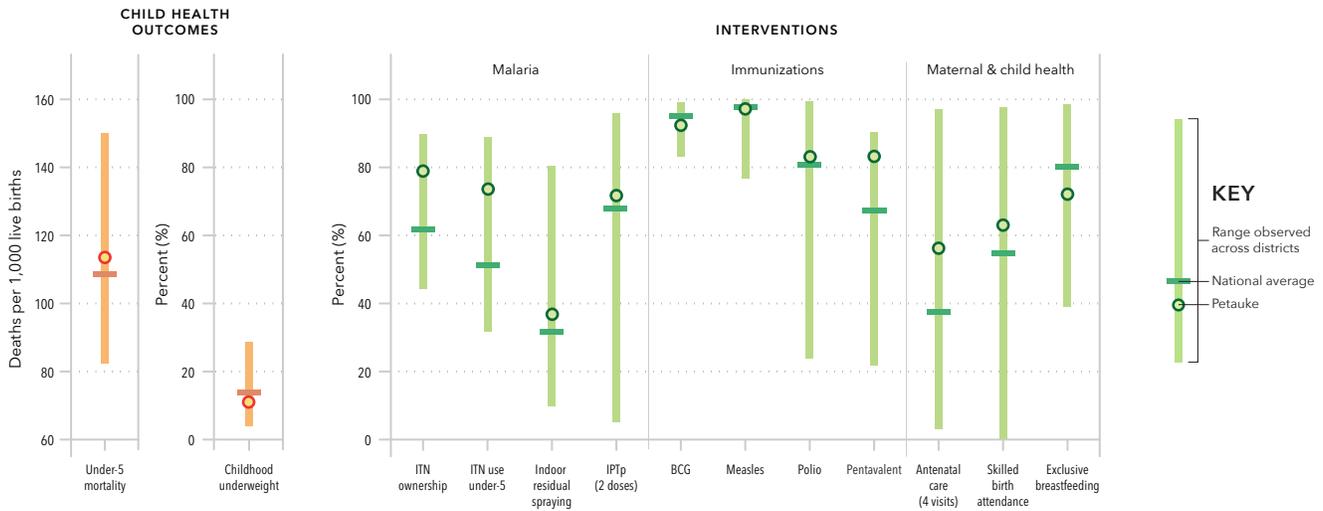
Skilled birth attendance slowly increased from 20% in the early 1990s to 48% in 2010 (95% CI: 13%, 84%). Despite

this gradual gain, SBA coverage in Nyimba remained slightly lower than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 2000, after which coverage rapidly increased to 62% in 2005 (95% CI: 51%, 73%). Gains in exclusive breastfeeding stalled for a few years before rising to 77% in 2010 (95% CI: 61%, 89%), which was slightly lower than the national average of 80%.



Petauke



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

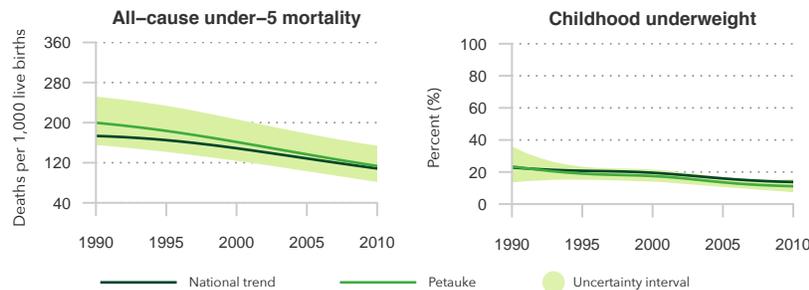
All-cause under-5 mortality substantially declined in Petauke between 1990 and 2010, but its mortality levels still exceeded the national average in 2010. Childhood underweight decreased in Petauke, falling below the national average in 2010. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

Petauke steadily scaled up ITNs over time and levels of IPTp2 coverage closely followed the national scale-up. At the same time that most routine immunization coverage closely followed national trends, Petauke successfully scaled up the pentavalent vaccine to among the highest levels of coverage in Zambia for 2010.

However, amidst these gains, worrisome trends were identified and warrant further attention. For example, Petauke made less progress in scaling up IRS. Minimal gains were made in skilled birth attendance, and ANC4 coverage stagnated over time. Exclusive breastfeeding continually lagged behind the national trend, and BCG immunization declined during the late 2000s.

In 2010, Petauke generally met or exceeded the national average for all interventions, with the main exception of exclusive breastfeeding. In comparison with the national average, Petauke showed slightly higher levels of under-5 mortality and lower levels of underweight.

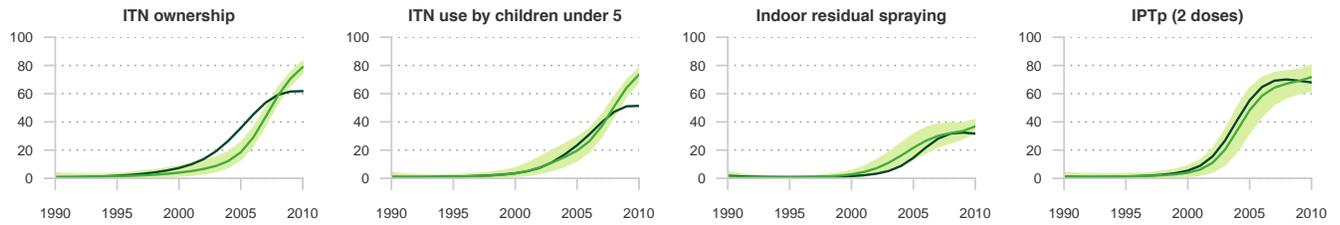
CHILD HEALTH OUTCOMES



From 1990 to 2010, Petauke recorded a significant reduction in all-cause under-5 mortality, dropping 43% from 200 deaths per 1,000 live births in 1990 (95% CI: 157, 250) to 113 in 2010 (95% CI: 84, 152). Nonetheless, in 2010, the district's under-5 mortality remained slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 23% in 1990 (95% CI: 14%, 35%) to 11% in 2009 (95% CI: 9%, 15%). This prevalence of childhood underweight was maintained through 2010, which was below the national average of 14%.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2004, after which coverage rapidly rose to 79% in 2010 (95% CI: 74%, 83%), which was much higher than the national average of 62%. Petauke's gains in ITN ownership are particularly notable given that the district's scale-up of ITNs occurred later than the national trend.

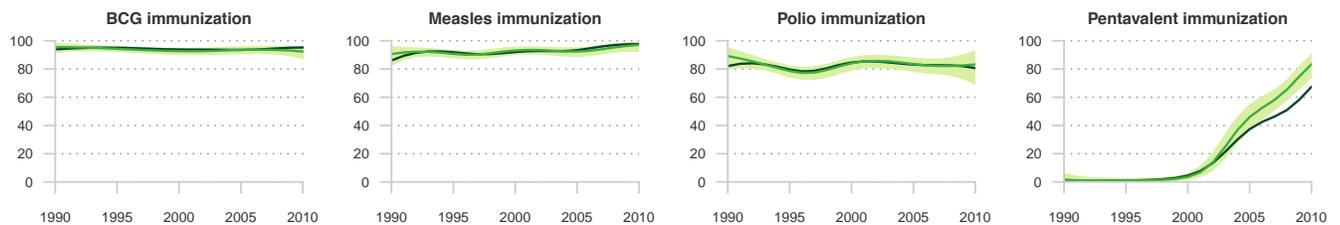
ITN use by children under 5 years old quickly increased to 74% in 2010 (95% CI: 68%, 78%), which was much higher than the national average of 51% and among the highest in Zambia for 2010. The difference between ITN ownership and ITN use was quite low in 2010, which suggests that net use by children

under 5 may be high among households that have ITNs.

Petauke formally implemented IRS activities in 2008 and reached 37% of households in 2010 (95% CI: 32%, 42%). Petauke's scale-up of IRS by 2010 was about average among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly rose to 64% in 2007 (95% CI: 52%, 75%). IPTp2 coverage continued to increase, but at a slower pace, reaching 72% in 2010 (95% CI: 62%, 80%), which was slightly higher than the national average of 68%.

IMMUNIZATIONS



BCG coverage slowly decreased from 96% in 1990 (95% CI: 92%, 98%) to 92% in 2010 (95% CI: 88%, 96%), which was lower than the national average of 95%.

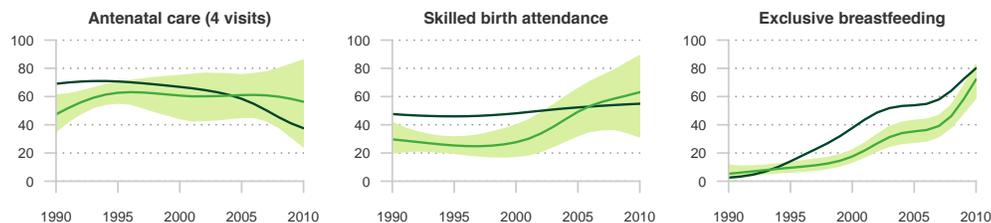
Measles immunization increased from 91% in 1990 (95% CI: 83%, 96%) to 97% in 2010 (95% CI: 93%, 99%), which was slightly lower than the national average of 98%.

Polio immunization coverage largely varied in the 1990s, rising above and falling below 80%, before consistently

remaining between 82% and 86% in the 2000s. In 2010, coverage came in at 83% (95% CI: 69%, 93%), which was slightly higher than the national average of 81%.

After the pentavalent vaccine was formally introduced in Petauke in 2005, coverage increased to 52% in 2006 (95% CI: 45%, 60%) and 83% in 2010 (95% CI: 74%, 90%). This level of pentavalent coverage far exceeded the national average of 67% for 2010 and was among the highest in Zambia.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 47% in 1990 (95% CI: 35%, 61%) to 63% in the mid-1990s, but declined to 56% in 2010 (95% CI: 25%, 86%). ANC4 decreased throughout Zambia from 1990 to 2010 and, while coverage in Petauke did not fall as drastically and was higher than the national average of 37% in 2010, the district's levels remained lower than optimal.

Skilled birth attendance stayed between 25% and 30% from 1990 to 2001, but increased to 63% in 2010 (95% CI: 31%, 89%) and exceeded the national average of 55%.

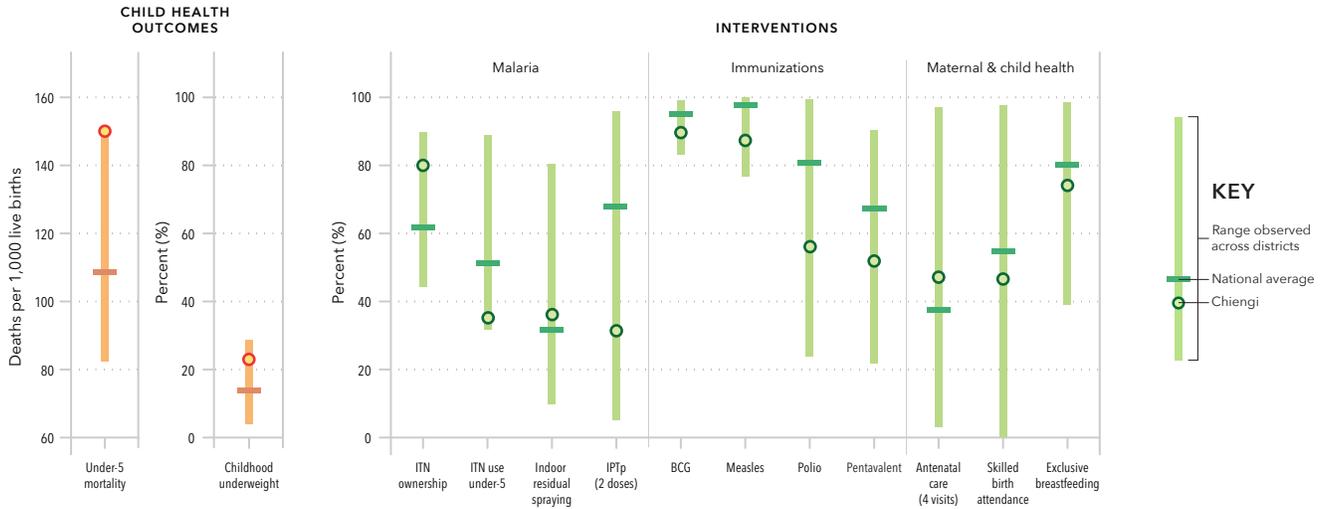
Despite these gains, SBA coverage remained lower than optimal.

The proportion of children who were exclusively breastfed slowly increased before stalling around 35% in the mid-2000s. In 2008, these gains accelerated, with coverage reaching 72% in 2010 (95% CI: 59%, 83%). This level of exclusive breastfeeding coverage still remained below the national average of 80% for 2010 and was among the lowest in the country.

Luapula province



Chiengi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

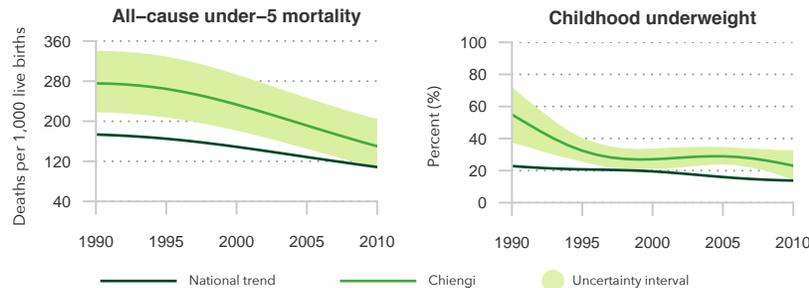
All-cause under-5 mortality and childhood underweight substantially declined in Chiengi from 1990 to 2010, but each remained among the highest in the country in 2010. Prioritizing efforts to further accelerate progress in child health outcomes should be considered.

Aside from the district's scale-up of ITN ownership and moderately high levels of IRS coverage, most trends in intervention coverage showed signs of challenges. Minimal progress was made for ITN use and IPTp2 coverage, both of which were among the lowest in Zambia in 2010. The district had a marginal scale-up of the pentavalent vaccine, and im-

munization coverage dropped in recent years, with levels of each vaccine falling among the lowest in Zambia for 2010. ANC4 coverage decreased, and skilled birth attendance remained low. Especially with its very low levels of vaccine coverage, Chiengi will likely benefit from targeting these interventions for improvement.

In 2010, Chiengi generally fell below the national average for interventions, with ITN ownership being the stark exception. In comparison with the national average, Chiengi showed substantially higher levels of mortality and underweight.

CHILD HEALTH OUTCOMES

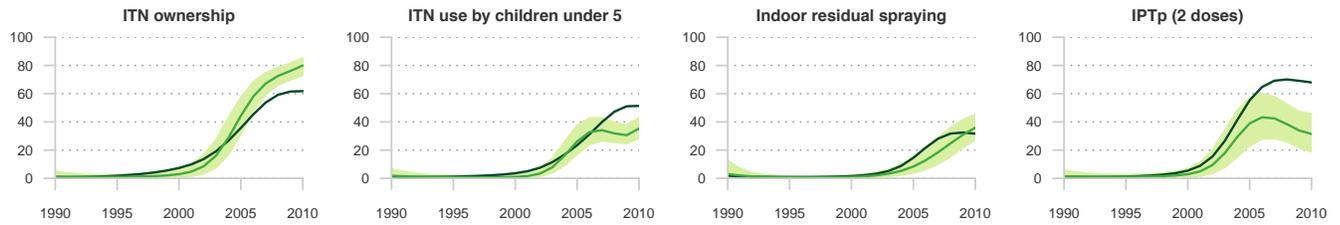


From 1990 to 2010, Chiengi recorded a significant reduction in all-cause under-5 mortality, dropping 46% from 276 deaths per 1,000 live births in 1990 (95% CI: 220, 338) to 150 in 2010 (95% CI: 109, 203). In 2010, the district's under-5 mortality still remained substantially higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia. It is important to note that Chiengi had very high levels of under-5 mortality in 1990, and while the dis-

trict's levels remained quite high in 2010, its difference from the national average decreased between 1990 and 2010.

The proportion of children who were underweight decreased from 55% in 1990 (95% CI: 38%, 71%) to 23% in 2010 (95% CI: 15%, 32%). Chiengi made substantial progress in reducing its very high levels of underweight from the 1990s, but the district still had one of the highest levels of underweight in Zambia for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage rapidly climbed to 80% in 2010 (95% CI: 73%, 85%), rising to among the highest in Zambia that year.

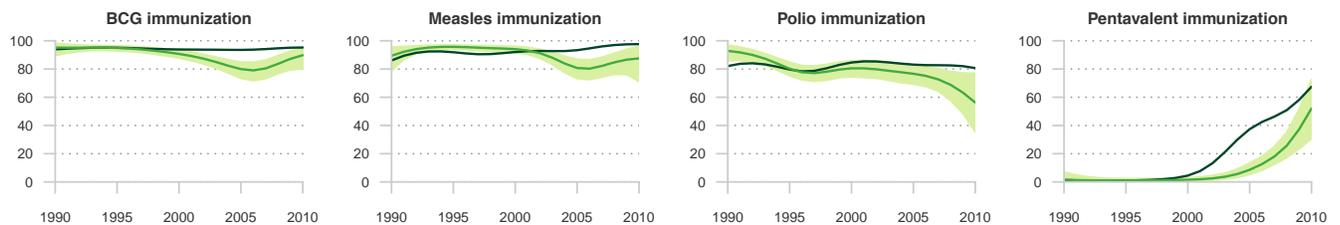
ITN use by children under 5 years old increased to 33% in 2006 (95% CI: 24%, 43%), but largely stagnated during the late 2000s, coming in at 35% in 2010 (95% CI: 28%, 43%). This level of ITN use was much lower than the national average of 51% for 2010, and starkly contrasting with its ITN ownership trends, Chiengi's ITN use was among the lowest in Zambia for 2010. The difference between ITN ownership and use (45 percentage points) was much higher in Chiengi than what was

observed nationally (11 percentage points) for 2010, which suggests that the district's net use culture may be minimal.

Chiengi formally implemented IRS activities in 2010, and reached 36% of households that year (95% CI: 27%, 45%). Chiengi's scale-up of IRS was about average among the other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage rose to 43% in 2006 (95% CI: 28%, 60%). Coverage faltered in 2007, eventually falling to 31% in 2010 (95% CI: 19%, 46%), which was among the lowest in Zambia that year.

IMMUNIZATIONS



BCG coverage remained at 95% through 1996, after which coverage dropped to 79% in 2006 (95% CI: 72%, 85%). BCG coverage rebounded, up to 90% in 2010 (95% CI: 80%, 95%) but still remained among the lowest in Zambia for that year.

After maintaining coverage above 90% from 1991 to 2002, measles immunization fell to 80% in 2006 (95% CI: 72%, 87%). Coverage increased to 88% in 2010 (95% CI: 71%, 96%), but remained among the lowest in the country.

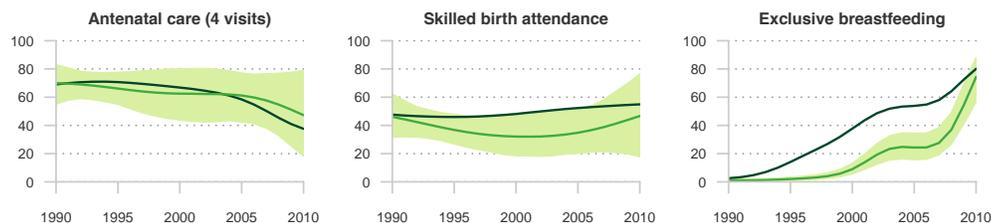
Coverage of polio immunization declined from 93% in 1990 (95% CI: 86%, 97%) to 56% in 2010 (95% CI: 35%, 77%),

which was among the lowest in Zambia.

After the pentavalent vaccine was formally introduced in Chiengi in 2005, coverage increased to 13% in 2006 (95% CI: 8%, 18%). Gains accelerated in 2009, with coverage rising to 52% in 2010 (95% CI: 30%, 73%), but this level of pentavalent coverage remained among the lowest in Zambia in 2010.

Coverage of routine immunizations in Chiengi was consistently among the lowest in Zambia for 2010. This finding is cause for concern, and the district would benefit from addressing its vaccination challenges.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steadily decreased from 70% in 1990 (95% CI: 55%, 83%) to 47% in 2010 (95% CI: 18%, 79%). While coverage was higher than the national average of 37% in 2010, the district's levels remained lower than optimal.

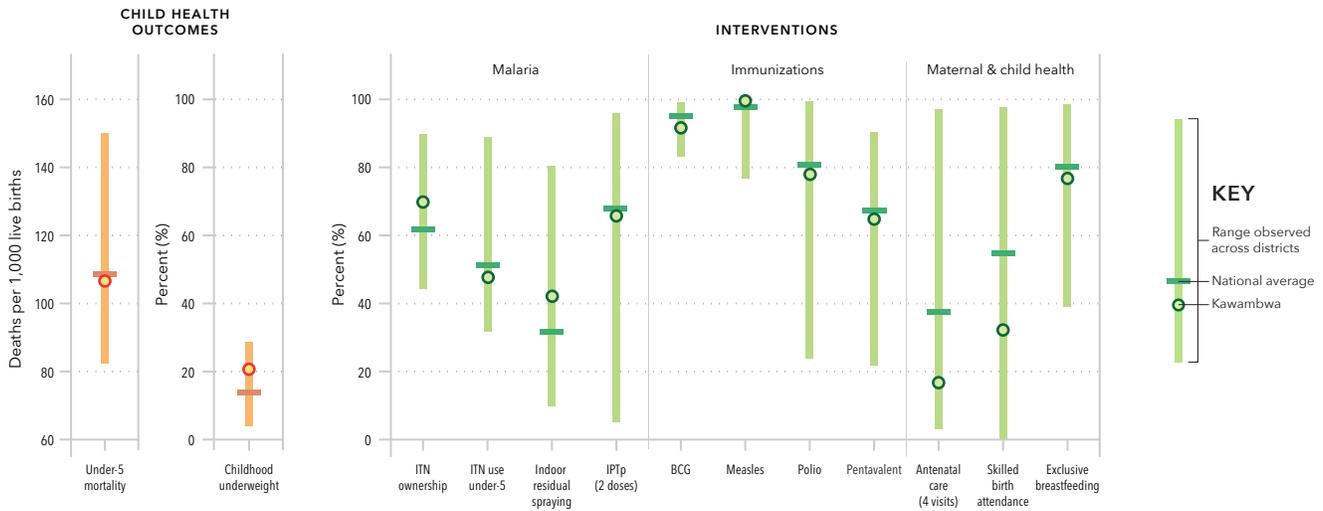
Skilled birth attendance remained relatively low, falling to 32% in the early 2000s before slowly rising to 47% in 2010 (95% CI: 18%, 76%). This level of coverage was lower than the

national average of 55% for 2010, with the district demonstrating minimal progress in improving its SBA coverage.

The proportion of children who were exclusively breastfed reached 23% in 2003 (95% CI: 16%, 32%), but stayed around 30% until 2008. Coverage increased to 74% in 2010 (95% CI: 57%, 88%), but remained below the national average of 80%.



Kawambwa



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Kawambwa substantially reduced all-cause under-5 mortality and childhood underweight; however, the latter remained well above the national average in 2010. Prioritizing ways to accelerate gains in child health outcomes, especially for underweight, should be considered.

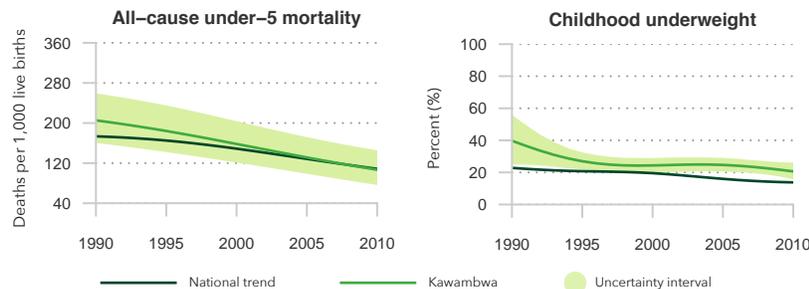
Kawambwa rapidly scaled up ITN ownership and IRS, exceeding the national average in 2010. Steady gains were made in the scale-up of the pentavalent vaccine, and measles immunization was well above the national average in 2010.

However, amidst these gains, several troubling trends were identified and warrant further attention. ITN use fell substantially from its peak in the mid-2000s. Exclusive breast-

feeding declined during the mid-2000s, with coverage only recently rising again. Coverage of BCG and polio immunization decreased, and skilled birth attendance remained consistently low. After making steady gains in coverage, ANC4 coverage also steeply dropped.

In 2010, Kawambwa generally exceeded the national average for malaria interventions, but fell below for immunizations and maternal and child health interventions (with measles coverage as the clear exception). In comparison with the national average, Kawambwa showed similar levels of mortality and much higher levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Kawambwa recorded a significant reduction in all-cause under-5 mortality, dropping 48% from 205 deaths per 1,000 live births in 1990 (95% CI: 162, 257) to 107 in 2010 (95% CI: 78, 144). In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116); this progress is notable given the district's high mortality levels during the 1990s.

The proportion of children who were underweight decreased from 40% in 1990 (95% CI: 26%, 55%) to 21% in 2010 (95% CI: 16%, 26%), but remained well above the national average of 14%. Kawambwa made substantial progress in reducing its high levels of underweight from the 1990s, but much work remains.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2000, after which coverage quickly rose to 75% in 2007 (95% CI: 69%, 81%). Coverage faltered soon after, falling to 70% in 2010 (95% CI: 61%, 78%), but remained above the national average of 62%.

The use of ITNs by children under 5 years old rapidly increased to 71% in 2006 (95% CI: 63%, 77%), but dropped to 48% in 2010 (95% CI: 40%, 56%), falling below the national average of 51%. The difference between ITN ownership and use (22 percentage points) was much higher in Kawambwa than what was observed at the national level (11 percentage points). The district's especially sharp decline in ITN use since

2006 is cause for concern.

Kawambwa formally implemented IRS activities in 2008, and reached 42% of households in 2010 (95% CI: 36%, 49%). Kawambwa's scale-up of IRS by 2010 was on the higher end among the districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly rose to 60% in 2007 (95% CI: 46%, 72%). Gains in coverage stalled for a few years before IPTp2 levels climbed to 66% in 2010 (95% CI: 51%, 78%), which was slightly lower than the national average of 68%.

IMMUNIZATIONS



BCG immunization fell from 97% during the early to mid-1990s to 88% in the mid-2000s. Coverage rebounded to 91% in 2009 and 2010, but remained below the national average of 95%.

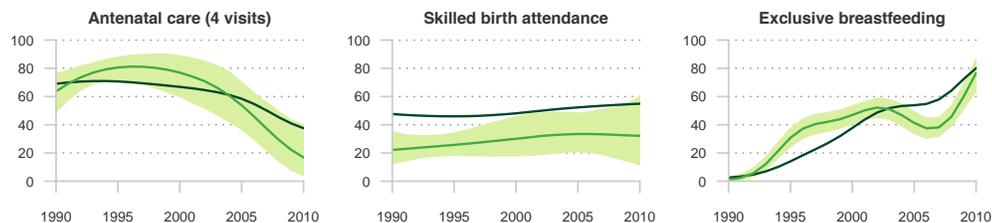
Overall, measles immunization increased from 86% in 1990 (95% CI: 77%, 93%) to 99% in 2008 (95% CI: 97%, 99%), which was maintained through 2010 and slightly exceeded the national average of 98% for that year.

Coverage of polio immunization remained around 90%

during the early to mid-1990s, but dropped to 75% in 2003 (95% CI: 69%, 81%). Coverage rose to 80% between 2007 and 2009, but slipped to 78% in 2010 (95% CI: 65%, 88%), which was slightly lower than the national average of 81%.

After the pentavalent vaccine was introduced in Kawambwa in 2005, coverage increased to 30% in 2006 (95% CI: 24%, 37%) and 65% in 2010 (95% CI: 51%, 77%), which was slightly lower than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 64% in 1990 (95% CI: 49%, 76%) to 81% in the late-1990s before steeply dropping to 17% in 2010 (95% CI: 4%, 40%). ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Kawambwa's levels of coverage fell over 60 percentage points since 1997 is of particular concern.

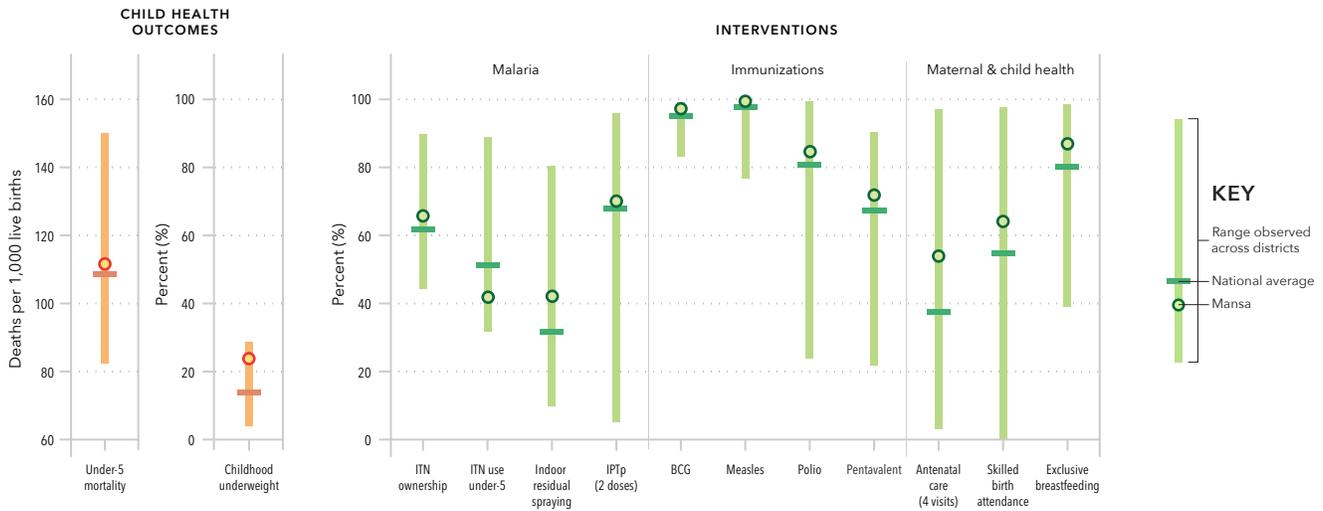
Skilled birth attendance gradually increased from 22% in 1990 (95% CI: 12%, 35%) to 32% in 2010 (95% CI: 12%, 60%). These gains in coverage were fairly minimal, and SBA

in Kawambwa remained below the national average of 55% for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1994, after which coverage increased to 50% in 2001 (95% CI: 44%, 56%). Coverage declined, falling to 37% in 2006 (95% CI: 31%, 44%), but then rebounded to 77% in 2010 (95% CI: 64%, 86%), which remained slightly below the national average of 80%.



Mansa



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Mansa recorded a substantial reduction in all-cause under-5 mortality, though its under-5 mortality rate still exceeded the national average in 2010. Childhood underweight generally decreased in Mansa, but levels actually increased in recent years, rising to among the highest levels in Zambia. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

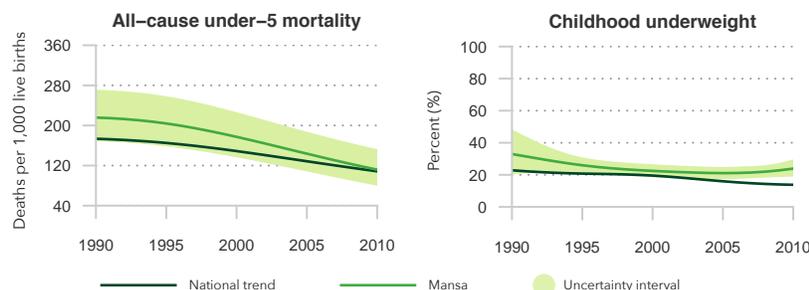
Mansa scaled up ITNs and IPTp2 earlier than the rest of the country, and the district successfully expanded coverage of the pentavalent vaccine between 2005 and 2010. After periods of lower coverage, levels of routine immunizations increased in 2010, equaling or exceeding the national average for that year. Exclusive breastfeeding declined during

the early to mid-2000s, but coverage surpassed the national average in 2010. Skilled birth attendance steadily increased during the 2000s, rising above the national average in 2010.

Amidst these gains, however, some worrisome trends were identified and warrant further attention. ITN use fell below the national average, while IPTp2 coverage declined since its peak in the mid-2000s. ANC4 coverage steadily decreased over time, with its pace of decline accelerating in recent years.

In 2010, Mansa generally met or exceeded the national average for all interventions, with ITN use as the exception. In comparison with the national average, Mansa showed slightly higher levels of mortality and much higher levels of underweight.

CHILD HEALTH OUTCOMES

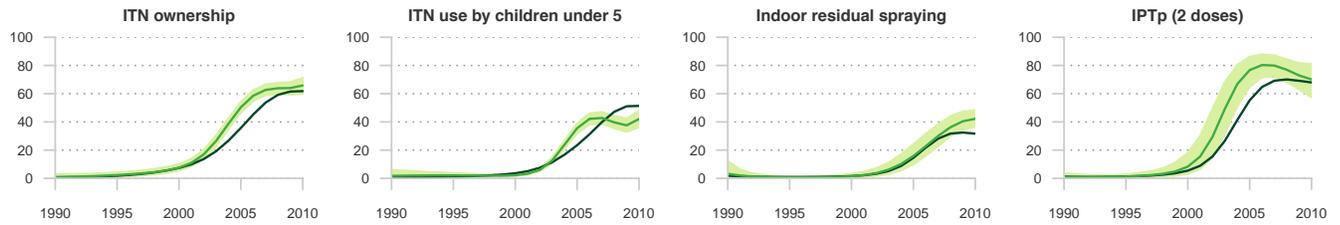


From 1990 to 2010, Mansa recorded a significant reduction in all-cause under-5 mortality, dropping 48% from 216 deaths per 1,000 live births in 1990 (95% CI: 171, 269) to 112 in 2010 (95% CI: 82, 151). In 2010, the district's under-5 mortality still remained slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 33% in 1990 (95% CI: 21%, 48%) to 21% during

the mid-2000s, but then increased to 24% in 2010 (95% CI: 19%, 29%). This level of underweight was well above the national average of 14% in 2010, and was among the highest in Zambia. Despite some progress, childhood underweight remains high in Mansa and the district's slight rise in prevalence is cause for concern.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage increased to 66% in 2010 (95% CI: 60%, 71%) and was slightly higher than the national average of 62%.

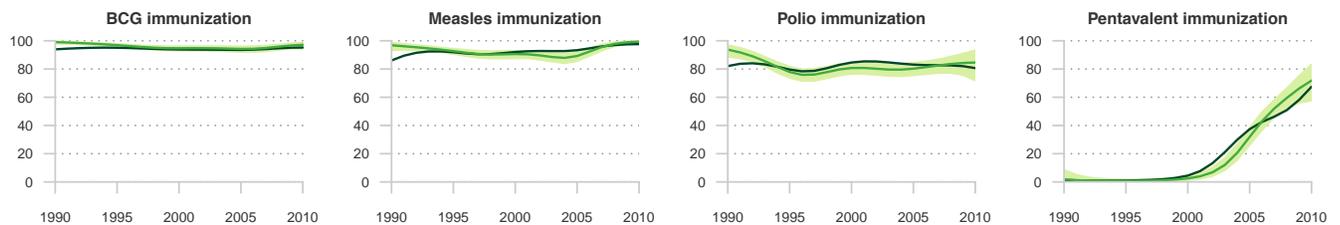
ITN use by children under 5 years old quickly rose to 43% in 2007 (95% CI: 39%, 47%), but fell below 40% in 2009. ITN use slightly rebounded, to 42% in 2010 (95% CI: 36%, 48%), but remained much lower than the national average of 51%. The difference between ITN ownership and use (24 percentage points) was much higher in Mansa than what was observed at the national level (11 percentage points).

Mansa formally implemented IRS activities in 2008, reach-

ing 36% of households that year (95% CI: 30%, 44%) and 42% in 2010 (95% CI: 36%, 49%). Mansa's scale-up of IRS by 2010 was about average among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 80% in 2006 (95% CI: 72%, 88%). Coverage remained at 80% through 2007, but declined to 70% in 2010 (95% CI: 57%, 81%). While this level of coverage was slightly higher than the national average of 68% in 2010, IPTp2 in Mansa peaked earlier and higher than the national trend.

IMMUNIZATIONS



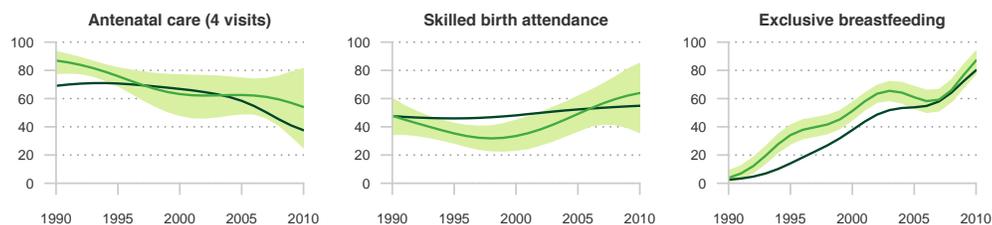
BCG coverage declined from 99% in the early 1990s to a low of 94% during the mid-2000s, but increased to 97% in 2009 and 2010. This level of coverage surpassed the national average of 95%.

Measles immunization gradually decreased from 97% in 1990 (95% CI: 93%, 99%) to 88% during the mid-2000s; however, coverage rose to 99% in 2009 and 2010, which was slightly higher than the national average of 98%.

Coverage of polio immunization dropped from 94% in 1990 (95% CI: 89%, 97%) to below 80% in 1995 and 1998. Polio coverage hovered around 80% through 2006, increasing to 85% in 2010 (95% CI: 72%, 93%) and slightly exceeding the national average of 81% for that year.

After the pentavalent vaccine was formally introduced in Mansa in 2005, coverage increased to 43% in 2006 (95% CI: 37%, 49%) and 72% in 2010 (95% CI: 58%, 83%), which was slightly higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 87% in 1990 (95% CI: 78%, 93%) to 54% in 2010 (95% CI: 26%, 81%). ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and though Mansa's levels of coverage were higher than the national average of 37% for 2010, the finding that the district's ANC4 coverage fell over 30 percentage points during this period is troubling.

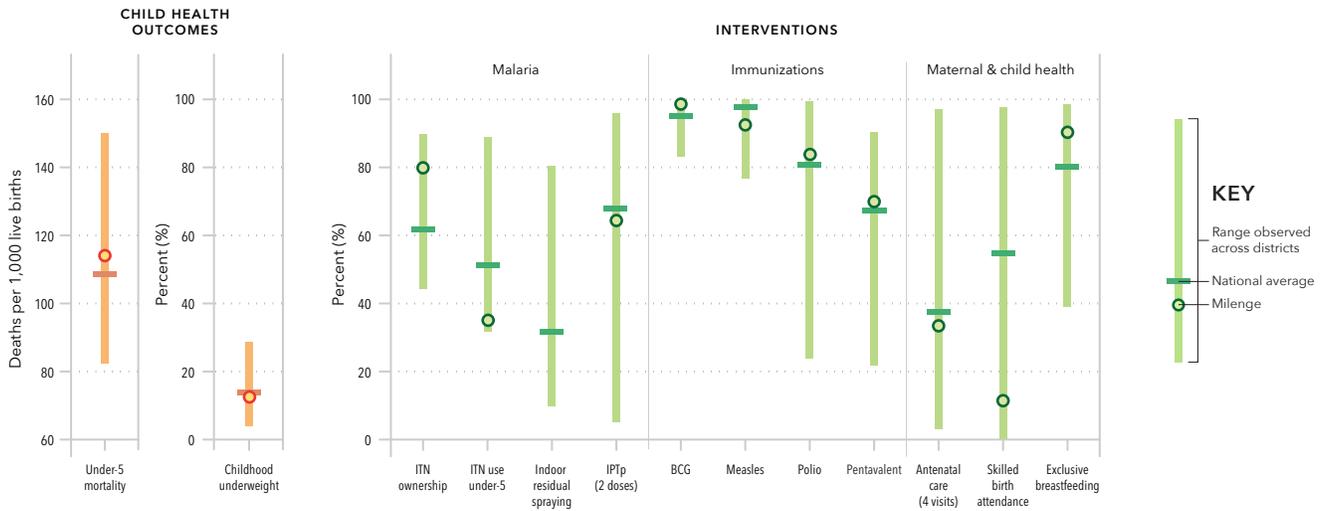
Skilled birth attendance declined from 48% in 1990 (95%

CI: 35%, 60%) to 32% in the late 1990s, after which coverage steadily rose to 64% in 2010 (95% CI: 36%, 85%), exceeding the national average of 55%.

The proportion of children who were exclusively breastfed remained under 20% until 1993, after which coverage rose to 66% in 2003 (95% CI: 59%, 72%). Coverage fell below 60% in 2006 and 2007, but rebounded to 87% in 2010 (95% CI: 78%, 93%) and exceeded the national average of 80%.



Milenge



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Milenge started IRS after 2010.

SUMMARY

Between 1990 and 2010, Milenge substantially reduced all-cause under-5 mortality and childhood underweight; however, its mortality levels still exceeded the national average in 2010. Prioritizing ways to further accelerate declines in child health outcomes, especially under-5 mortality, should be considered.

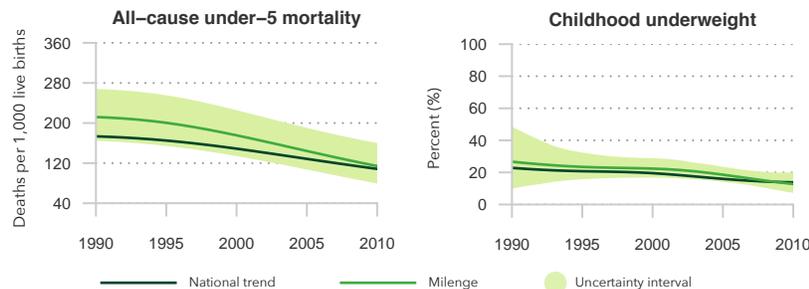
Milenge scaled up ITN ownership and IPTp2, and the district recorded steady gains in coverage for the pentavalent vaccine and exclusive breastfeeding. BCG immunization in Milenge was among the highest in Zambia in 2010, and trends in polio coverage recovered after falling in the mid-1990s.

Amidst these gains, however, several troubling trends were identified and warrant further attention. ITN use dramati-

cally declined after rapidly rising in the mid-2000s, falling to among the lowest in the country for 2010. After maintaining high levels of measles immunization, coverage recently dropped. Skilled birth attendance substantially decreased from already low levels of coverage, and ANC4 fell to lower levels in 2010.

In 2010, Milenge generally exceeded the national average for immunizations, but largely fell below for malaria interventions and maternal and child health interventions (except for ITN ownership). In comparison with the national average, Milenge showed slightly higher levels of mortality and similar levels of underweight.

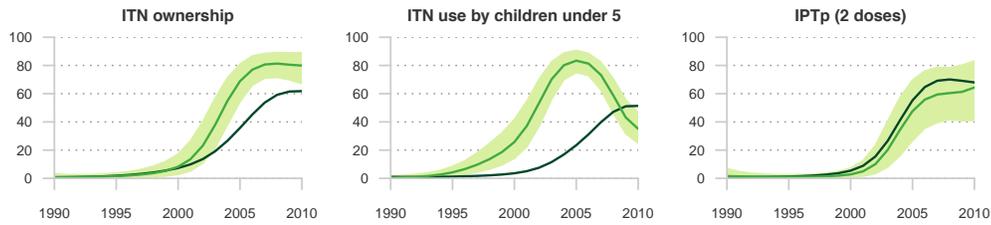
CHILD HEALTH OUTCOMES



From 1990 to 2010, Milenge recorded a significant reduction in all-cause under-5 mortality, dropping 46% from 212 deaths per 1,000 live births in 1990 (95% CI: 167, 266) to 114 in 2010 (95% CI: 81, 158). Despite these gains, the district's under-5 mortality in 2010 still remained slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 27% in 1990 (95% CI: 11%, 48%) to 13% in 2010 (95% CI: 8%, 19%), which was comparable to the national average of 14%.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage rapidly rose to 81% in 2007 (95% CI: 71%, 88%). This level of coverage was sustained through 2009, and then coverage slightly slipped to 80% in 2010 (95% CI: 67%, 89%). Nonetheless, this level of ITN ownership far exceeded the national average of 62% for 2010, and was among the highest in Zambia.

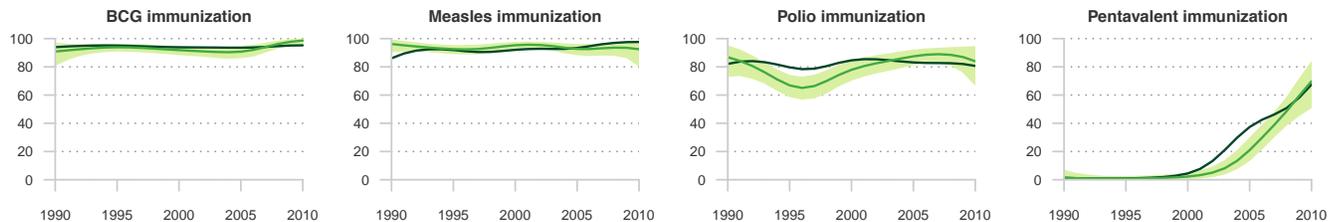
ITN use by children under 5 years old rapidly increased to 83% in 2005 (95% CI: 75%, 91%), but plunged to 35% in 2010 (95% CI: 25%, 47%). This level of ITN use was much lower than the national average of 51% for 2010, and was among the lowest in Zambia for that year. The district's precipitous drop

in ITN use is cause for concern given that ITN ownership did not substantially decrease by 2010; this finding suggests that something may have changed in the culture surrounding ITN use.

IRS coverage trends are not included because Milenge did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly rose to 56% in 2006 (95% CI: 36%, 76%). Coverage continued to increase, but at a slower pace, reaching 64% in 2010 (95% CI: 41%, 83%). This level of IPTp2 coverage was slightly lower than the national average of 68% in 2010.

IMMUNIZATIONS



BCG immunization remained between 90% and 94% from 1990 to 2007, after which coverage climbed to 99% in 2010 (95% CI: 97%, 100%) and rose to among the highest in Zambia.

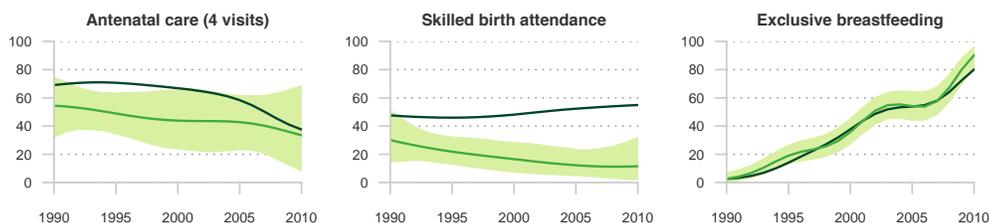
Measles immunization vacillated between 92% and 96% from 1990 to 2010, falling to 92% in 2010 (95% CI: 81%, 98%), which was lower than the national average of 98%.

Coverage of polio immunization dropped from 87% in 1990 (95% CI: 74%, 95%) to 65% in 1996 (95% CI: 57%, 72%).

Polio coverage steadily climbed to 89% between 2006 and 2008, but dipped to 84% in 2010 (95% CI: 68%, 94%). This level of coverage was slightly higher than the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Milenge in 2005, coverage increased to 30% in 2006 (95% CI: 22%, 38%) and 70% in 2010 (95% CI: 52%, 83%), which was slightly higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 54% in the early 1990s to 33% in 2010 (95% CI: 9%, 68%), which was slightly lower than the national average of 37%. Although Milenge did not experience the same drastic decline in ANC4 coverage that was observed at the national level, its consistently low levels of ANC4 are worrisome.

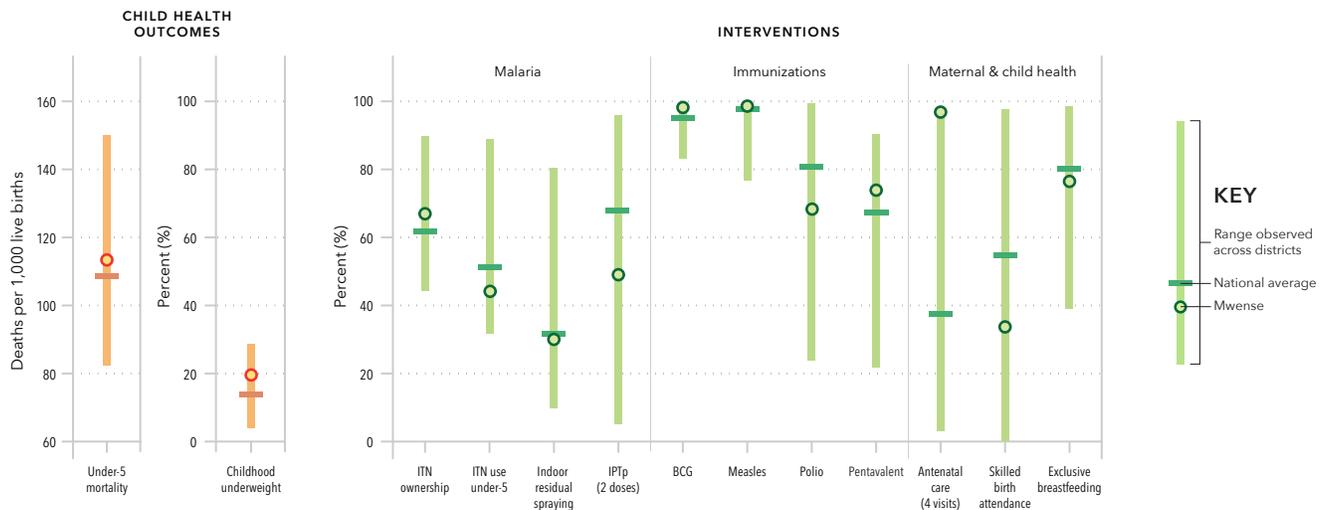
Skilled birth attendance steadily declined from 30% in 1990 (95% CI: 15%, 51%) to 12% in 2010 (95% CI: 2%, 32%),

which was well below the national average of 55%. This level of SBA coverage was among the lowest in Zambia for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage increased to 55% in 2003 (95% CI: 45%, 64%). Gains in coverage stalled through 2006, but exclusive breastfeeding rapidly rose to 90% in 2010 (95% CI: 81%, 96%), which was much higher than the national average of 80%.



Mwense



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

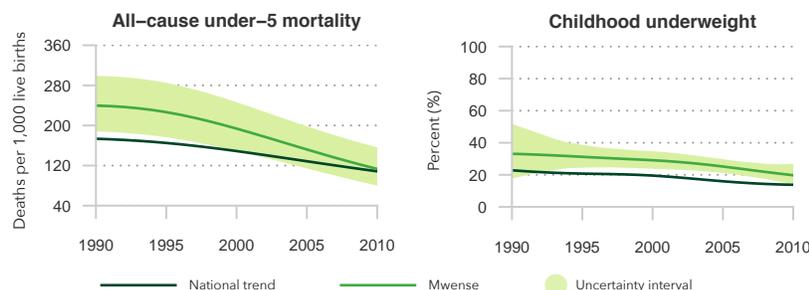
All-cause under-5 mortality and childhood underweight substantially decreased in Mwense between 1990 and 2010, but the district's levels for each remained above the national average in 2010. Prioritizing ways to further accelerate progress in child health outcomes should be considered.

Mwense scaled up ITN ownership through 2010, and successfully expanded coverage of the pentavalent vaccine. Coverage of BCG, the measles vaccine, and exclusive breastfeeding also increased after recent declines. Most notably, ANC4 coverage increased and was sustained at very high levels through 2010. Given that most of Zambia experienced dramatic declines in ANC4 coverage, much could be learned from the district's ANC4 programs.

However, amidst these gains, some troubling trends were identified and warrant further attention. Gains in IPTp2 coverage stalled in the mid-2000s, and polio immunization steeply declined in 2010. Skilled birth attendance decreased in recent years, which directly contrasted with the progress observed at the national level.

In 2010, Mwense exceeded the national average for immunizations (except for polio coverage), but fell below for malaria interventions and maternal and child health interventions (with ITN ownership and ANC4 as the clear exceptions). In comparison with the national average, Mwense showed slightly higher levels of mortality and much higher levels of underweight.

CHILD HEALTH OUTCOMES

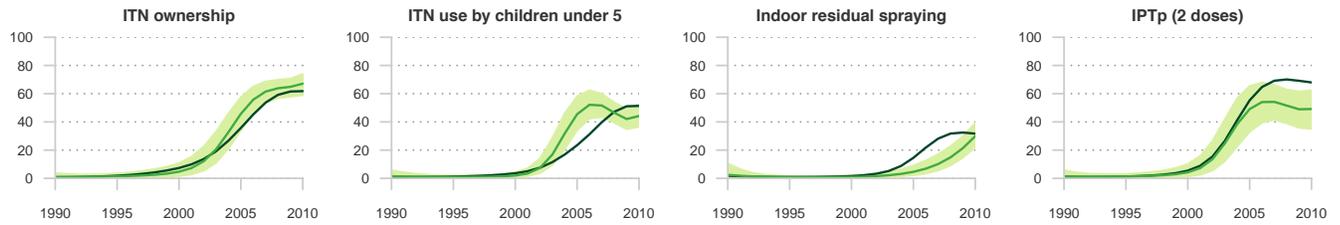


From 1990 to 2010, Mwense recorded a significant reduction in all-cause under-5 mortality, dropping 53% from 240 deaths per 1,000 live births in 1990 (95% CI: 190, 297) to 113 in 2010 (95% CI: 82, 154). However, the district's under-5 mortality in 2010 still remained slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). It is worthy to note that Mwense has made considerable progress

in bringing its levels of under-5 mortality, which were very high in the 1990s, closer to the national average.

The proportion of children who were underweight decreased from 33% in 1990 (95% CI: 18%, 51%) to 20% in 2010 (95% CI: 15%, 26%), which was much higher than the national average of 14%.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2002, after which coverage increased to 67% in 2010 (95% CI: 59%, 74%), rising slightly higher than the national average of 62%.

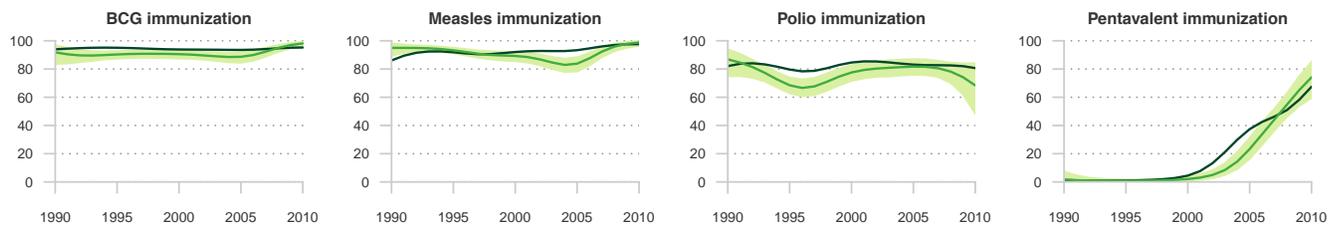
ITN use by children under 5 years old rose to 52% in 2006 and 2007, but decreased to 44% in 2010 (95% CI: 36%, 53%), falling below the national average of 51%. The difference between ITN ownership and use (23 percentage points) was much higher than what was observed nationally (11 percentage points). The district's drop in ITN use is troubling given that ownership did not decrease by 2010; this finding suggests that something may have changed in the culture sur-

rounding net use.

Mwense formally implemented IRS activities in 2010, and reached 30% of households that year (95% CI: 22%, 39%). Mwense's scale-up of IRS was on the lower end in comparison with other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rose to 54% in 2006 (95% CI: 39%, 68%). Coverage remained at 54% through 2007, but slipped to 49% in 2009 and 2010, falling well below the national average of 68%.

IMMUNIZATIONS



BCG coverage hovered around 90% between 1990 and 2006, but increased to 98% in 2010 (95% CI: 96%, 99%) and exceeded the national average of 95%.

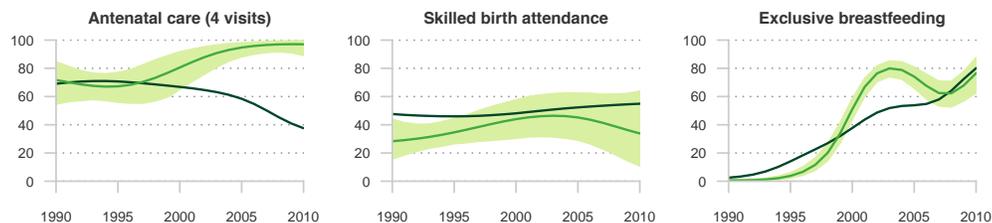
Measles immunization gradually decreased from 95% in the early 1990s to 83% in 2004 (95% CI: 78%, 87%), but coverage rebounded to 99% in 2010 (95% CI: 96%, 100%) and was slightly higher than the national average of 98%.

Coverage of polio immunization dropped from 87% in

1990 (95% CI: 75%, 94%) to 67% in 1996 (95% CI: 61%, 73%), but increased to around 80% between 2000 and 2007. Polio coverage then decreased to 68% in 2010 (95% CI: 48%, 84%), which was lower than the national average of 81%.

After the pentavalent vaccine was formally introduced in Mwense in 2005, coverage increased to 34% in 2006 (95% CI: 26%, 42%) and then to 74% in 2010 (95% CI: 59%, 85%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage hovered around 70% from 1990 to 1998, after which coverage climbed to 97% in 2007 (95% CI: 91%, 99%) and remained at that level through 2010. This level of ANC4 coverage was among the highest in Zambia in 2010, and Mwense's gains in ANC4 are impressive given that most districts documented drastic declines in coverage. It is likely that the rest of the country could benefit from learning about Mwense's antenatal care programs.

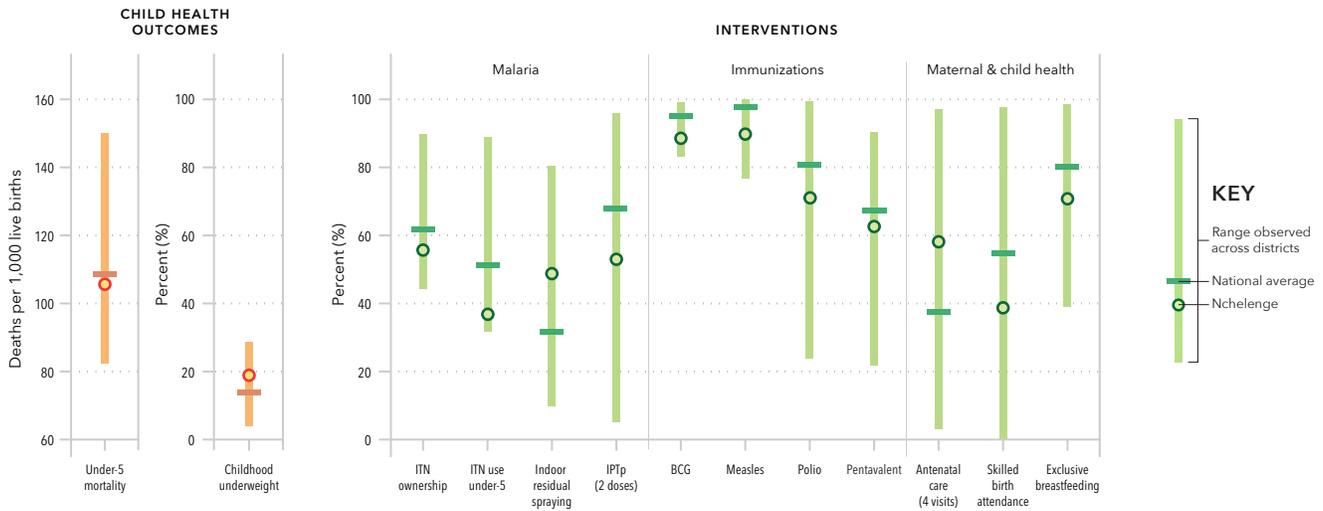
Skilled birth attendance increased from 28% in 1990 (95% CI: 16%, 44%) to 46% in the early 2000s, but dropped to 34%

in 2010 (95% CI: 11%, 64%). This level of SBA coverage was lower than the national average of 55%, and Mwense's trends of decline contrasted with the gradual gains observed at the national level.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage increased to 80% in 2003 (95% CI: 74%, 85%). Coverage fell to 62% in 2007 and 2008, but rebounded to 77% in 2010 (95% CI: 63%, 87%). Despite these gains, Mwense's level of coverage was slightly lower than the national average of 80% in 2010.



Nchelenge



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Nchelenge substantially reduced all-cause under-5 mortality and childhood underweight; however, underweight in the district remained consistently higher than the national average. Prioritizing efforts to further accelerate gains for child health outcomes should be considered.

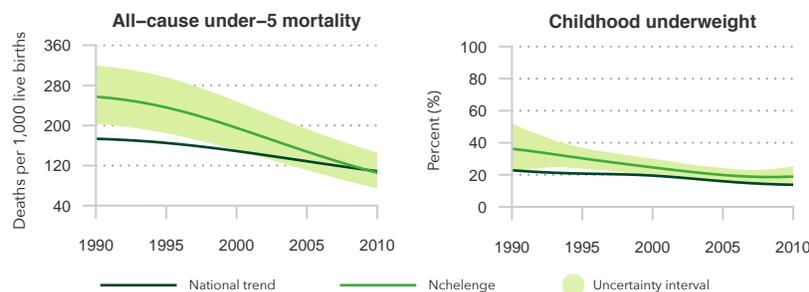
Nchelenge scaled up IRS coverage through 2010, and was moderately successful in expanding coverage of the pentavalent vaccine by 2010.

Amidst these gains, several troubling trends were identified and warrant further attention. Aside from IRS, malaria intervention coverage decreased from high levels in the mid-2000s, with ITN coverage falling to among the lowest levels in the country in 2010. Immunization coverage faltered, with

BCG immunization rates dropping to among the lowest in Zambia. The district's relatively slow scale-up of exclusive breastfeeding left its levels of coverage among the lowest in Zambia in 2010. Skilled birth attendance was consistently low through 2010, and though ANC4 coverage did not fall below the national average, its levels substantially declined.

In 2010, Nchelenge generally fell below the national average for all interventions, with spraying and ANC4 as the exceptions. In comparison with the national average, Nchelenge showed slightly lower levels of mortality and higher levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Nchelenge recorded a significant reduction in all-cause under-5 mortality, dropping 59% from 257 deaths per 1,000 live births in 1990 (95% CI: 205, 318) to 106 in 2010 (95% CI: 77, 144). In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). This progress is worthy of note given that Nchelenge had one of the highest levels of under-5 mortality in 1990.

The proportion of children who were underweight decreased from 36% in 1990 (95% CI: 22%, 51%) to 19% in 2006 (95% CI: 16%, 23%). This level of underweight was maintained through 2010 and was higher than the national average of 14%. While the district's progress is notable, underweight in Nchelenge remained high.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage rapidly rose to 65% in 2007 (95% CI: 61%, 69%). Coverage declined, dropping to 56% in 2010 (95% CI: 50%, 61%), which was among the lowest in the country.

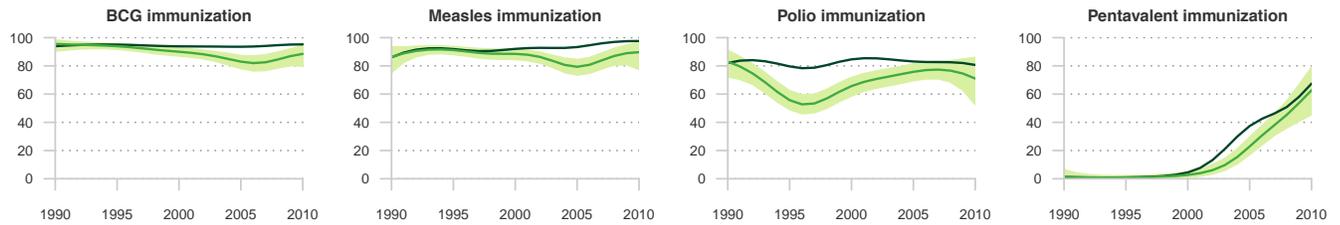
ITN use by children under 5 years old quickly increased to 69% in 2006 (95% CI: 63%, 75%), but dropped to 37% in 2010 (95% CI: 31%, 43%) and was among the lowest levels in Zambia. In 2010, the difference between ITN ownership and use (19 percentage points) was higher in Nchelenge than what was observed at the national level (11 percentage

points)

Nchelenge formally implemented IRS activities in 2008, and reached 49% of households in 2010 (95% CI: 42%, 55%). Nchelenge's scale-up of IRS by 2010 was on the higher end among the districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 72% in 2006 (95% CI: 58%, 83%). Coverage declined, dropping to 53% in 2010 (95% CI: 40%, 65%) and falling well below the national average of 68%.

IMMUNIZATIONS



BCG coverage declined from 96% in 1990 (95% CI: 91%, 98%) to 82% in 2006 (95% CI: 77%, 87%), but increased to 89% in 2010 (95% CI: 80%, 94%). Despite these recent gains, coverage remained among the lowest in Zambia in 2010.

After rising above 90% in the mid-1990s, measles immunization decreased to 81% in 2006 (95% CI: 75%, 86%), but rose to 90% in 2010 (95% CI: 77%, 97%). This level of coverage remained well below the national average of 98% for 2010.

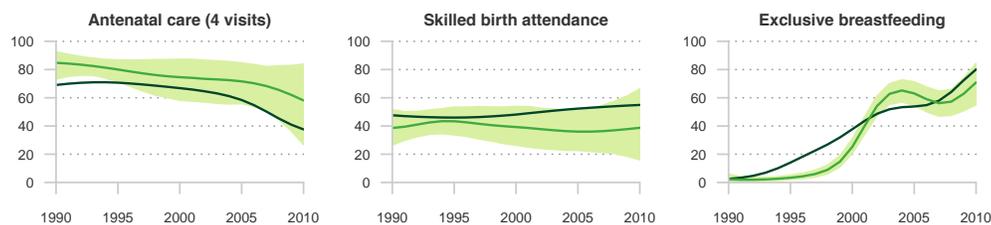
Coverage of polio immunization dropped from 83% in 1990 (95% CI: 72%, 91%) to 53% in 1996 and 1997. Coverage

increased to 77% from 2006 to 2008, but then decreased to 71% in 2010 (95% CI: 53%, 86%). This level of coverage was lower than the national average of 81% for that year.

After the pentavalent vaccine was formally introduced in Nchelenge in 2005, coverage increased to 31% in 2006 (95% CI: 24%, 38%) and 63% in 2010 (95% CI: 46%, 79%), which was slightly below the national average of 67%.

Nchelenge consistently had lower levels of immunization coverage than the national average in 2010. The district would likely benefit from addressing its vaccination challenges.

MATERNAL AND CHILD HEALTH INTERVENTIONS

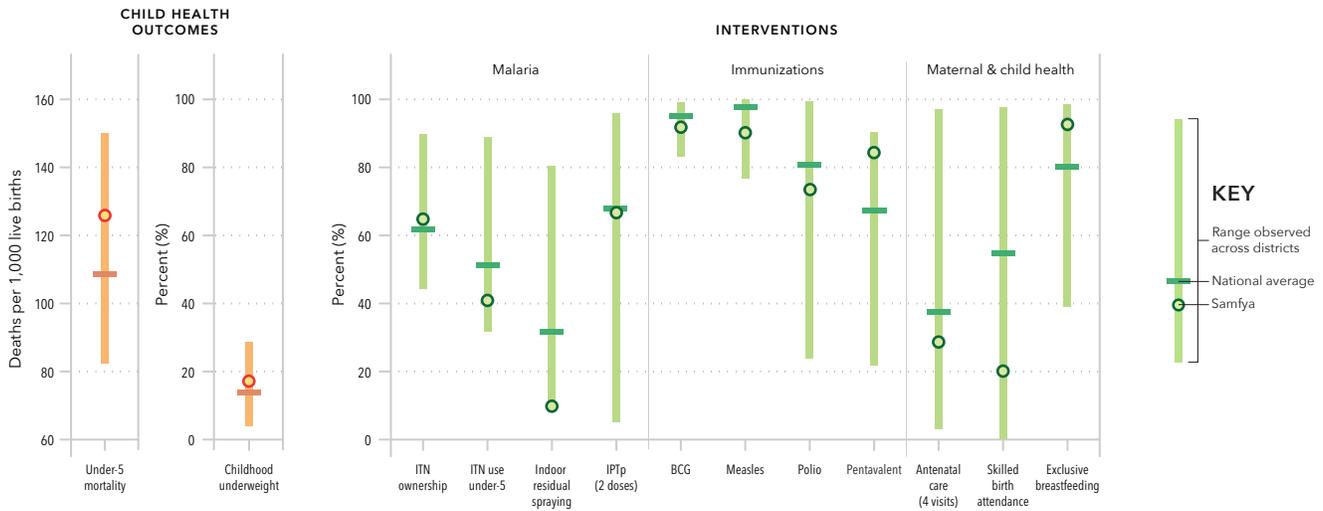


ANC4 coverage steadily declined from 85% in 1990 (95% CI: 73%, 92%) to 58% in 2010 (95% CI: 27%, 84%). While the district's ANC4 levels remained higher than the national average of 37% in 2010, the district's decline of nearly 30 percentage points in coverage since 1990 is cause for concern.

Skilled birth attendance remained between 36% and 43% from 1990 to 2010, with SBA coming in at 39% in 2010 (95% CI: 16%, 66%). This level of coverage was lower than the national average of 55% for 2010, and the district's overall lack of

progress in skilled birth attendance warrants further attention.

The proportion of children who were exclusively breastfed remained below 20% until 2000, after which coverage climbed to 65% in 2004 (95% CI: 57%, 73%). Coverage briefly declined, falling below 60% from 2006 to 2008, but increased to 71% in 2010 (95% CI: 55%, 84%). Despite these recent gains, the district's level of coverage in 2010 remained among the lowest in the country.



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Samfya substantially reduced all-cause under-5 mortality and childhood underweight. However, its levels of under-5 mortality remained among the highest in Zambia in 2010. Prioritizing ways to further accelerate progress in child health outcomes, especially under-5 mortality, should be considered.

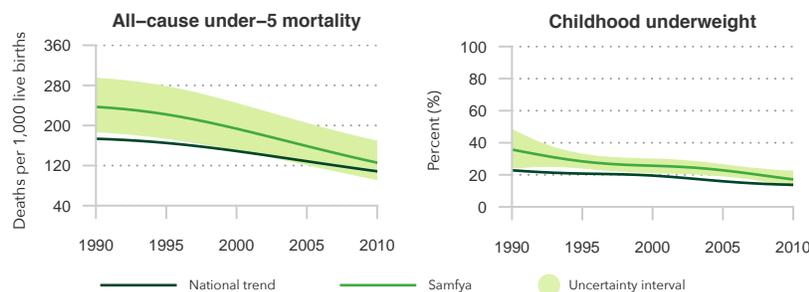
Samfya scaled up ITN ownership and IPTp2 through 2010, and successfully expanded coverage of the pentavalent vaccine to among the highest in Zambia. After a period of stagnation, Samfya substantially increased its levels of exclusive breastfeeding.

However, amidst these gains, some troubling trends were identified and warrant further attention. Minimal progress was

made in scaling up IRS, and ITN use declined to some of the lowest levels in Zambia. In 2010, immunization rates for BCG, measles, and polio remained lower than the national average. Skilled birth attendance stayed at very low levels, and Samfya recorded steep declines in ANC4 coverage in recent years.

In 2010, Samfya generally fell below the national average for immunizations and maternal and child health interventions (with pentavalent coverage and exclusive breastfeeding as the exceptions). For malaria interventions, the district had a more mixed performance. In comparison with the national average, Samfya showed higher levels of mortality and underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Samfya recorded a significant reduction in all-cause under-5 mortality, dropping 47% from 237 deaths per 1,000 live births in 1990 (95% CI: 188, 293) to 126 in 2010 (95% CI: 93, 168). However, the district's under-5 mortality in 2010 remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104 to 116) and was among the highest in Zambia for that year.

The proportion of children who were underweight decreased from 36% in 1990 (95% CI: 25%, 48%) to 17% in 2010 (95% CI: 13%, 22%), but still exceeded the national average of 14% for that year. Despite the district's progress, childhood underweight remained high in Samfya.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage rapidly rose to 65% in 2010 (95% CI: 57%, 71%), rising slightly higher than the national average of 62%.

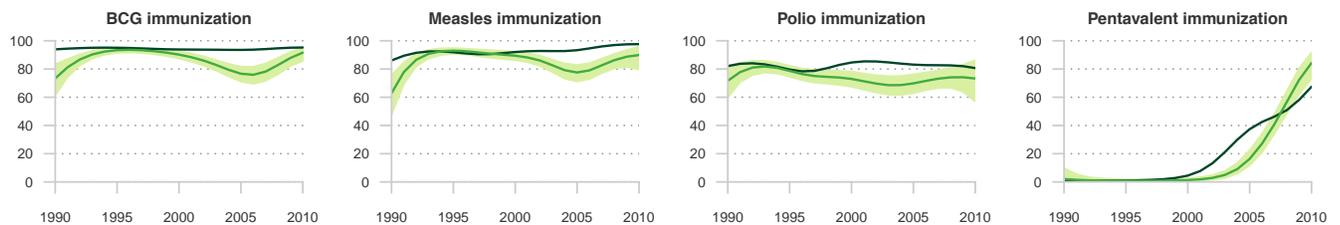
ITN use by children under 5 years old increased earlier to 45% in 2006 (95% CI: 39%, 53%), but dropped to 41% in 2010 (95% CI: 34%, 48%), falling among the lowest levels in the country. In 2010, the difference between ITN ownership and use (24 percentage points) was much higher in Samfya than what was observed at the national level (11 percentage points). The district's drop in ITN use is troubling given that ITN ownership did not decrease by 2010; this finding sug-

gests that something may have changed in the culture surrounding ITN use.

Samfya formally implemented IRS activities in 2010, and reached 10% of households that year (95% CI: 6%, 14%). Samfya's scale-up of IRS was on the lower end in comparison with other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly rose to 58% in 2006 (95% CI: 47%, 70%). Coverage continued to rise, though more slowly, reaching 66% in 2010 (95% CI: 53%, 78%), which was slightly lower than the national average of 68%.

IMMUNIZATIONS



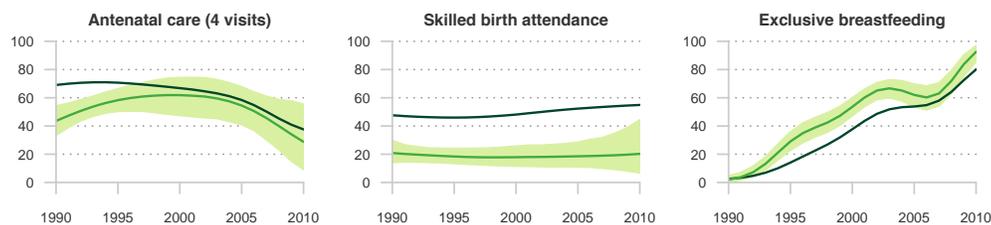
BCG immunization remained above 90% from 1993 to 2000, but fell to 76% in 2006 (95% CI: 69%, 82%). Coverage rebounded, increasing to 92% in 2010 (95% CI: 86%, 96%), but nonetheless remained below the national average of 95%.

Measles immunization exceeded 90% between 1993 and 1999, but fell to 78% in 2005 (95% CI: 71%, 83%). Coverage gradually recovered, reaching 90% in 2010 (95% CI: 80%, 96%), but still was much lower than the national average of 98%.

Polio immunization increased to 82% in 1993 (95% CI: 77%, 86%) before declining to 69% in 2003 and 2004. Polio coverage rose to 74% in 2008 and 2009, but slipped to 73% in 2010 (95% CI: 57%, 86%), falling below the national average of 81%.

After the pentavalent vaccine was formally introduced in Samfya in 2005, coverage increased to 27% in 2006 (95% CI: 21%, 34%) and 84% in 2010 (95% CI: 73%, 92%), rising to among the highest in Zambia.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage slowly increased from 44% in 1990 (95% CI: 33%, 54%) to 62% in the late 1990s, but substantially decreased to 29% in 2010 (95% CI: 9%, 55%) and fell below the national average of 37%. The finding that Samfya's levels of coverage fell over 30 percentage points since 2000 is worrisome.

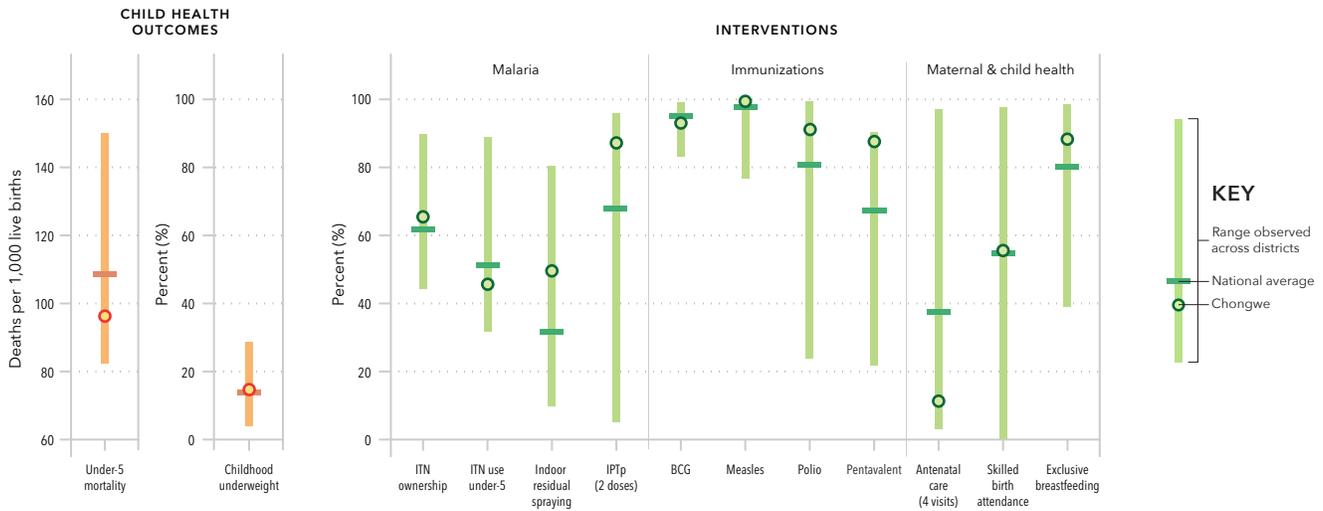
From 1990 to 2010, skilled birth attendance remained between 18% and 20%, ultimately coming in at 20% in 2010 (95% CI: 7%, 44%) and falling well below the national average of 55%.

The proportion of children who were exclusively breastfed remained under 20% until 1994, after which coverage rose to 67% in 2003 (95% CI: 60%, 73%). Gains in coverage stalled until 2007, after which exclusive breastfeeding climbed to 93% in 2010 (95% CI: 86%, 97%) and far exceeded the national average of 80%.

Lusaka province



Chongwe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

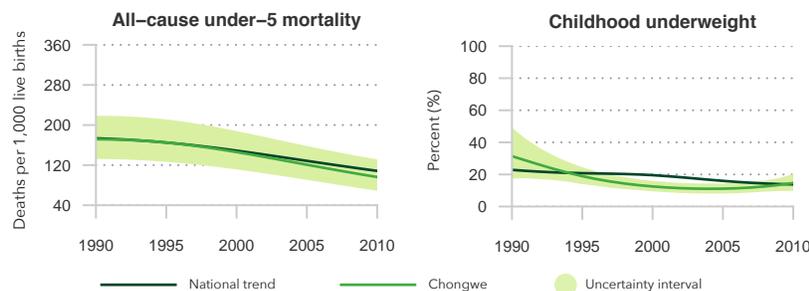
Overall, all-cause under-5 mortality and childhood underweight substantially declined in Chongwe from 1990 to 2010; however, underweight actually increased between 2007 and 2010. Prioritizing ways to accelerate gains for child health outcomes, especially childhood underweight, should be considered.

The district quickly scaled up ITN ownership and IPTp2 through 2010, and rapidly increased coverage of the pentavalent vaccine to very high levels. In 2010, immunization coverage met or exceeded the national average, with Chongwe's measles coverage rising to among the highest in Zambia.

At the same time, coverage of spraying decreased in 2010 and ITN use remained low. Progress in skilled birth attendance was slow, and ANC4 coverage steeply fell, dropping to among the lowest levels in Zambia in 2010. With its low levels of ANC4 in particular, Chongwe will likely benefit from targeting these interventions for improvement.

In 2010, Chongwe met or exceeded national levels for immunizations and malaria interventions (with the exception of ITN use). For maternal and child health interventions, the district had a more mixed performance. In comparison with the national average, Chongwe showed lower levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Chongwe recorded a significant reduction in all-cause under-5 mortality, dropping 44% from 172 deaths per 1,000 live births in 1990 (95% CI: 134, 217) to 96 in 2010 (95% CI: 71, 129). In 2010, the district's under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight substantially decreased from 31% in 1990 (95% CI: 18%, 48%) to 15% in 2010 (95% CI: 10%, 19%), which was comparable to the national average of 14%. However, it is important to note that underweight increased from the district's low of 11% during the early and mid-2000s.

MALARIA INTERVENTIONS



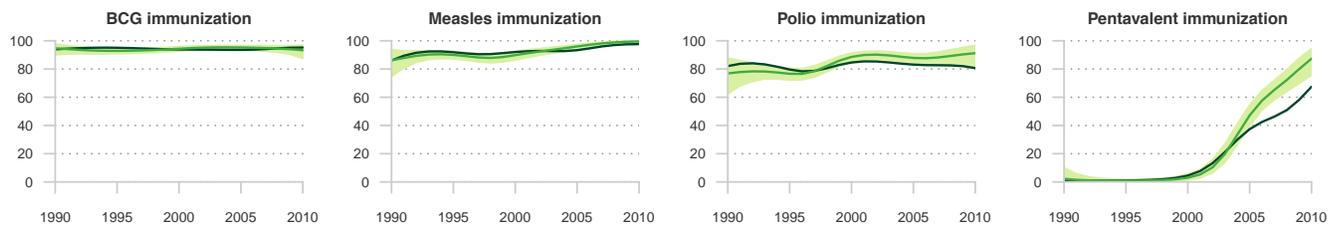
ITN ownership remained below 10% until 2002, after which coverage increased to 67% in 2009 (95% CI: 62%, 72%). Ownership slipped to 66% in 2010 (95% CI: 60%, 72%), but remained higher than the national average of 62%.

The use of ITNs by children under 5 years old increased to 49% in 2009 (95% CI: 43%, 56%), but decreased to 46% in 2010 (95% CI: 39%, 52%), which was lower than the national average of 51%. In 2010, the difference between ITN ownership and use (20 percentage points) was much higher than what was observed at the national level (11 percentage points).

Chongwe formally implemented IRS activities in 2006, and was one of the first 15 districts in Zambia to roll out IRS. IRS coverage increased to 56% in 2008 (95% CI: 52%, 61%) and remained at 56% through 2009, but spraying decreased to 50% in 2010 (95% CI: 44%, 56%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but quickly rose to 60% in 2005 (95% CI: 42%, 76%). Coverage continued to increase but at a slower rate, reaching 87% in 2009 (95% CI: 79%, 93%) and remaining at this level through 2010. This level of IPTp2 coverage far exceeded the national average of 68% for 2010.

IMMUNIZATIONS



BCG coverage never fell below 93% between 1990 and 2010, peaking at 95% from 2001 to 2007 before coming in at 93% in 2010 (95% CI: 88%, 97%). This level of coverage was slightly lower than the national average of 95% for 2010.

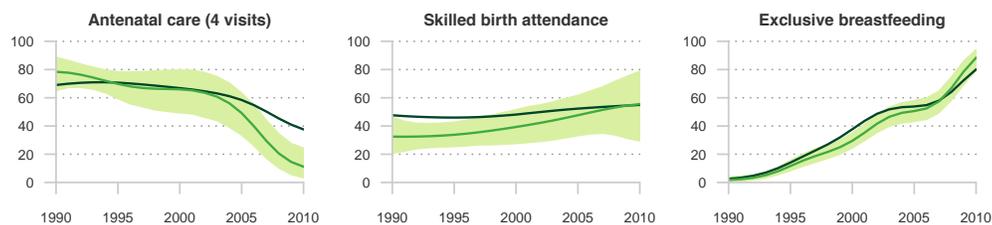
After hovering around 90% between 1990 and 2000, measles immunization rose from 90% in 2000 (95% CI: 86%, 93%) to 100% in 2010 (95% CI: 98%, 100%). This level of coverage was among the highest in Zambia for 2010.

Polio immunization remained below 80% between 1990

and 1997, after which coverage slowly rose to 90% in 2001 (95% CI: 87%, 92%). Polio coverage fell below 90% between 2004 and 2008, but increased to 91% in 2010 (95% CI: 81%, 97%), exceeding the national average of 81%.

After the pentavalent vaccine was formally introduced in Chongwe in 2005, coverage increased to 58% in 2006 (95% CI: 51%, 65%) and 87% in 2010 (95% CI: 76%, 94%), which was among the highest levels in Zambia.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steeply fell from 78% in 1990 (95% CI: 65%, 88%) to 11% in 2010 (95% CI: 3%, 24%), which was among the lowest levels in the country. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Chongwe's levels of coverage fell nearly 70 percentage points during that time is particularly worrisome.

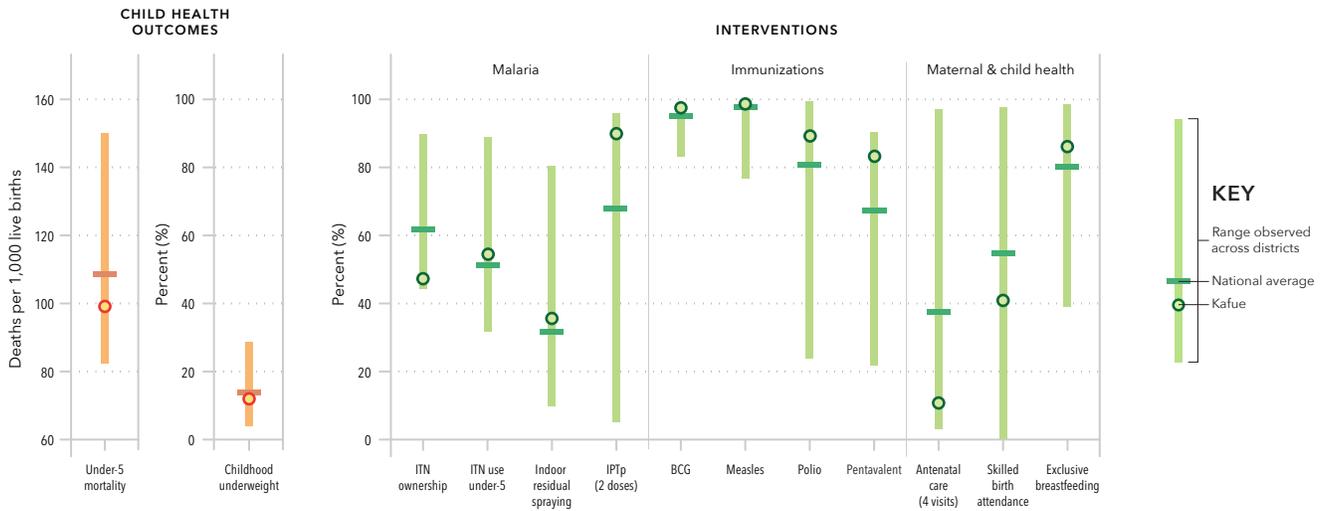
Skilled birth attendance steadily increased from 32% in 1990 (95% CI: 21%, 46%) to 56% in 2010 (95% CI: 30%, 79%).

This level of SBA coverage was comparable to the national average of 55% for 2010, but it remained lower than optimal.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage rapidly rose to 88% in 2010 (95% CI: 80%, 94%), exceeding the national average of 80%.



Kafue



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Kafue experienced substantial reductions in all-cause under-5 mortality and childhood underweight. Given its marked improvement, Kafue should consider ways to maintain these rates of progress in child health outcomes.

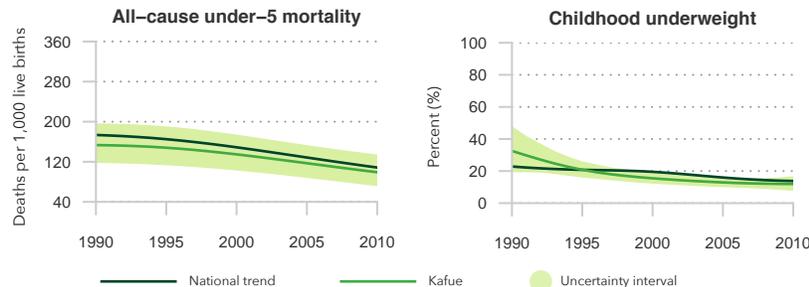
The district was able to rapidly scale up IPTp2 to very high levels through 2010. ITN use exceeded ITN ownership, which suggests that Kafue may have been particularly successful in promoting net use. In 2010, Kafue consistently performed at or above national levels for immunizations, and was able to quickly scale up the pentavalent vaccine to among the highest levels in Zambia in 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. Coverage of ITNs and

IRS decreased from 2009 to 2010, with ITN ownership falling to among the lowest levels in Zambia. ANC4 coverage and skilled birth attendance steeply fell during the mid- to late 2000s. With its low levels of ANC4 in particular, Kafue will likely benefit from targeting these interventions for improvement.

In 2010, Kafue generally exceeded national levels for immunizations and malaria interventions (ITN ownership was the stark exception), but fell below for maternal and child health interventions (with the exception of exclusive breastfeeding). In comparison with the national average, Kafue showed much lower levels of mortality and slightly lower levels of underweight.

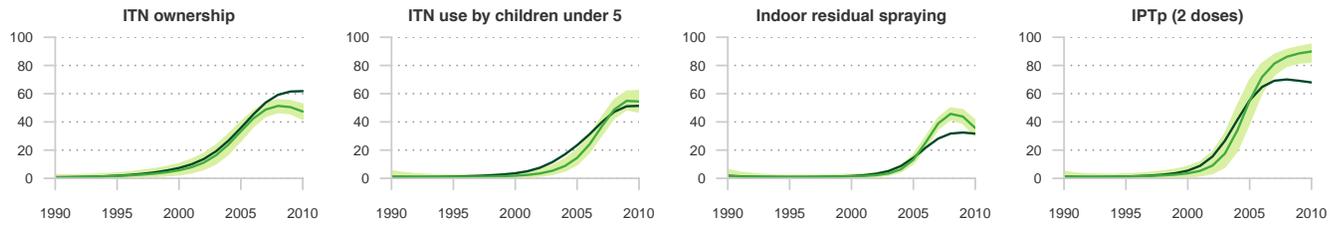
CHILD HEALTH OUTCOMES



From 1990 to 2010, Kafue recorded a significant reduction in all-cause under-5 mortality, dropping 35% from 153 deaths per 1,000 live births in 1990 (95% CI: 120, 194) to 99 in 2010 (95% CI: 73, 133). In 2010, the district's under-5 mortality was well below than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight substantially declined from 33% in 1990 (95% CI: 20%, 47%) to 12% in 2007 (95% CI: 10%, 15%), which was then maintained through 2010. This level of underweight was slightly lower than the national average of 14% for 2010.

MALARIA INTERVENTIONS



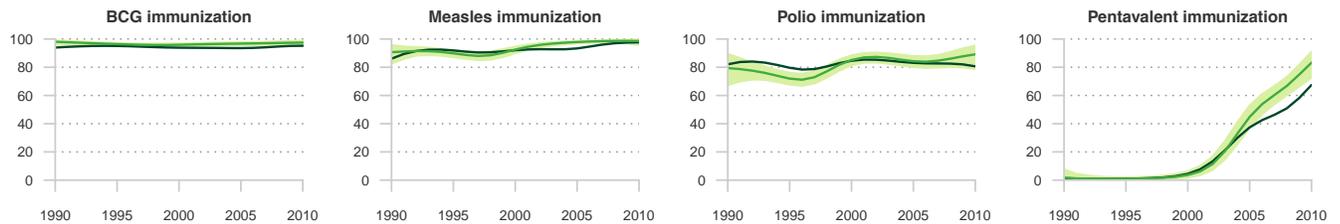
ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 51% in 2008 (95% CI: 47%, 56%). However, ITN ownership declined to 47% in 2010 (95% CI: 42%, 53%), which was among the lowest levels in Zambia.

ITN use by children under 5 years old rapidly increased to 55% in 2009 (95% CI: 49%, 62%), slipping to 54% in 2010 (95% CI: 47%, 62%) but remaining slightly higher than the national average of 51%. In 2010, ITN use exceeded ITN ownership in Kafue, which suggests that net use by children under 5 may be high among households that have ITNs.

Kafue formally implemented IRS activities in 2006, and was one of the first 15 districts in Zambia to roll out IRS. Kafue expanded IRS coverage to 46% in 2008 (95% CI: 42%, 50%), but coverage declined to 36% in 2010 (95% CI: 30%, 41%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage rapidly increased to 90% in 2010 (95% CI: 82%, 95%), rising to among the highest levels in Zambia.

IMMUNIZATIONS



BCG coverage remained above 96% from 1990 to 2010, peaking at 98% in the early 1990s. Coverage was maintained at 97% from 2003 to 2010, which was slightly higher than the national average of 95% for 2010.

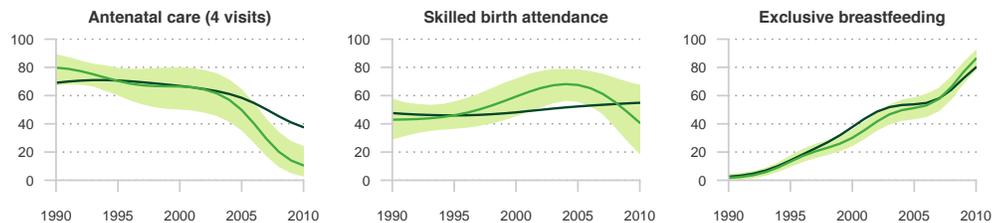
Measles immunization hovered around 90% from 1990 to 1999, but then increased to 99% in 2008 (95% CI: 97%, 99%) and remained at this level of coverage through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization remained below 80% be-

tween 1990 and 1998, but then gradually increased to 89% in 2010 (95% CI: 79%, 95%), rising above the national average of 81%.

After the pentavalent vaccine was formally introduced in Kafue in 2005, coverage increased to 54% in 2006 (95% CI: 47%, 61%) and 83% in 2010 (95% CI: 73%, 91%). Kafue achieved a much higher level of coverage than the national average of 67% for 2010, and had one of the highest levels of pentavalent coverage in Zambia.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 80% in 1990 (95% CI: 68%, 89%) to 10% in 2010 (95% CI: 3%, 24%), which was well below the national average of 37% for 2010 and among the lowest in Zambia for that year. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Kafue's levels of coverage fell 70 percentage points during that time is particularly worrisome.

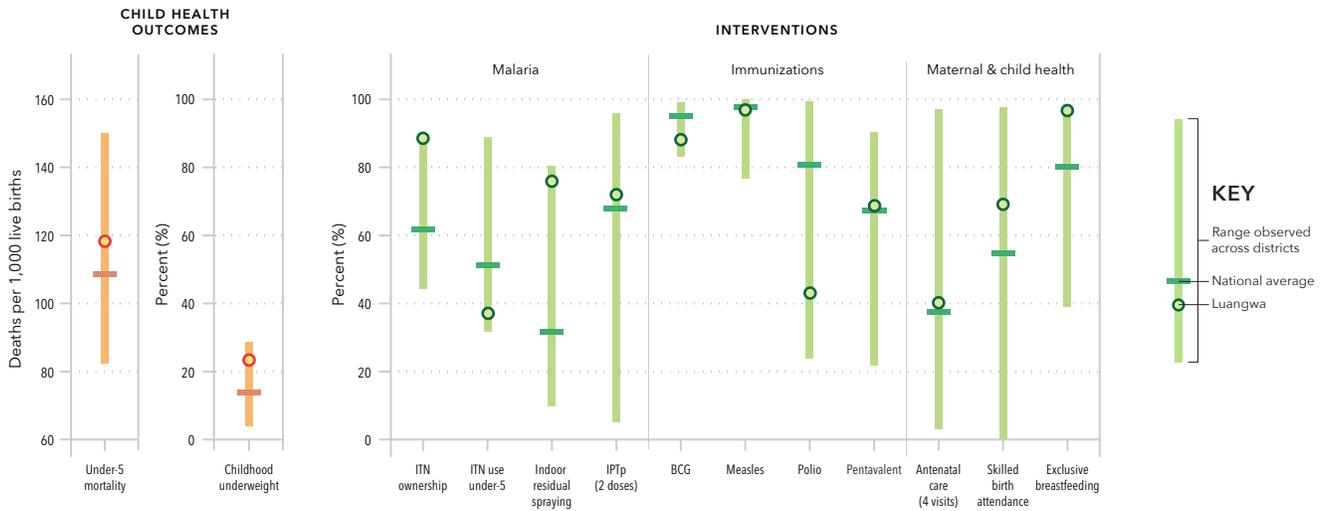
Skilled birth attendance increased from 43% in 1990 (95% CI: 30%, 57%) to 68% in 2004 (95% CI: 57%, 78%) before de-

creasing to 41% in 2010 (95% CI: 19%, 67%), which was below the national average of 55%. This decline is cause for concern given that Kafue brought up SBA coverage above the national average between 2001 and 2006.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which coverage rapidly to 86% in 2010 (95% CI: 79%, 92%), exceeding the national average of 80% for that year.



Luangwa



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

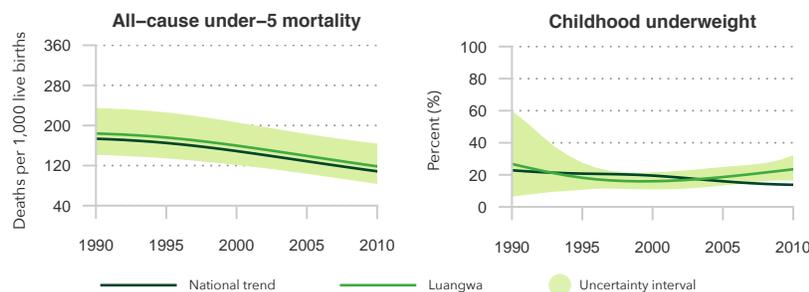
All-cause under-5 mortality substantially decreased in Luangwa between 1990 and 2010, but its levels in 2010 still exceeded the national average. Minimal progress was made in reducing childhood underweight, with levels rising in the 2000s to among the highest in Zambia for 2010. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

The district was able to rapidly scale up ITNs, IRS, and IPTp2 through 2010. Luangwa achieved some of the highest rates of exclusive breastfeeding in the country for 2010. Pentavalent coverage reached the national average in 2010, and high levels of measles coverage were maintained.

However, amidst these gains, several troubling trends were identified and warrant further attention. ITN use remained very low, which starkly contrasts with the district's high levels of ITN ownership. BCG and polio immunization fell among the lowest levels in Zambia for 2010, and perhaps most alarmingly, ANC4 steeply declined after coverage had increased to high levels during the 1990s.

In 2010, Luangwa generally exceeded national levels for maternal and child health interventions and malaria interventions, with the clear exception of ITN use. For immunizations, the district had a more mixed performance. In comparison with the national average, Luangwa showed higher levels of mortality and underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Luangwa recorded a significant reduction in all-cause under-5 mortality, dropping 36% from 184 deaths per 1,000 live births in 1990 (95% CI: 143, 233) to 118 in 2010 (95% CI: 85, 162). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight declined from 27% in 1990 (95% CI: 7%, 59%) to 23% in 2010 (95% CI: 17%, 32%), which was among the highest levels in Zambia. Further, childhood underweight actually increased between 1999 and 2010, from a low of 16% in 1998 (95% CI: 12%, 21%). This trend is cause for concern and warrants further attention.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage increased rapidly to 89% in 2010 (95% CI: 71%, 97%), rising to among the highest levels in Zambia.

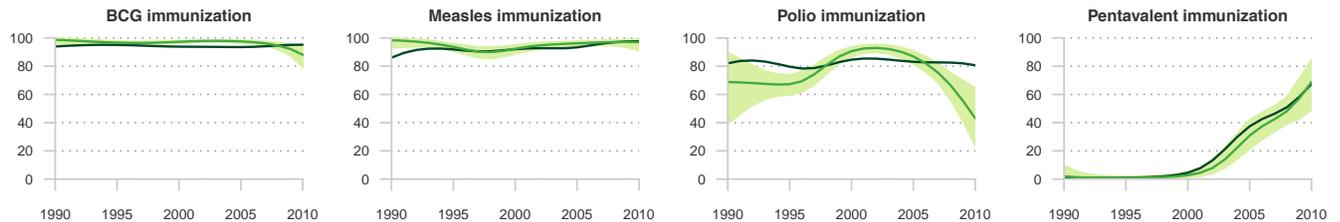
ITN use by children under 5 years old increased to 37% in 2009 (95% CI: 13%, 66%) and remained at this level through 2010, among the lowest in Zambia. This very low level of ITN use was in stark contrast with the district's high levels of ownership. The difference between ITN ownership and use (52 percentage points) was much higher than what was observed nationally (11 percentage points), which suggests that the dis-

trict's net use culture may be minimal.

Luangwa formally implemented IRS activities in 2010, and reached 76% of households that year (95% CI: 64%, 86%). This level of IRS coverage was among the highest in Zambia for 2010, irrespective of IRS start year.

The proportion of pregnant women who received IPTp2 remained below 10% until 2004, but rapidly rose to 50% in 2007 (95% CI: 22%, 80%). Coverage continued to rise but at a slower rate, reaching 72% in 2010 (95% CI: 27%, 96%) and slightly exceeding the national average of 68%.

IMMUNIZATIONS



BCG coverage remained above 96% from 1990 to 2006, but steadily decreased to 88% in 2010 (95% CI: 79%, 94%). This level of BCG immunization was among the lowest in Zambia for that year.

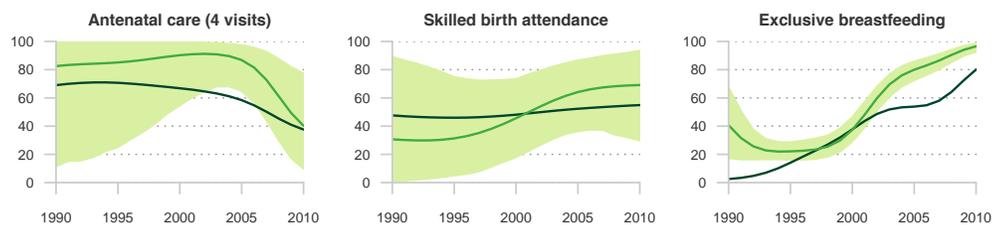
After declines in the 1990s, measles immunization increased to 97% in 2006 (95% CI: 94%, 98%) and remained at this level through 2010, only slightly below the national average of 98%.

Coverage of polio immunization varied in the 1990s, remaining below 70% from 1990 to 1996 before rising to 93%

in 2001 and 2002. Polio coverage then declined, dropping to 43% in 2010 (95% CI: 24%, 65%) and falling to among the lowest levels in the country. This steep decrease in polio immunization is particularly surprising given that coverage was above the national average during the early 2000s.

After the pentavalent vaccine was formally introduced in Luangwa in 2005, coverage increased to 37% in 2006 (95% CI: 28%, 47%) and 69% in 2010 (95% CI: 49%, 85%), which was slightly higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



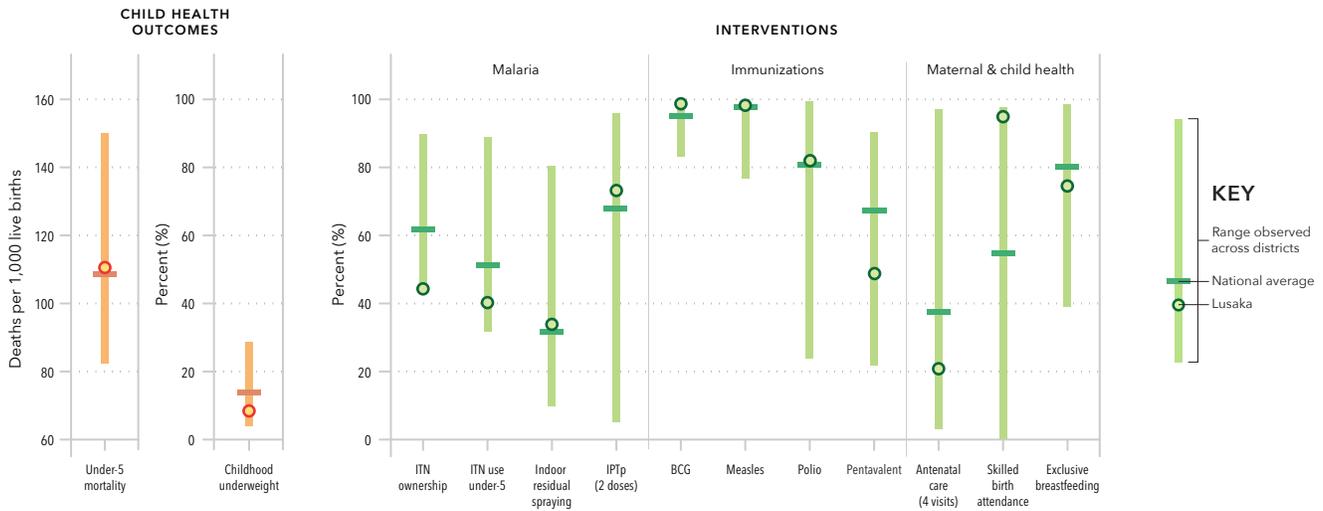
ANC4 coverage increased from 83% in 1990 (95% CI: 12%, 100%) to 91% in 2001 (95% CI: 60%, 99%), but rapidly decreased to 40% in 2010 (95% CI: 10%, 77%). Although this level of ANC4 was slightly higher than the national average of 37% in 2010, the finding that ANC4 declined more than 50 percentage points in seven years is worrisome.

Skilled birth attendance slowly increased from 31% in

1990 (95% CI: 1%, 89%) to 69% in 2009 (95% CI: 32%, 92%). This level of coverage was sustained through 2010, exceeding the national average of 55%.

The proportion of children who were exclusively breastfed dropped from 41% in 1990 (95% CI: 17%, 67%) to below 30% until 1999, after which coverage increased to 97% in 2010 (95% CI: 93%, 99%), one of the highest levels in Zambia for that year.

Lusaka



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

All-cause under-5 mortality moderately decreased in Lusaka from 1990 to 2010. Childhood underweight was halved between 2001 and 2010, falling to some of the lowest levels in Zambia in 2010. Prioritizing ways to accelerate declines in under-5 mortality should be considered.

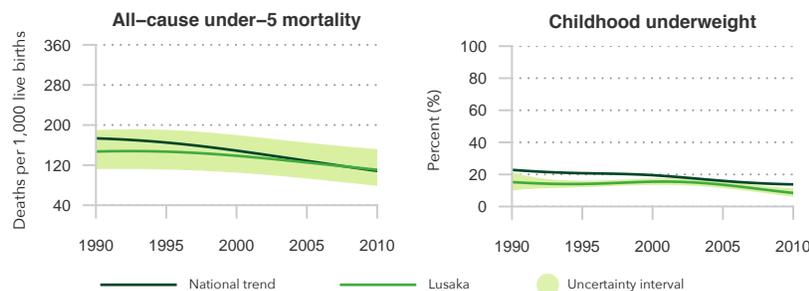
Lusaka achieved high levels of IPTp2, and further increased its previously high levels of skilled birth attendance. The district maintained high coverage for most routine immunizations, with its levels of BCG becoming some of the highest in Zambia for 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. In comparison with the

rest of Zambia, Lusaka's scale-up of ITNs was quite low. IRS coverage fell from its peak in 2008, and the district's level of pentavalent coverage was among the lowest in the country for 2010. Alarming, ANC4 coverage dramatically fell in recent years.

In 2010, Lusaka met or exceeded national levels for immunizations (with pentavalent coverage as the stark exception), but fell below for maternal and child health interventions (with the exception of the district's high levels of skilled birth attendance). For malaria interventions, the district had a more mixed performance. In comparison with the national average, Lusaka showed similar levels of mortality and much lower levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Lusaka recorded a reduction in all-cause under-5 mortality, dropping 25% from 147 deaths per 1,000 live births in 1990 (95% CI: 114, 188) to 111 in 2010 (95% CI: 81, 150); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

During the 1990s, the proportion of children who were underweight remained relatively unchanged. After 2000, however, underweight decreased from 16% in 2001 (95% CI: 14%, 17%) to 8% in 2010 (95% CI: 7%, 11%), falling well below the national average of 14%. This level of childhood underweight was among the lowest in Zambia for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage rose to 47% in 2008 (95% CI: 45%, 49%). ITN ownership slightly declined to 44% in 2010 (95% CI: 42%, 47%), which was among the lowest in Zambia for that year.

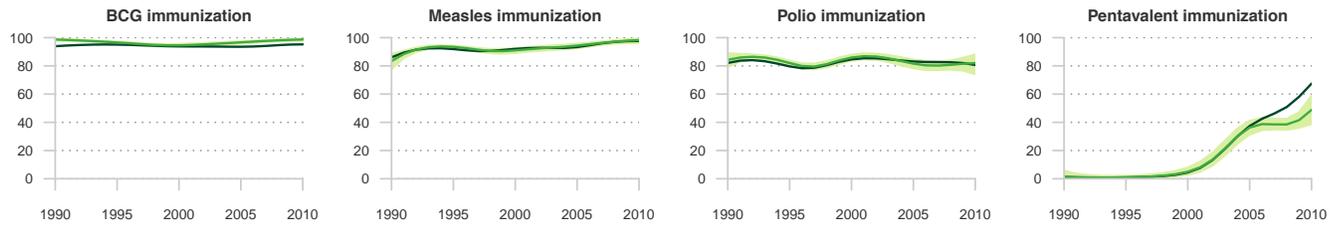
ITN use by children under 5 years old increased to 45% in 2009 (95% CI: 42%, 48%), but dropped slightly to 40% in 2010 (95% CI: 37%, 44%), falling well below the national average of 51% and among the lowest in the country for that year. However, in 2010, the difference between ITN ownership and ITN use was quite low in Lusaka, which suggests that net use by children

under 5 may be high among households that have ITNs.

Lusaka formally implemented IRS activities in 2003, and was one of the first 15 districts in Zambia to roll out IRS. Coverage peaked at 46% in 2008 (95% CI: 43%, 48%), and fell to 34% in 2010 (95% CI: 31%, 37%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly increased to 75% in 2009 (95% CI: 68%, 80%). IPTp2 coverage fell slightly to 73% in 2010 (95% CI: 66%, 79%) but still exceeded the national average of 68%.

IMMUNIZATIONS



BCG coverage was consistently at or above 95% from 1990 to 2010, only decreasing to 95% from 1997 to 2002 before rising to 99% in 2010 (95% CI: 98%, 99%). This level of BCG coverage was among the highest in Zambia for 2010.

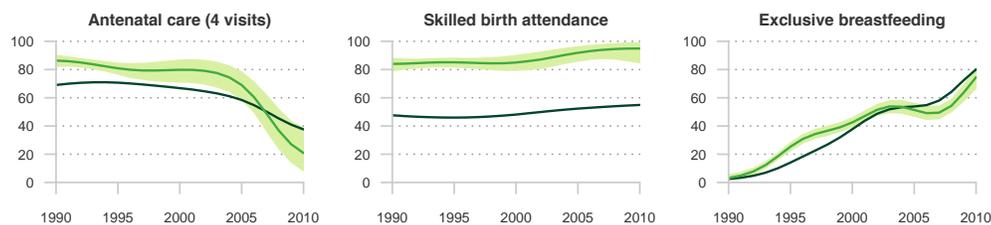
After exceeding 90% coverage in 1992, measles immunization in Lusaka largely stagnated between 90% and 94% from 1992 to 2005. In 2006, coverage began to increase gradually, reaching 98% in 2010 (95% CI: 96%, 99%) and equaling the national average for 2010.

Polio immunization fell from 86% in the early 1990s to 80%

in 1996 (95% CI: 78%, 82%) before rising to 87% in the early 2000s. Coverage declined again, dropping to 80% in 2006 (95% CI: 77%, 84%), but increased to 82% in 2010 (95% CI: 74%, 88%). Lusaka's level of polio coverage in 2010 was comparable to the national average of 81%.

After the pentavalent vaccine was formally introduced in Lusaka in 2005, coverage hovered around 39% through 2008 and then increased to 49% in 2010 (95% CI: 39%, 59%), which was among the lowest in Zambia. The district's marginal scale-up of the pentavalent vaccine is cause for concern.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage remained between 78% and 86% from 1990 to 2003, but declined to 21% in 2010 (95% CI: 8%, 38%), falling below the national average of 37%. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Lusaka's levels of coverage fell 65 percentage points during this time is troubling.

Skilled birth attendance increased from 84% in 1990 (95% CI: 79%, 88%) to 95% in 2010 (95% CI: 85%, 99%), which was

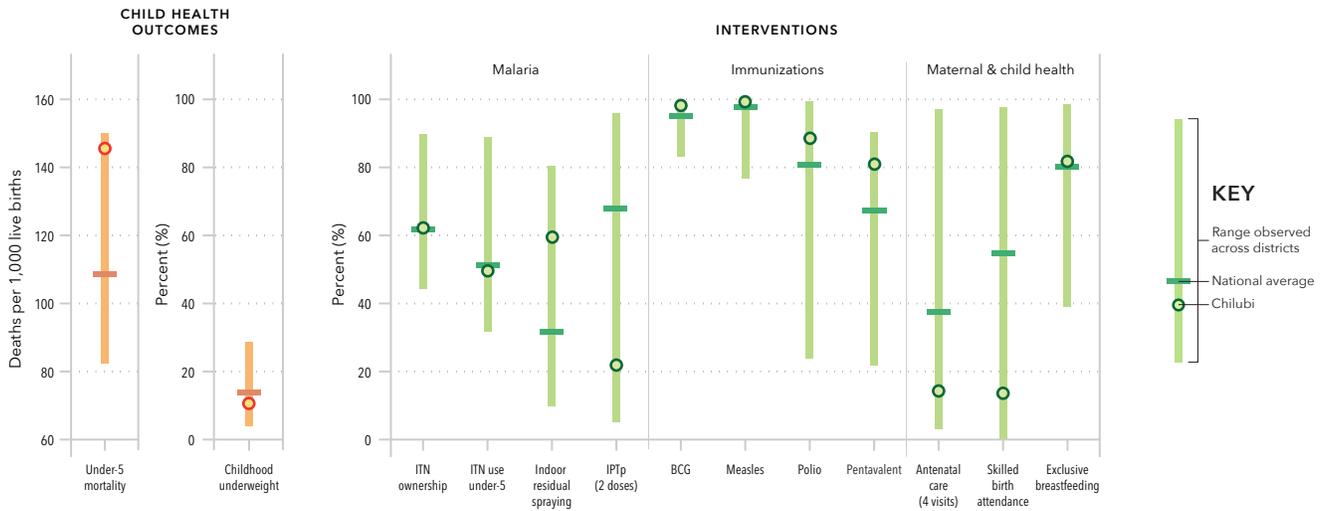
among the highest levels of coverage in Zambia for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage rose to 54% in 2003 and 2004. Coverage dropped below 50% between 2006 and 2007 before increasing to 75% in 2010 (95% CI: 67%, 81%), which was lower than the national average of 80% for that year.

Northern province



Chilubi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

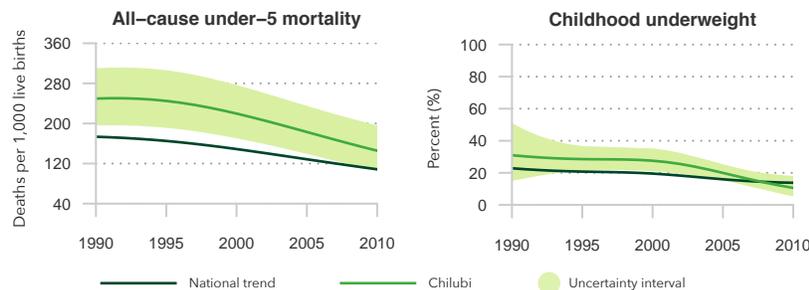
Chilubi substantially reduced all-cause under-5 mortality and childhood underweight between 1990 and 2010, but its mortality levels remained among the highest in the country in 2010. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

The district scaled up IRS coverage to some of the highest levels in Zambia, and successfully increased pentavalent coverage above the national average in 2010. High levels of BCG and measles coverage were maintained, and polio immunization exceeded the national average starting in the late 2000s. Exclusive breastfeeding rose to levels comparable to the national average in 2010.

However, amidst these gains, several worrisome trends were identified and warrant further attention. ITN coverage declined in 2010, and IPTp2 coverage fell sharply to some of the lowest levels in Zambia. Skilled birth attendance remained very low from 1990 to 2010, and ANC4 steadily decreased to some of the lowest levels of coverage in the country during the late 2000s.

In 2010, Chilubi generally met or exceeded national levels for immunizations and malaria interventions (with the clear exception of IPTp2), but equaled or fell below for maternal and child health interventions. In comparison with the national average, Chilubi showed much higher levels of mortality and lower levels of childhood underweight.

CHILD HEALTH OUTCOMES

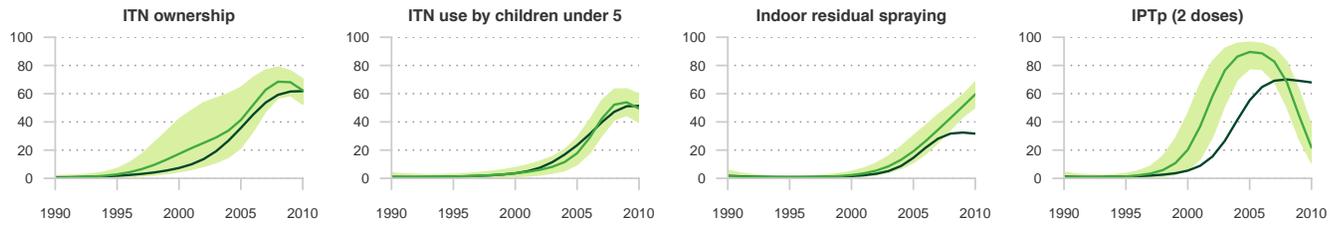


From 1990 to 2010, Chilubi recorded a significant reduction in all-cause under-5 mortality, dropping 42% from 250 deaths per 1,000 live births in 1990 (95% CI: 198, 308) to 146 in 2010 (95% CI: 108, 194). In 2010, the district's under-5 mortality remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia. However, it is important to note that the gap between Chilubi's level of under-5 mortality and the na-

tional level has decreased since 1990.

The proportion of children who were underweight substantially declined from 31% in 1990 (95% CI: 16%, 50%) to 11% in 2010 (95% CI: 6%, 17%), which was lower than the national average of 14%. Chilubi's reduction in underweight is particularly notable given that its prevalence of childhood underweight was higher than the national average in 1990.

MALARIA INTERVENTIONS



ITN ownership remained under 10% until 1998, after which coverage rapidly increased to 68% in 2008 (95% CI: 57%, 79%). Ownership slipped to 62% in 2010 (95% CI: 53%, 70%), equaling the national average for that year.

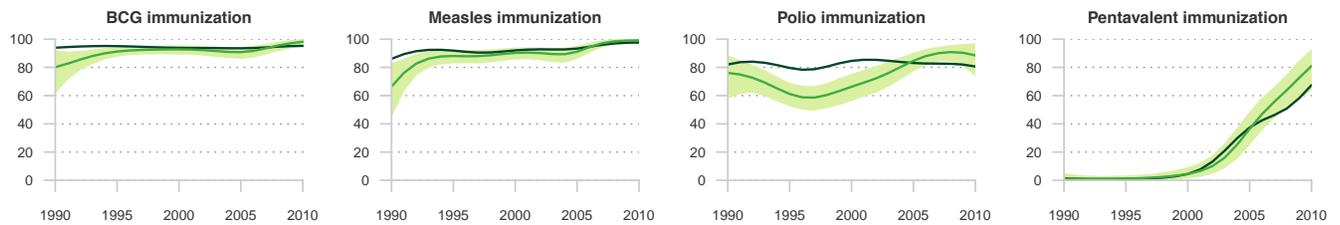
ITN use by children under 5 years old quickly rose to 54% in 2009 (95% CI: 45%, 63%) before dropping to 50% in 2010 (95% CI: 40%, 60%). This level of ITN use was similar to the national average of 51% for 2010. The difference between ITN ownership and use (12 percentage points) in Chilubi was comparable to what was observed at the national level for 2010.

Chilubi formally implemented IRS activities in 2008, and

reached 60% of households in 2010 (95% CI: 50%, 68%). This scale-up of IRS was on the higher end as compared to other districts that also began IRS in 2008. Further, Chilubi recorded one of the highest levels of IRS in Zambia for 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 1999, after which coverage rapidly increased to 90% in 2005 (95% CI: 78%, 96%). IPTp2 coverage fell as quickly as it rose, declining to 22% in 2010 (95% CI: 11%, 37%), among the lowest in Zambia. The district's steep decrease in IPTp2 coverage is cause for concern.

IMMUNIZATIONS



BCG coverage generally increased between 1990 and 2010, rising from 80% in 1990 (95% CI: 62%, 91%) to 98% in 2010 (95% CI: 95%, 99%). This level of BCG immunization was higher than the national average of 95% in 2010.

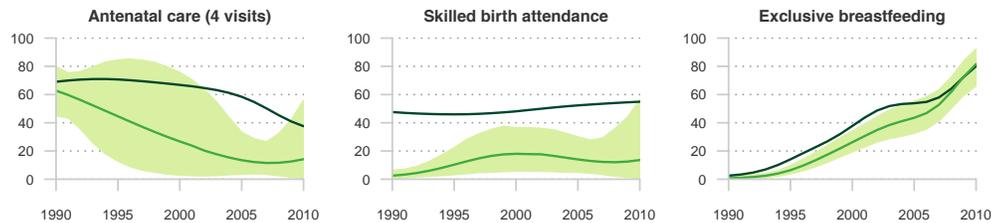
Measles immunization increased from 66% in 1990 (95% CI: 46%, 83%) to 99% in 2010 (95% CI: 97%, 100%), slightly exceeding the national average of 98%.

Coverage of polio immunization dropped from 76% in

1990 (95% CI: 59%, 88%) to 59% in 1996 (95% CI: 51%, 66%) before rising to 91% in 2008 (95% CI: 85%, 95%). Polio coverage decreased slightly to 89% in 2010 (95% CI: 75%, 97%), but remained higher than the national average of 81%.

After the pentavalent vaccine was formally introduced in Chilubi in 2005, coverage increased to 47% in 2006 (95% CI: 36%, 58%) and 81% in 2010 (95% CI: 64%, 92%), exceeding the national average of 67% for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 63% in 1990 (95% CI: 45%, 80%) to 12% in the mid-2000s. Coverage slightly increased to 14% in 2010 (95% CI: 1%, 56%), but remained among the lowest in Zambia. The finding that Chilubi's levels of coverage fell 49 percentage points between 1990 and 2010 is troubling.

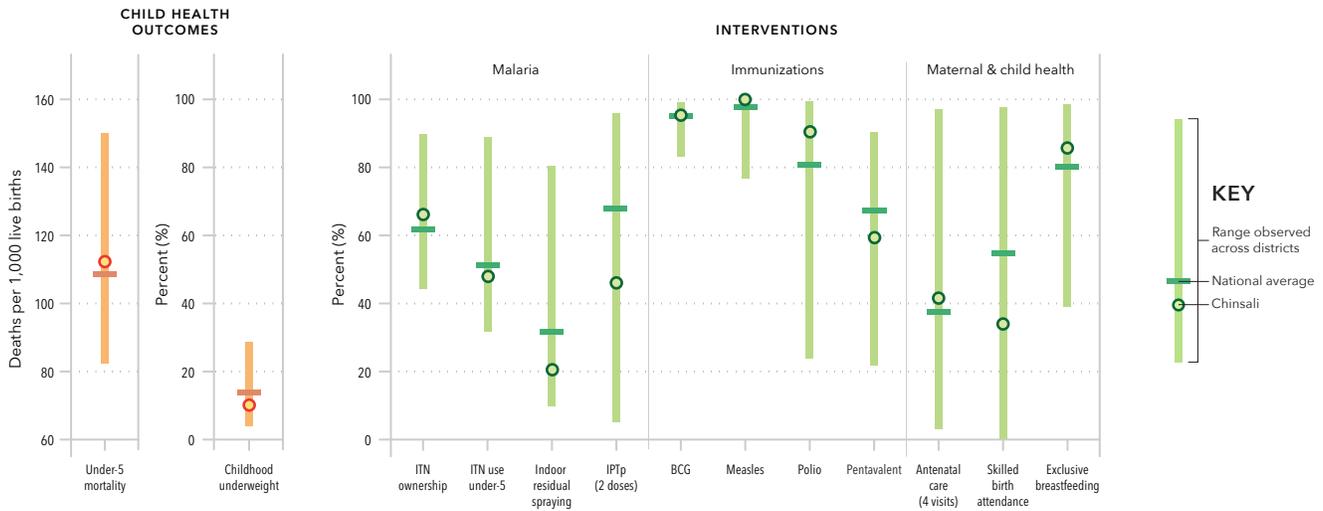
Skilled birth attendance steadily increased from 2% in 1990 (95% CI: 1%, 6%) to 18% in the early 2000s, after which coverage fell slightly to 12% during the late 2000s. SBA cov-

erage rose to 14% in 2010 (95% CI: 1%, 56%), which remained below the national average of 55%. Chilubi's consistently low levels of SBA coverage are cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1999, after which coverage increased to 82% in 2010 (95% CI: 66%, 92%). This level of coverage was comparable to the national average of 80% for 2010.



Chinsali



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

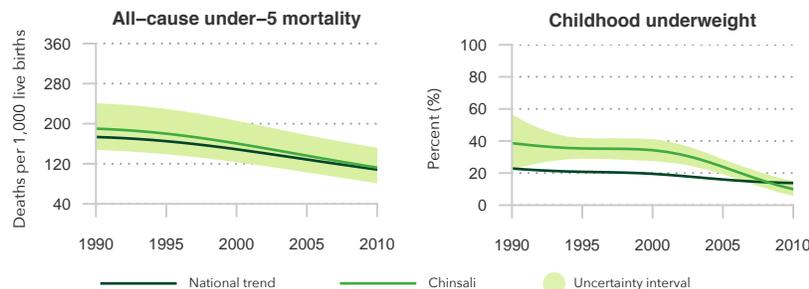
Chinsali substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010, but its levels of under-5 mortality remained slightly higher than the national average in 2010. More progress was made for childhood underweight, especially given the district's high levels in 1990. Prioritizing ways to further accelerate gains for child health outcomes, especially under-5 mortality, should be considered.

The district expanded ITN ownership to national levels in 2010, and also scaled up coverage of exclusive breastfeeding to levels comparable to the national average. Chinsali recovered from dips in vaccine coverage, increasing BCG, measles, and polio immunization to or above the national average in 2010. Further, Chinsali recorded one of the highest levels of measles coverage in Zambia for 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. IPTp2 coverage substantially decreased from its peak in 2006, and Chinsali's scale-up of the pentavalent vaccine consistently lagged behind the national trend. Despite small gains in coverage, skilled birth attendance and ANC4 remained quite low in 2010.

In 2010, Chinsali generally met or exceeded national levels for immunizations (with the exception of the pentavalent vaccine) and maternal and child health interventions (excluding skilled birth attendance). For malaria interventions, the district had a more mixed performance. In comparison with the national average, Chinsali showed slightly higher levels of mortality and lower levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Chinsali recorded a significant reduction in all-cause under-5 mortality, dropping 41% from 190 deaths per 1,000 live births in 1990 (95% CI: 150, 239) to 112 in 2010 (95% CI: 83, 150). In 2010, the district's under-5 mortality remained slightly higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight substantially decreased from 39% in 1990 (95% CI: 23%, 56%) to 10% in 2010 (95% CI: 6%, 14%), which was lower than the national average of 14%. Chinsali's progress is particularly notable given how high its prevalence of underweight was in the 1990s.

MALARIA INTERVENTIONS



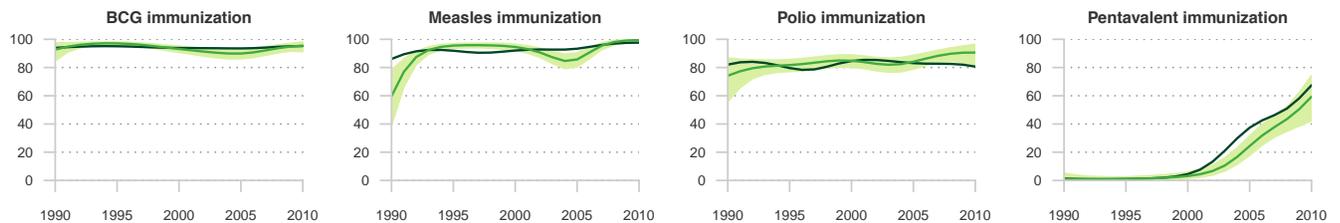
ITN ownership remained below 10% until 2000, after which coverage quickly increased to 67% in 2009 (95% CI: 61%, 73%). Ownership slightly slipped to 66% in 2010 (95% CI: 59%, 73%), but remained above the national average of 62%.

ITN use by children under 5 years old rapidly increased to 52% in 2009 (95% CI: 47%, 58%), but dropped slightly to 48% in 2010 (95% CI: 42%, 54%). This level of ITN use was marginally lower than the national average of 51% for 2010. The difference between ITN ownership and use (18 percentage points) was higher in Chinsali than what was observed at the national level (11 percentage points) for 2010.

Chinsali formally implemented IRS activities in 2010, and reached 20% of households that year (95% CI: 15%, 27%). This scale-up of IRS was on the lower end in comparison with the other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly increased to 75% in 2006 (95% CI: 63%, 85%). IPTp2 coverage steadily fell to 46% in 2010 (95% CI: 34%, 58%), which was well below the national average of 68%. The district's recent declines in IPTp2 coverage are cause for concern.

IMMUNIZATIONS



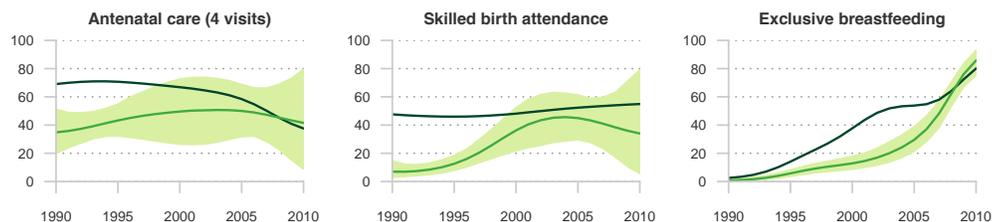
BCG immunization increased to 97% in the mid-1990s before declining to 90% in the mid-2000s. Coverage then rose to 95% in 2010 (95% CI: 91%, 98%), equaling the national average for that year.

Measles immunization quickly increased from 60% in 1990 (95% CI: 39%, 78%) to 96% in the mid- to late 1990s. Coverage dipped below 90% during the mid-2000s, but climbed to 100% in 2010 (95% CI: 98%, 100%), rising to among the highest in Zambia for 2010.

Coverage of polio immunization steadily rose from 74% in 1990 (95% CI: 56%, 87%) to 85% in 1999 and 2000. Polio coverage briefly fell to 82% in the mid-2000s, but increased to 91% in 2009 (95% CI: 83%, 95%). This level of coverage was sustained through 2010, far exceeding the national average of 81%.

After the pentavalent vaccine was formally introduced in Chinsali in 2005, coverage increased to 38% in 2007 (95% CI: 31%, 46%) and 59% in 2010 (95% CI: 42%, 74%). This level of pentavalent coverage was lower than the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS

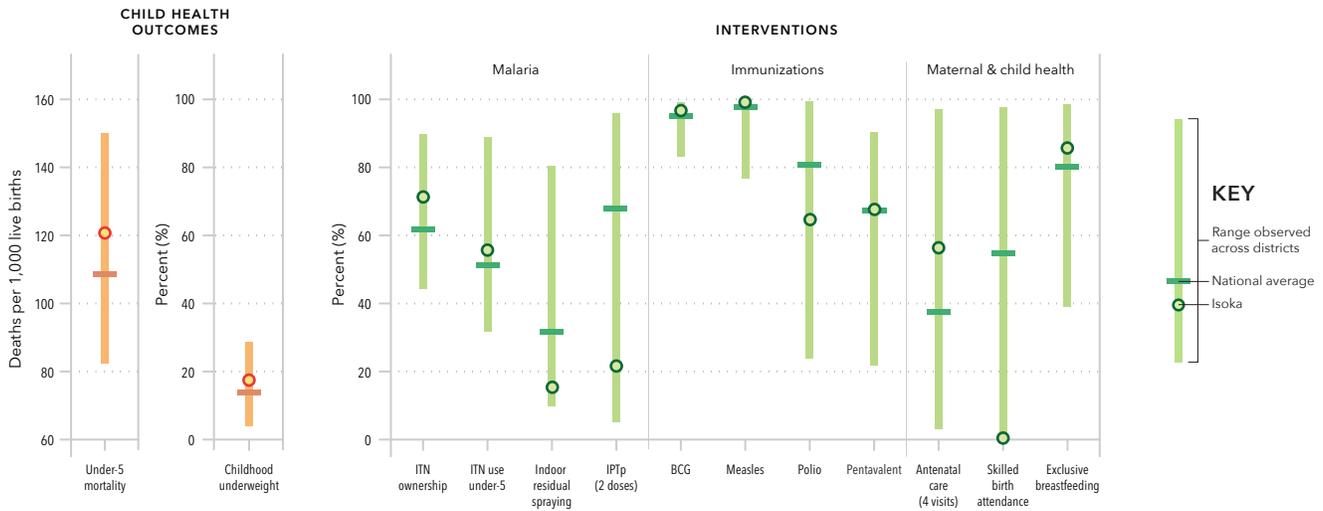


ANC4 coverage gradually increased from 35% in 1990 (95% CI: 20%, 51%) to 50% in the early 2000s, after which coverage slowly declined to 42% in 2010 (95% CI: 9%, 80%). While ANC4 coverage in Chinsali was higher than the national average of 37% in 2010, its levels remained lower than optimal.

Skilled birth attendance substantially increased from 7% in the early 1990s to 46% in 2004 (95% CI: 29%, 63%), but then

declined to 34% in 2010 (95% CI: 6%, 79%), falling below the national average of 55%. Chinsali's marginal progress in improving SBA over time is worrisome.

The proportion of children who were exclusively breastfed remained below 20% until 2003, after which coverage rapidly increased to 86% in 2010 (95% CI: 75%, 93%), exceeding the national average of 80%.



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

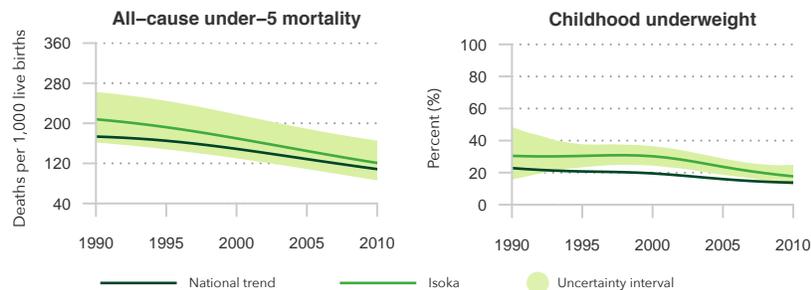
Isoka substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010, but both child health outcomes remained above the national average in 2010. Prioritizing efforts to further accelerate gains for child health outcomes should be considered.

The district recorded an impressive scale-up of ITNs and did so without seeing declines in 2010. After a slight decrease in coverage during the mid-2000s, BCG and measles immunization rebounded to high levels in 2010. Isoka's scale-up of the pentavalent vaccine closely followed the national trend, and the district consistently recorded high levels of exclusive breastfeeding since the late 2000s.

However, amidst these gains, some troubling trends were identified and warrant further attention. The district's scale-up of IPTp2 was minimal, and polio coverage fell in recent years. After steady gains, ANC4 coverage dropped during the late 2000s. Isoka's extremely low levels of SBA coverage are of greatest concern, as it appeared that few, if any, women delivered with a skilled birth attendant in 2010.

In 2010, Isoka generally met or exceeded national levels for immunizations (except for polio immunization) and maternal and child health interventions (with the clear exception of skilled birth attendance). For malaria interventions, the district had a more mixed performance. In comparison with the national average, Isoka showed higher levels of mortality and underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Isoka recorded a significant reduction in all-cause under-5 mortality, dropping 42% from 208 deaths per 1,000 live births in 1990 (95% CI: 164, 260) to 121 in 2010 (95% CI: 88, 163). In 2010, the district's under-5 mortality remained well above the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 30% in 1990 (95% CI: 16%, 48%) to 18% in 2010 (95% CI: 13%, 24%); nonetheless, this level of underweight remained above the national average of 14% for that year.

MALARIA INTERVENTIONS



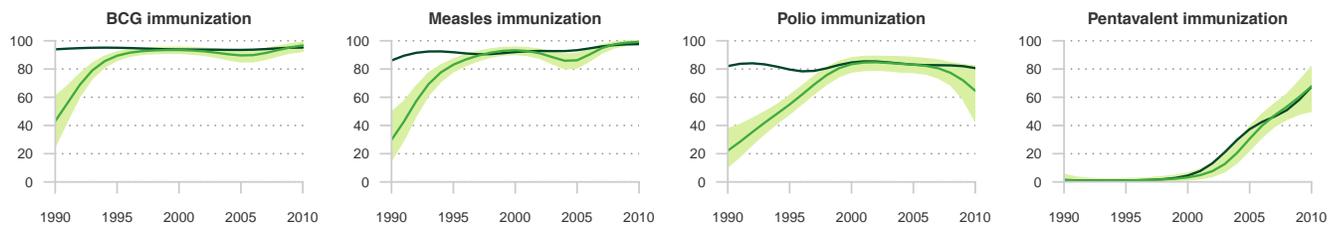
ITN ownership remained below 10% until 2004, after which coverage quickly rose to 71% in 2010 (95% CI: 63%, 78%), exceeding the national average of 62%. Isoka's rapid increase in ITN ownership is notable given that the district's initial scale-up lagged well behind the national trend.

ITN use by children under 5 years old increased to 57% in 2009 (95% CI: 50%, 64%), but slipped to 56% in 2010 (95% CI: 47%, 64%). This level of ITN use remained higher than the national average of 51% in 2010. The difference between ITN ownership and use (15 percentage points) was higher than what was observed nationally (11 percentage points) for 2010.

Isoka formally implemented IRS activities in 2010, and reached 15% of households that year (95% CI: 10%, 22%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2004, after which coverage rose to 22% in 2007 (95% CI: 11%, 38%). Gains in IPTp2 stalled, with coverage slipping to 21% in 2008 and 2009 before returning to 22% in 2010 (95% CI: 12%, 35%), which was among the lowest in Zambia for that year. Isoka's marginal scale-up of IPTp2 coverage is cause for concern.

IMMUNIZATIONS



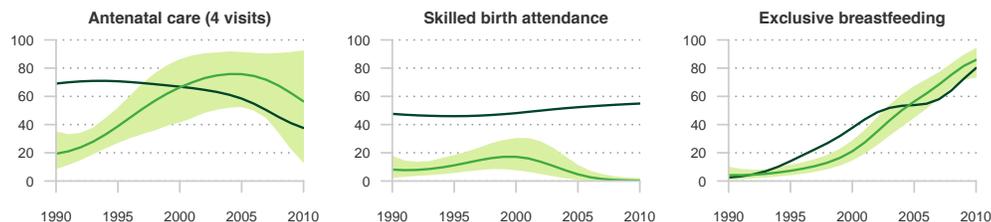
BCG coverage substantially increased from 43% in 1990 (95% CI: 25%, 61%) to 97% in 2010 (95% CI: 93%, 99%), which exceeded the national average of 95% for that year.

Measles immunization rapidly increased from 30% in 1990 (95% CI: 15%, 49%) to 93% in the early 2000s. Coverage slipped below 90% in the mid-2000s, but rose to 99% in 2009 (95% CI: 97%, 100%) and remained at 99% through 2010. This level of measles coverage was slightly higher than the national average of 98% for 2010.

Coverage of polio immunization quickly climbed from 22% in 1990 (95% CI: 11%, 38%) to 85% in the early 2000s. Polio coverage remained slightly above 80% until 2007, after which coverage dropped to 65% in 2010 (95% CI: 43%, 82%) and fell below the national average of 81%.

After the pentavalent vaccine was formally introduced in Isoka in 2005, coverage increased to 40% in 2006 (95% CI: 32%, 48%) and 68% in 2010 (95% CI: 50%, 82%), which was comparable to the national average of 67% for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 19% in 1990 (95% CI: 9%, 35%) to 76% in 2004 (95% CI: 53%, 91%), but decreased to 56% in 2010 (95% CI: 14%, 92%). While coverage in Isoka was higher than the national average of 37% for 2010, its ANC4 levels remained lower than optimal.

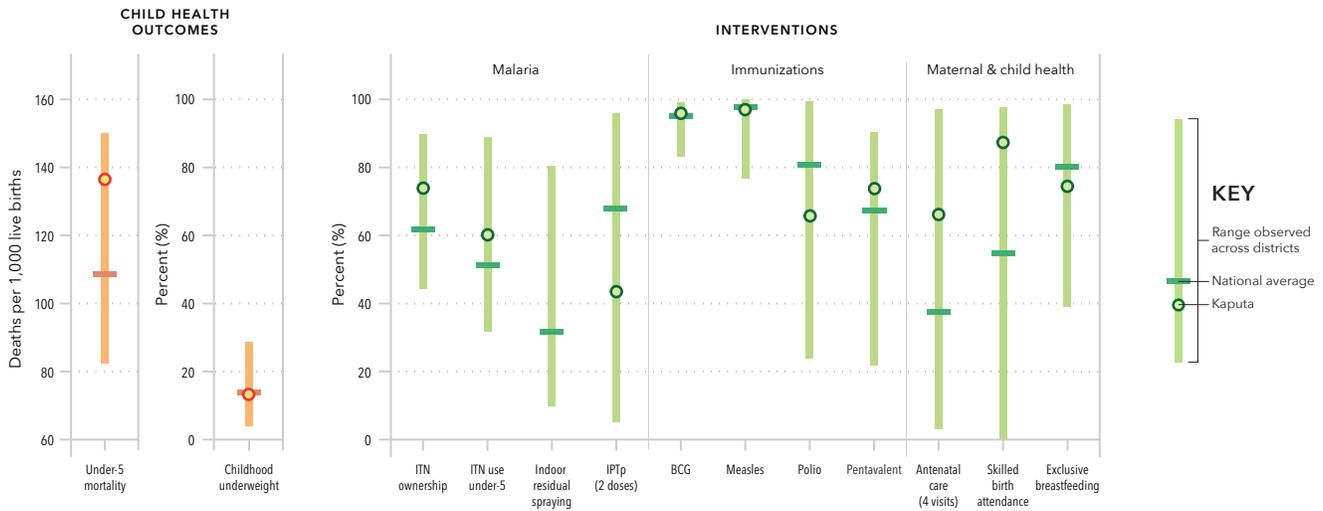
Skilled birth attendance rose above 10% in 1994, reaching 17% in 1999 (95% CI: 9%, 29%), but dropped to just over 0% in 2010 (95% CI: 0%, 2%), which was among the lowest

in Zambia for that year. Isoka's extremely low levels of SBA coverage, especially in the late 2000s, are worrisome. Immediately addressing this serious service delivery gap should be a priority.

The proportion of children who were exclusively breastfed remained below 20% until 2000, after which coverage rose to 86% in 2010 (95% CI: 74%, 93%), exceeding the national average of 80%.



Kaputa



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Kaputa started IRS after 2010.

SUMMARY

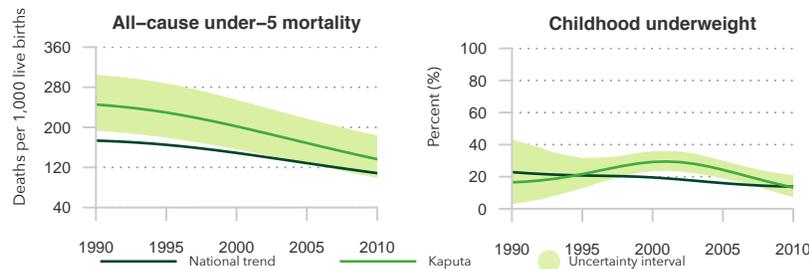
Kaputa substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010, but its levels of under-5 mortality remained among the highest in Zambia for 2010. Prioritizing ways to further accelerate gains for child health outcomes, especially under-5 mortality, should be considered.

The district scaled up ITN coverage and also achieved increases in pentavalent coverage by 2010. BCG and measles immunization recovered to high levels after a period of declines. Remarkably, skilled birth attendance rebounded from extremely low levels in the early 2000s, rising to among the highest levels of SBA coverage in 2010. Other districts may learn from Kaputa's experience in increasing skilled birth attendance.

However, amidst these gains, some troubling trends were identified and warrant further attention. IPTp2 coverage fell substantially from its peak in 2006, and polio coverage dropped in 2010. Coverage of exclusive breastfeeding remained below the national average in 2010, and alarmingly, ANC4 declined after substantially increasing coverage and maintaining high levels for several years.

In 2010, Kaputa generally met or exceeded national levels across interventions, with the exceptions of IPTp2, polio immunization, and exclusive breastfeeding. In comparison with the national averages, Kaputa showed much higher levels of mortality and similar levels of underweight.

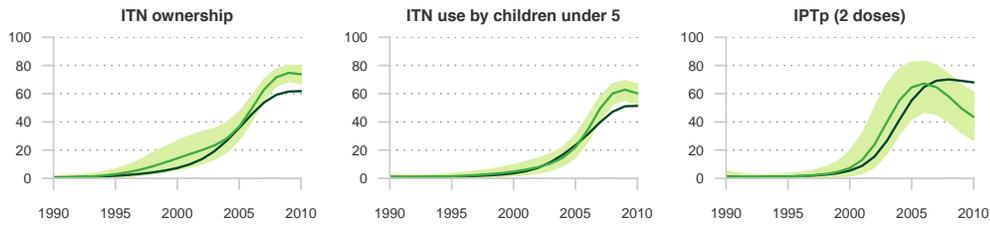
CHILD HEALTH OUTCOMES



From 1990 to 2010, Kaputa recorded a significant reduction in all-cause under-5 mortality, dropping 44% from 245 deaths per 1,000 live births in 1990 (95% CI: 195, 303) to 136 in 2010 (95% CI: 101, 182). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia.

The proportion of children who were underweight increased from 16% in 1990 (95% CI: 4%, 43%) to 29% in the early 2000s, after which levels of underweight fell to 13% in 2010 (95% CI: 8%, 20%). Kaputa's prevalence of underweight was comparable to the national average of 14% for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 1999, after which coverage rapidly increased to 75% in 2009 (95% CI: 69%, 80%). Ownership slightly slipped to 74% in 2010 (95% CI: 67%, 80%), but still far exceeded the national average of 62%.

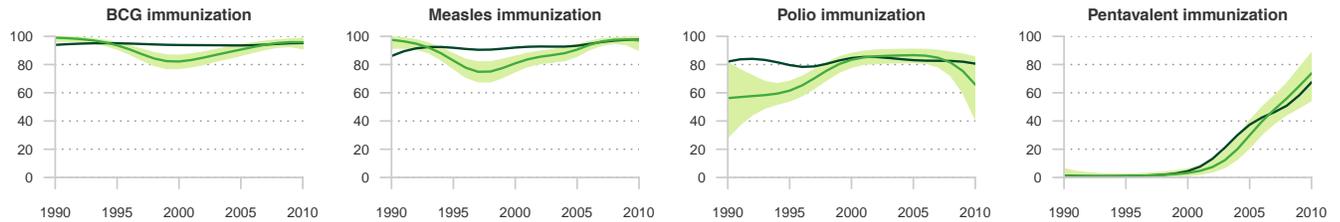
ITN use by children under 5 years old climbed to 63% in 2009 (95% CI: 56%, 69%), but dropped slightly to 60% in 2010 (95% CI: 52%, 67%). This level of ITN use remained higher than the national average of 51% for 2010. The difference between ITN ownership and use (14 percentage points) was higher in Kaputa than what was observed at the national level

(11 percentage points) for 2010.

IRS coverage trends are not included because Kaputa did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rose to 67% in 2006 (95% CI: 47%, 83%). IPTp2 coverage fell to 44% in 2010 (95% CI: 27%, 61%), one of the lowest levels in Zambia. The district's declines in IPTp2 coverage are cause for concern.

IMMUNIZATIONS



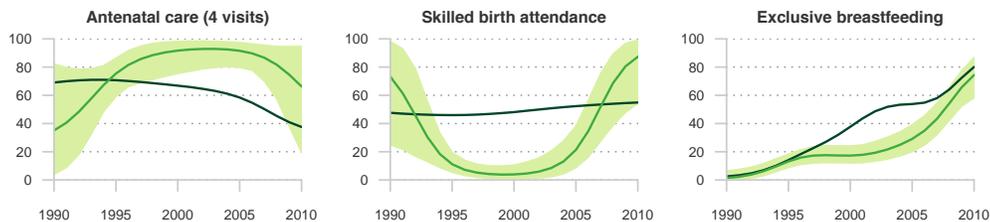
BCG immunization decreased from 99% in the early 1990s to 82% in 2000 (95% CI: 77%, 86%), but rose to 96% in 2009 (95% CI: 93%, 98%) and remained at 96% through 2010. This level of coverage was slightly higher than the national average of 95% for 2010.

Measles immunization declined from 97% in 1990 (95% CI: 92%, 100%) to 75% in the mid-1990s, but rose to 98% in 2008 and 2009. Coverage slipped to 97% in 2010 (95% CI: 90%, 99%), which was slightly lower than the national average of 98%.

Coverage of polio immunization increased from 56% in 1990 (95% CI: 29%, 81%) to 87% in the mid-2000s. Polio coverage remained above 80% until 2009, after which coverage dropped to 66% in 2010 (95% CI: 42%, 85%) and fell below the national average of 81%.

After the pentavalent vaccine was formally introduced in Kaputa in 2005, coverage increased to 40% in 2006 (95% CI: 31%, 50%) and 74% in 2010 (95% CI: 55%, 88%), exceeding the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage quickly increased from 35% in 1990 (95% CI: 4%, 82%) to 93% in the early 2000s, but then declined to 66% in 2010 (95% CI: 20%, 95%). While coverage in Kaputa was higher than the national average of 37% in 2010, its levels remained lower than optimal. Further, the recent reversal of the district's gains in coverage and maintenance of high ANC4 levels is cause for concern.

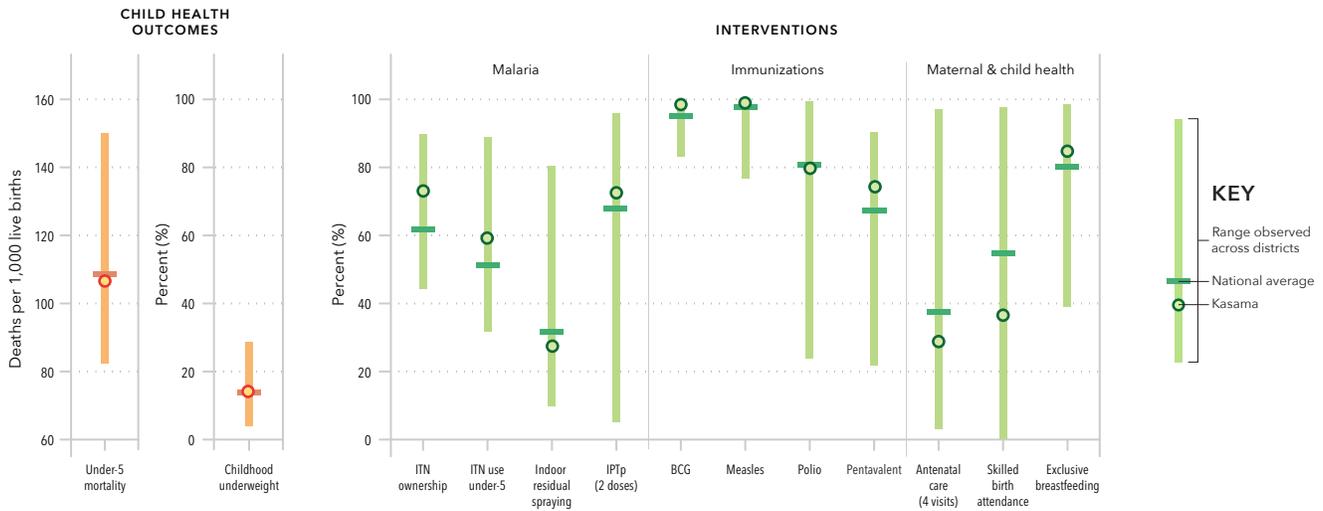
Skilled birth attendance fell sharply from 73% in 1990 (95% CI: 25%, 98%) to 4% in the late 1990s, but coverage

rebounded to 87% in 2010 (95% CI: 54%, 99%), which was among the highest in the country for that year. Kaputa's gains are quite notable, and it is likely that other districts could learn from its progress in increasing SBA coverage.

The proportion of children who were exclusively breastfed remained below 10% until 1994, after which coverage rose to 29% in 2005 (95% CI: 20%, 39%). Gains in coverage then accelerated, with exclusive breastfeeding reaching 74% in 2010 (95% CI: 58%, 87%), which was lower than the national average of 80%.



Kasama



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Kasama substantially reduced all-cause under-5 mortality and childhood underweight between 1990 and 2010, with both child health outcomes being comparable to the national average in 2010. The declines in childhood underweight occurred more recently, as prevalence actually increased until the late 1990s. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

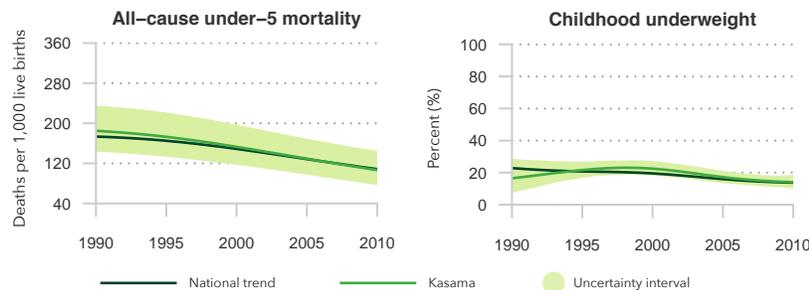
The district saw a large scale-up of ITNs through 2010, and IPTp2 coverage reached levels that were comparable to the national average in 2010. Exclusive breastfeeding steadily increased, and Kasama expanded pentavalent coverage above the national average in 2010. After experiencing declines in the early to mid-2000s, coverage of routine immunizations

returned to high levels. BCG coverage rose to one of the highest levels in Zambia for 2010.

However, amidst these successes, some troubling trends emerged and warrant further attention. Kasama's scale-up of IRS was fairly minimal, and after making steady gains during the 1990s, skilled birth attendance declined through 2010. ANC4 steadily decreased from 1990 to 2010, with coverage levels being quite low in 2010.

In 2010, Kasama generally met or exceeded national levels for immunizations and malaria interventions (aside from IRS), and fell below for maternal and child health interventions (except for exclusive breastfeeding). In comparison with the national average, Kasama had similar levels of mortality and underweight.

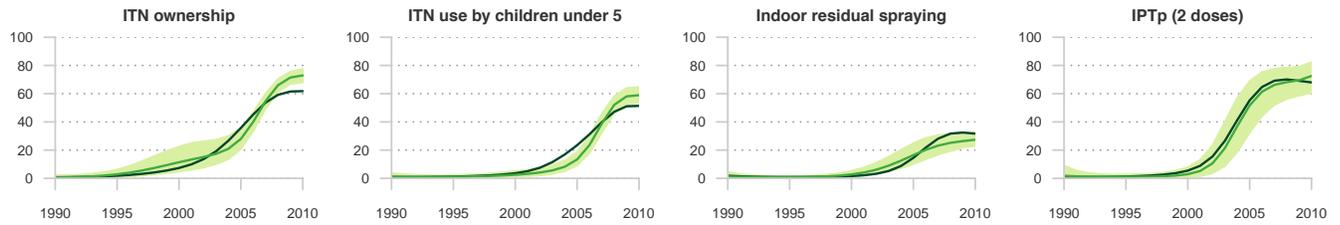
CHILD HEALTH OUTCOMES



From 1990 to 2010, Kasama recorded a significant reduction in all-cause under-5 mortality, dropping 42% from 185 deaths per 1,000 live births in 1990 (95% CI: 146, 233) to 107 in 2010 (95% CI: 79, 143). In 2010, the district's under-5 mortality was similar to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 16% in 1990 (95% CI: 8%, 28%) to 23% in the late 1990s, but then decreased to 14% in 2009 (95% CI: 12%, 17%) and remained at 14% through 2010. This level of childhood underweight equaled the national average for 2010.

MALARIA INTERVENTIONS



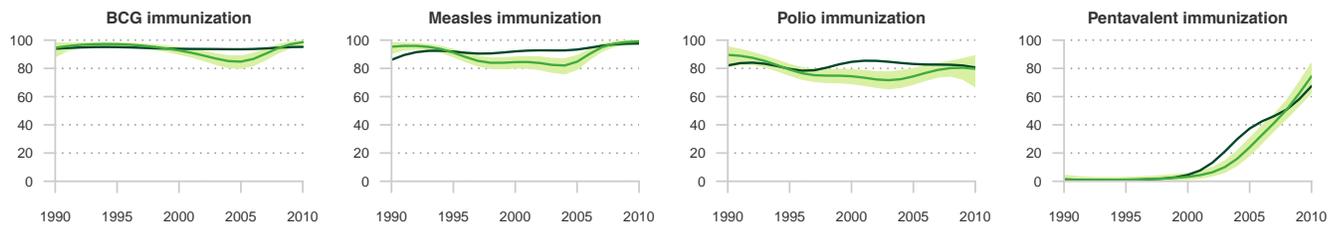
ITN ownership remained below 10% until 2000, after which coverage quickly increased to 73% in 2010 (95% CI: 68%, 78%), far exceeding the national average of 62%.

ITN use by children under 5 years old rapidly rose to 59% in 2010 (95% CI: 53%, 65%), which exceeded the national average of 51%. The difference between ITN ownership and use (14 percentage points) was slightly higher in Kasama than what was observed at the national level (11 percentage points) for 2010.

Kasama formally implemented IRS activities in 2008, and reached 27% of households in 2010 (95% CI: 23%, 33%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly increased to 73% in 2010 (95% CI: 61%, 82%), exceeding the national average of 68%.

IMMUNIZATIONS



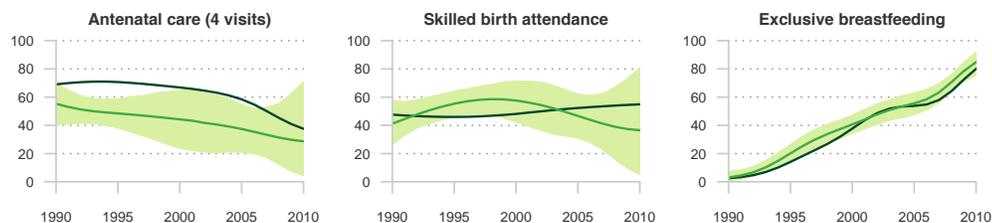
BCG immunization increased to 97% in the early to mid-1990s, but then decreased to 85% in the mid-2000s. Coverage rebounded, rising to 99% in 2010 (95% CI: 97%, 99%), among the highest in Zambia.

Measles immunization decreased from 96% in the early 1990s to 82% in the mid-2000s, but quickly rebounded to 99% in 2009 (95% CI: 97%, 100%) and remained at 99% through 2010. This level of measles coverage was slightly higher than the national average of 98%.

Coverage of polio immunization steadily declined from 90% in 1990 (95% CI: 81%, 95%) to 72% in the mid-2000s, but then increased to 80% in 2008 (95% CI: 75%, 85%). This level of polio coverage was maintained through 2010, which was comparable to the national average of 81%.

After the pentavalent vaccine was formally introduced in Kasama in 2005, coverage increased to 42% in 2007 (95% CI: 36%, 47%) and 74% in 2010 (95% CI: 63%, 83%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage declined from 55% in 1990 (95% CI: 40%, 70%) to 29% in 2010 (95% CI: 4%, 71%), which was lower than the national average of 37%. The finding that Kasama's levels of coverage, which were already low, fell 26 percentage points from 1990 to 2010 is worrisome.

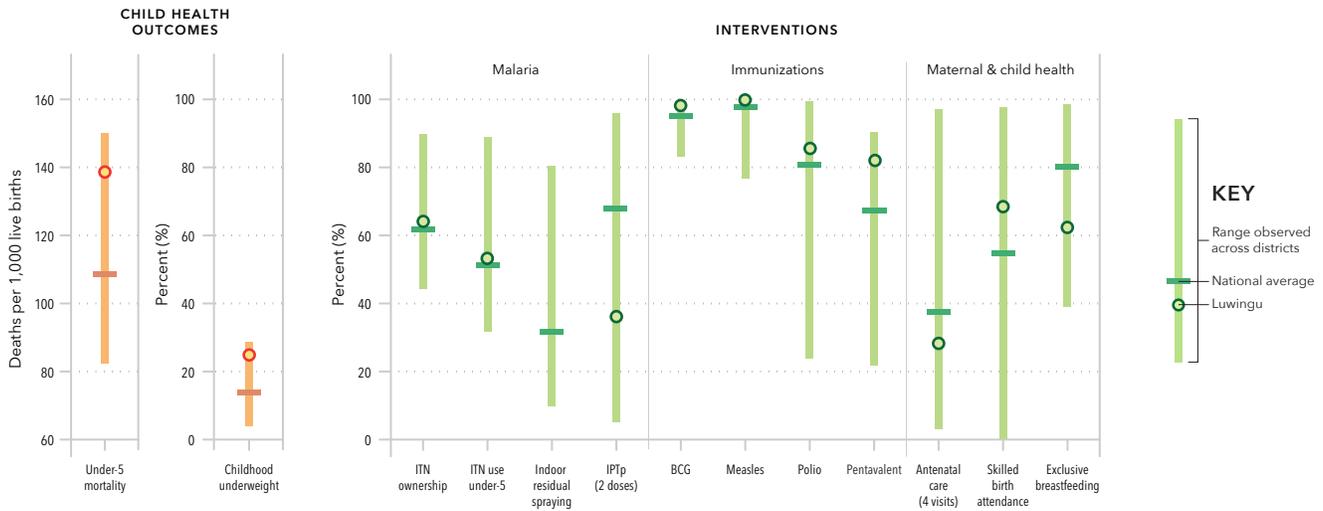
Skilled birth attendance gradually increased from 41% in 1990 (95% CI: 27%, 58%) to 59% in 1998 (95% CI: 48%, 69%) before dropping to 37% in 2010 (95% CI: 5%, 81%). This level of SBA coverage was lower than the national average of 55%,

and Kasama's recent declines in SBA, which contrasted with steady gains at the national level, are cause for concern.

The proportion of children who were exclusively breastfed remained under 20% until 1995, after which coverage steadily increased to 85% in 2010 (95% CI: 76%, 92%), exceeding the national average of 80%.



Luwingu



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Luwingu started IRS after 2010.

SUMMARY

Luwingu substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010, but both child health outcomes remained among the highest in Zambia in 2010. The district's progress is notable, given how high under-5 mortality and underweight were in the 1990s, but efforts to further accelerate these gains should be considered.

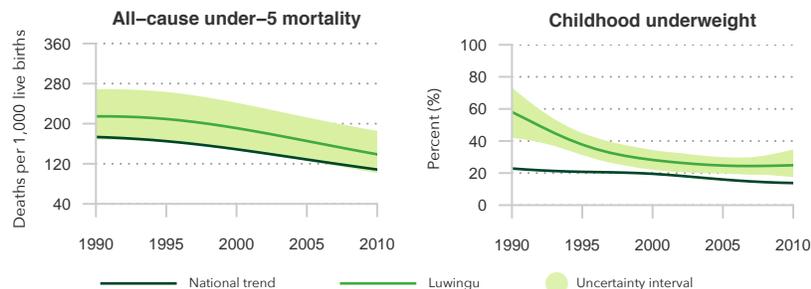
The district rapidly scaled up ITNs through 2010, and coverage of the pentavalent vaccine far exceeded the national average in 2010. After recording consistently lower levels of coverage in the 1990s and early 2000s, Luwingu brought coverage of routine immunizations above national levels in 2010. Notably, Luwingu's measles coverage was among the highest in Zambia for 2010. Skilled birth attendance steadily increased over time, rising from very low levels in 1990 to

above the national average in 2010.

However, amidst these successes, some worrisome trends were identified and warrant further attention. IPTp2 coverage fell sharply from its peak in 2006, and coverage of exclusive breastfeeding was among the lowest in Zambia for 2010. ANC4 coverage gradually increased until the mid-2000s, after which coverage quickly dropped to very low levels.

In 2010, Luwingu generally met or exceeded national levels for immunizations and malaria interventions (except for IPTp2), and fell below for maternal and child health interventions (aside from skilled birth attendance). In comparison with the national average, Luwingu showed much higher levels of mortality and underweight.

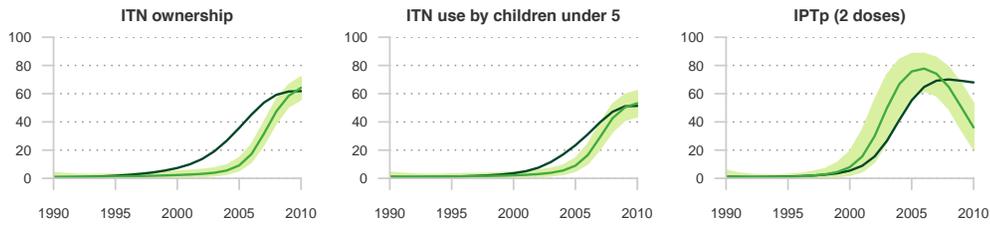
CHILD HEALTH OUTCOMES



From 1990 to 2010, Luwingu recorded a significant reduction in all-cause under-5 mortality, dropping 35% from 215 deaths per 1,000 live births in 1990 (95% CI: 170, 267) to 139 in 2010 (95% CI: 104, 184). In 2010, the district's under-5 mortality remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia.

The proportion of children who were underweight substantially declined from 58% in 1990 (95% CI: 43%, 72%) to 25% in 2010 (95% CI: 18%, 34%). While this level of underweight was well above the national average of 14% in 2010, Luwingu made tremendous progress in reducing childhood underweight from extremely high levels in the 1990s. Nevertheless, much work remains, as the district's prevalence of underweight remained among the highest in Zambia for 2010.

MALARIA INTERVENTIONS



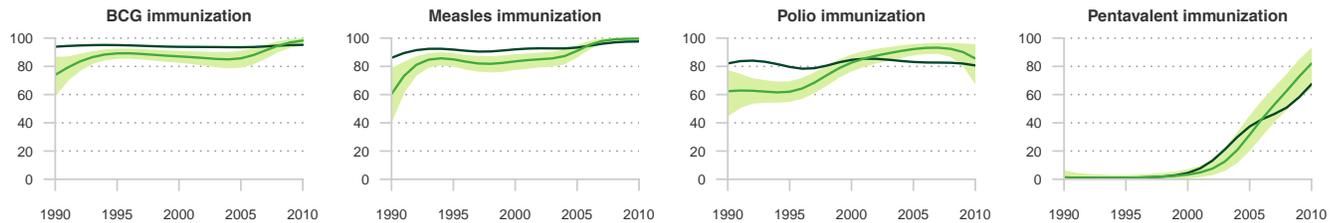
ITN ownership remained below 10% until 2006, after which coverage quickly increased to 64% in 2010 (95% CI: 56%, 72%), rising just above the national average of 62%. This rapid scale-up of ITN ownership is impressive given that the national gains in coverage started in the early 2000s.

ITN use by children under 5 years old rapidly rose to 53% in 2010 (95% CI: 44%, 62%), which was slightly higher than the national average of 51%. The difference between ITN ownership and use (11 percentage points) in Luwingu was comparable to what was observed at the national level for 2010.

IRS coverage trends are not included because Luwingu did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rose to 78% in 2006 (95% CI: 62%, 88%). IPTp2 coverage then declined, steeply dropping to 36% in 2010 (95% CI: 21%, 53%) and falling to one of the lowest levels in Zambia. The district's steep declines in IPTp2 coverage since 2006 are cause for concern.

IMMUNIZATIONS



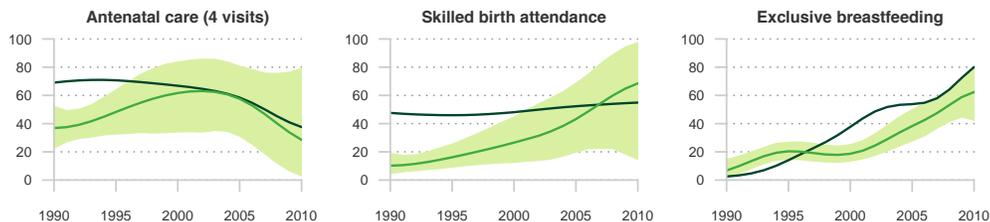
Aside from a small drop in coverage during the mid-2000s, BCG immunization generally increased from 74% in 1990 (95% CI: 60%, 86%) to 98% in 2010 (95% CI: 96%, 100%), rising well above the national average of 95%.

Measles immunization steadily climbed from 60% in 1990 (95% CI: 42%, 78%) to 100% in 2009 (95% CI: 99%, 100%). This level of measles coverage was maintained through 2010, exceeding the national average of 98% for that year. This level of measles immunization was among the highest in Zambia for 2010.

Coverage of polio immunization steadily increased from 62% in 1990 (95% CI: 45%, 77%) to 93% in the mid-2000s, but decreased to 86% in 2010 (95% CI: 68%, 95%). Despite this recent decline, Luwingu's level of polio coverage still exceeded the national average of 81% in 2010.

After the pentavalent vaccine was formally introduced in Luwingu in 2005, coverage increased to 43% in 2006 (95% CI: 31%, 55%) and 82% in 2010 (95% CI: 65%, 92%), exceeding the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS

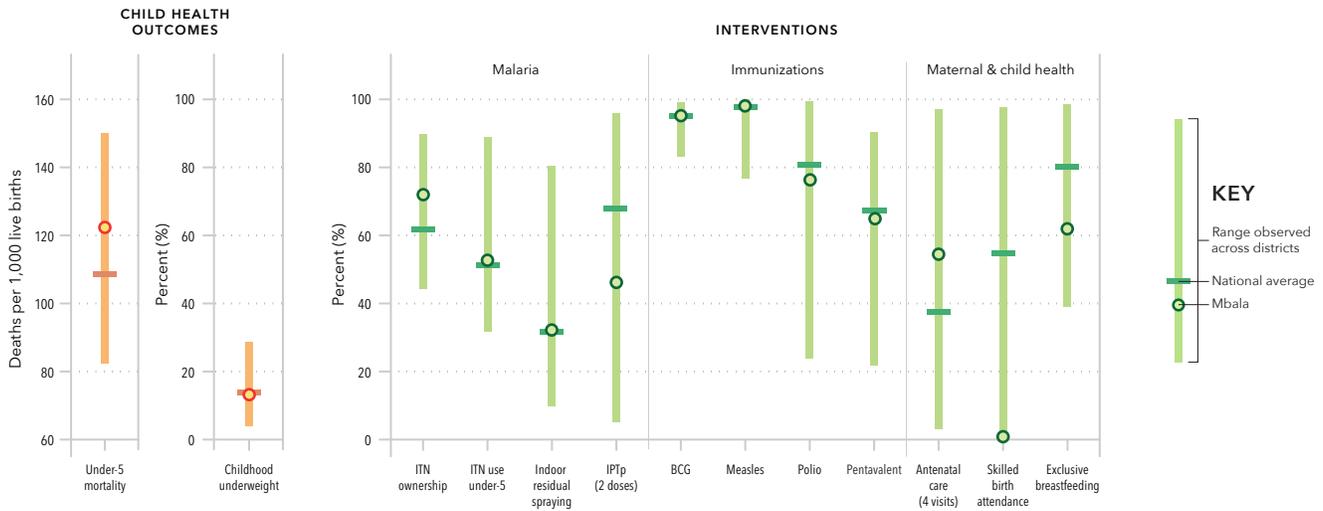


ANC4 increased from 37% in 1990 (95% CI: 23%, 52%) to 61% in 2004 (95% CI: 35%, 83%), but coverage then dropped considerably to 29% in 2010 (95% CI: 3%, 79%), falling below the national average of 37%. The finding that Luwingu's levels of ANC4 coverage fell more than 30 percentage points in six years is particularly troubling.

Skilled birth attendance gradually increased from 10% in

1990 (95% CI: 5%, 19%) to 69% in 2010 (95% CI: 15%, 97%), which was higher than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage steadily rose to 62% in 2010 (95% CI: 43%, 79%). This level of exclusive breastfeeding was well below the national average of 80% for 2010, and was among the lowest in Zambia.



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Mbala substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010, but its levels of under-5 mortality remained among the highest in Zambia for 2010. The district's prevalence of underweight, however, was comparable to the national average in 2010. Prioritizing ways to further accelerate gains for child health outcomes, especially under-5 mortality, should be considered.

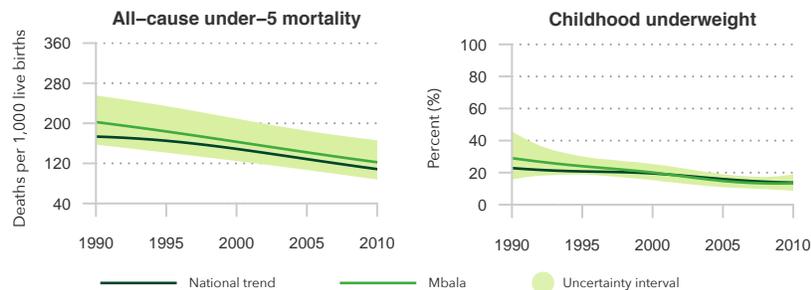
The district was able to rapidly scale up ITNs through 2010, and IRS coverage was higher than the national average in 2010. Mbala recorded steady growth in pentavalent coverage, and BCG and measles immunization rebounded to high levels after declines during the mid-2000s.

However, amidst these gains, several troubling trends were identified and warrant further attention. IPTp2 coverage

remained low, falling well below the national average in 2010. Polio coverage remained lower than the national average, and increases in exclusive breastfeeding largely stalled through the 2000s. ANC4 gradually decreased over time, but its levels remained low. Alarming, after a period of steady increases of coverage during the 1990s, skilled birth attendance declined to some of the lowest levels in Zambia by 2010.

In 2010, Mbala generally met or exceeded national levels for immunizations and malaria interventions (excluding IPTp2), but fell below the national average for maternal and child health interventions (with the exception of ANC4). In comparison with the national average, Mbala showed much higher levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES

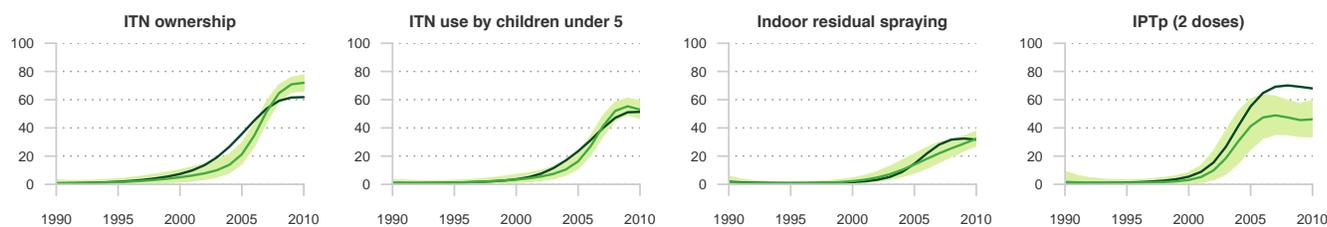


From 1990 to 2010, Mbala recorded a significant reduction in all-cause under-5 mortality, dropping 40% from 202 deaths per 1,000 live births in 1990 (95% CI: 159, 253) to 122 in 2010 (95% CI: 90, 164). In 2010, the district's under-5 mortality remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the

highest in Zambia that year.

The proportion of children who were underweight substantially declined from 29% in 1990 (95% CI: 16%, 45%) to 13% in 2010 (95% CI: 9%, 18%), which was comparable to the national average of 14% for 2010.

MALARIA INTERVENTIONS



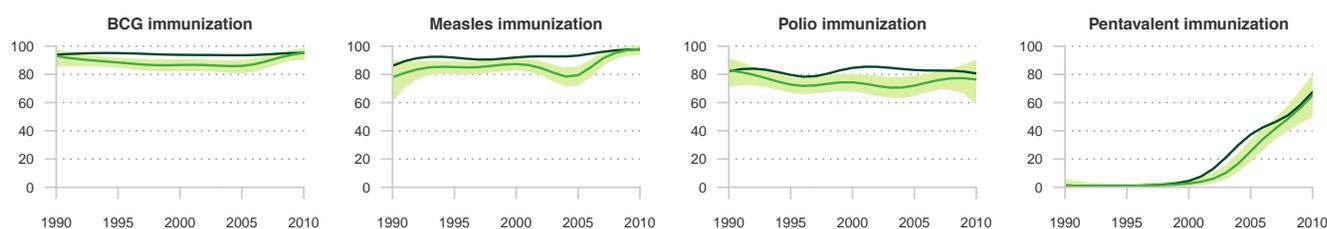
ITN ownership remained below 10% until 2003, after which coverage rapidly increased to 72% in 2010 (95% CI: 66%, 77%), exceeding the national average of 62% for that year.

ITN use by children under 5 years old rose to 55% in 2009 (95% CI: 49%, 61%), but slipped to 53% in 2010 (95% CI: 47%, 59%). This level of ITN use was slightly higher than the national average of 51%. The difference between ITN ownership and use (19 percentage points) was higher than what was observed nationally (11 percentage points) for 2010.

Mbala formally implemented IRS activities in 2008, and reached 32% of households in 2010 (95% CI: 27%, 37%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage quickly increased to 49% in 2007 (95% CI: 36%, 62%). IPTp2 coverage decreased slightly to 46% in 2010 (95% CI: 34%, 59%), falling much lower than the national average of 68%.

IMMUNIZATIONS



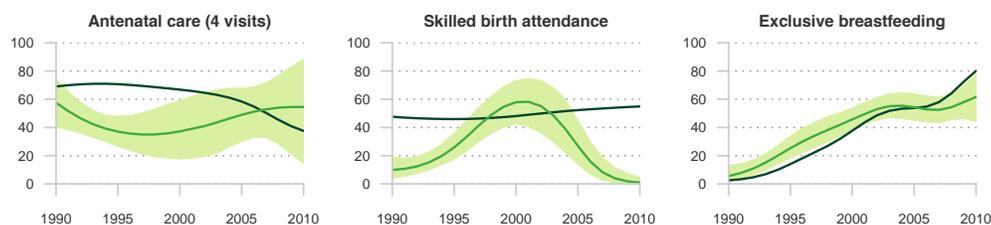
BCG coverage decreased from 93% in 1990 (95% CI: 86%, 97%) to 86% in 1999 (95% CI: 83%, 90%), after which coverage hovered around 87% until 2006. BCG immunization then steadily increased, reaching 95% in 2010 (95% CI: 91%, 98%) and equaling the national average for that year.

Measles immunization gradually increased from 78% in 1990 (95% CI: 61%, 90%) to 87% in the early 2000s, but dropped below 80% during the mid-2000s. Measles coverage rose soon after, climbing to 98% in 2010 (95% CI: 94%, 100%) and equaling the national average for that year.

Coverage of polio immunization decreased from 83% in 1990 (95% CI: 72%, 91%) to 71% in the mid-2000s, after which polio coverage increased, reaching 77% in 2008 and 2009. Coverage slightly slipped to 76% in 2010 (95% CI: 60%, 89%), which was lower than the national average of 81%.

After the pentavalent vaccine was formally introduced in Mbala in 2005, coverage increased to 34% in 2006 (95% CI: 27%, 41%) and 65% in 2010 (95% CI: 50%, 79%), which was slightly lower than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 57% in 1990 (95% CI: 40%, 74%) to 35% in the late 1990s before gradually rising to 55% in 2009 (95% CI: 21%, 82%). This level of ANC4 coverage was maintained through 2010. While coverage in Mbala was higher than the national average of 37% in 2010, its levels remained lower than optimal.

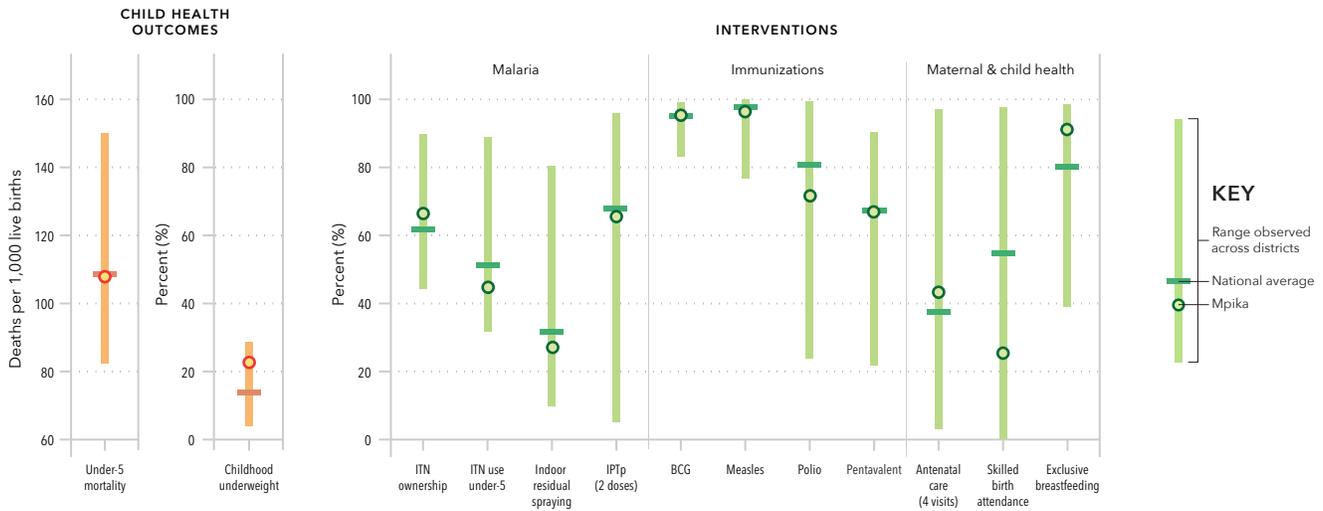
Skilled birth attendance increased from 10% in 1990 (95% CI: 4%, 19%) to 58% in the early 2000s, but then dropped to

1% in 2010 (95% CI: 0%, 5%). Mbala had one of the lowest levels of SBA in Zambia for 2010, and the district's abrupt decline after a period of gains is cause for concern.

The proportion of children who were exclusively breastfed steadily rose from 6% in 1990 (95% CI: 2%, 13%) to 55% in the mid-2000s. Gains stalled for several years before levels of exclusive breastfeeding increased to 62% in 2010 (95% CI: 44%, 77%), which was still among the lowest in Zambia.



Mpika



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Mpika reduced its all-cause under-5 mortality. At the same time, childhood underweight actually increased between 2006 and 2010, and rose to among the highest in Zambia in 2010. Prioritizing ways to accelerate gains for child health outcomes, especially childhood underweight, should be considered.

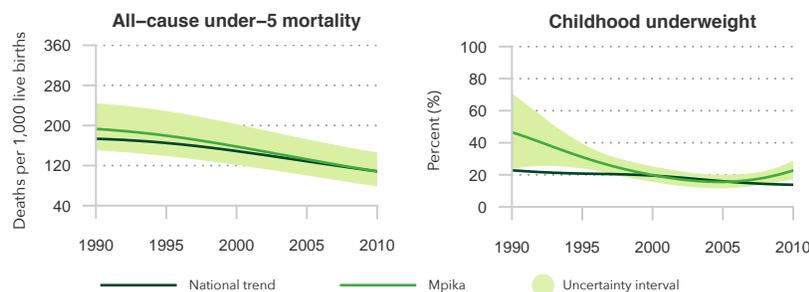
Mpika increased ITN ownership to levels higher than the national average in 2010, and recorded steady gains in bringing up coverage of the pentavalent vaccine. Exclusive breastfeeding coverage climbed well above the national average in 2010. Coverage of BCG and measles immunization recovered after declines during the mid-2000s.

However, amidst these gains, some troubling trends were

identified and warrant further attention. IPTp2 coverage fell substantially from its peak in 2006, and less progress was made in scaling up IRS. Polio immunization declined throughout the 2000s, and skilled birth attendance remained quite low. ANC4 coverage dropped considerably from very high levels during the early 1990s.

In 2010, Mpika generally met or exceeded national levels for immunizations and maternal and child health interventions (excluding polio coverage and skilled birth attendance), but equaled or fell below for malaria interventions. In comparison with the national average, Mpika showed similar levels of mortality and much higher levels of underweight.

CHILD HEALTH OUTCOMES

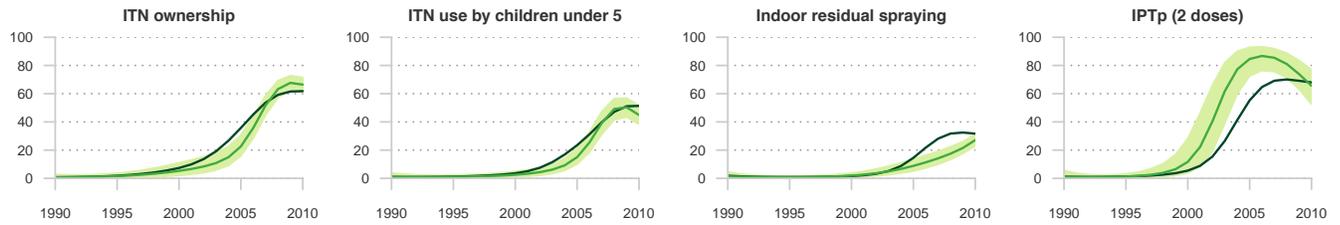


From 1990 to 2010, Mpika recorded a significant reduction in all-cause under-5 mortality, dropping 44% from 193 deaths per 1,000 live births in 1990 (95% CI: 153, 242) to 108 in 2010 (95% CI: 80, 144). In 2010, the district's under-5 mortality was comparable to the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight substantially decreased from 47% in 1990 (95% CI: 24%, 70%)

to 16% in the mid-2000s, but then levels increased to 23% in 2010 (95% CI: 18%, 28%), far exceeding the national average of 14%. This level of childhood underweight was among the highest in Zambia for 2010. While Mpika made remarkable progress in bringing down childhood underweight from very high levels, its recent rise in prevalence is cause for concern.

MALARIA INTERVENTIONS



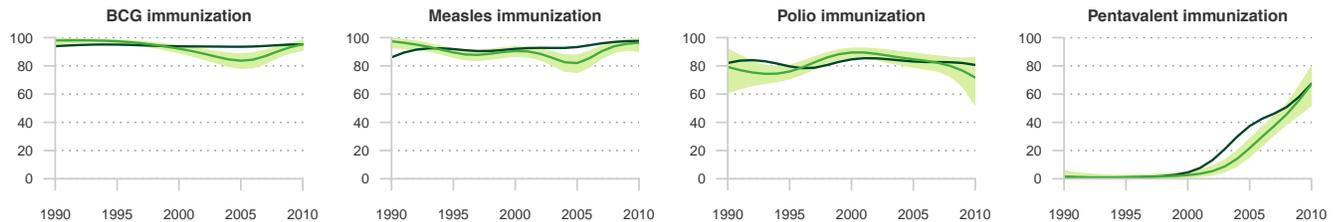
ITN ownership remained below 10% until 2003, after which coverage rapidly increased to 68% in 2009 (95% CI: 62%, 73%). Ownership slipped to 66% in 2010 (95% CI: 61%, 72%), but was still higher than the national average of 62%.

ITN use by children under 5 years old quickly rose to 50% in 2009 (95% CI: 43%, 57%), but dropped to 45% in 2010 (95% CI: 38%, 52%), falling below the national average of 51%. The difference between ITN ownership and use (21 percentage points) was much higher in Mpika than what was observed at the national level (11 percentage points) for 2010.

Mpika formally implemented IRS activities in 2008 and reached 27% of households in 2010 (95% CI: 23%, 31%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2000, after which coverage rapidly increased to 87% in 2006 (95% CI: 76%, 93%). IPTp2 coverage then declined, dropping to 66% in 2010 (95% CI: 52%, 77%) and falling slightly below the national average of 68% in 2010.

IMMUNIZATIONS



BCG coverage decreased from 98% in the early to mid-1990s to 84% in the mid-2000s, but then climbed to 95% in 2010 (95% CI: 91%, 98%), equaling the national average for that year.

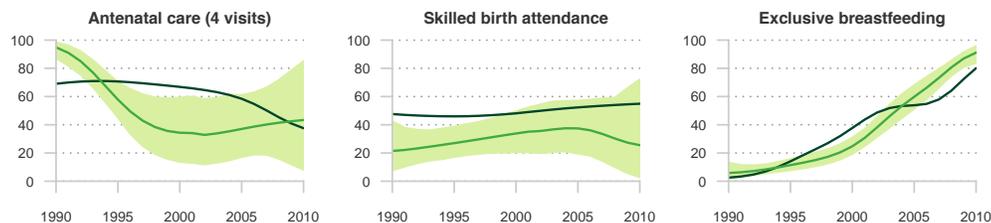
After declining from 97% in 1990 (95% CI: 93%, 99%), measles immunization hovered around 90% until coverage dropped to 82% in 2005 (95% CI: 75%, 87%). Measles coverage then rebounded, rising to 96% in 2009 (95% CI: 91%, 98%) and staying at this level of coverage through 2010. Nonetheless, Mpika's measles coverage remained below the

national average of 98% for 2010.

Coverage of the polio immunization decreased to 74% in the mid-1990s before rising to 90% in 2001 (95% CI: 86%, 92%). Polio coverage then dropped to 72% in 2010 (95% CI: 52%, 86%), falling below the national average of 81%.

After the pentavalent vaccine was formally introduced in Mpika in 2005, coverage increased to 38% in 2007 (95% CI: 32%, 44%) and 67% in 2010 (95% CI: 52%, 79%), equaling the national average for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage fell sharply from 95% in 1990 (95% CI: 87%, 98%) to 33% in 2002 (95% CI: 12%, 58%) before gradually increasing to 43% in 2010 (95% CI: 8%, 85%). Although Mpika showed some recent improvement, the finding that the district's levels of coverage were more than 50 percentage points lower in 2010 than in 1990 is quite worrisome.

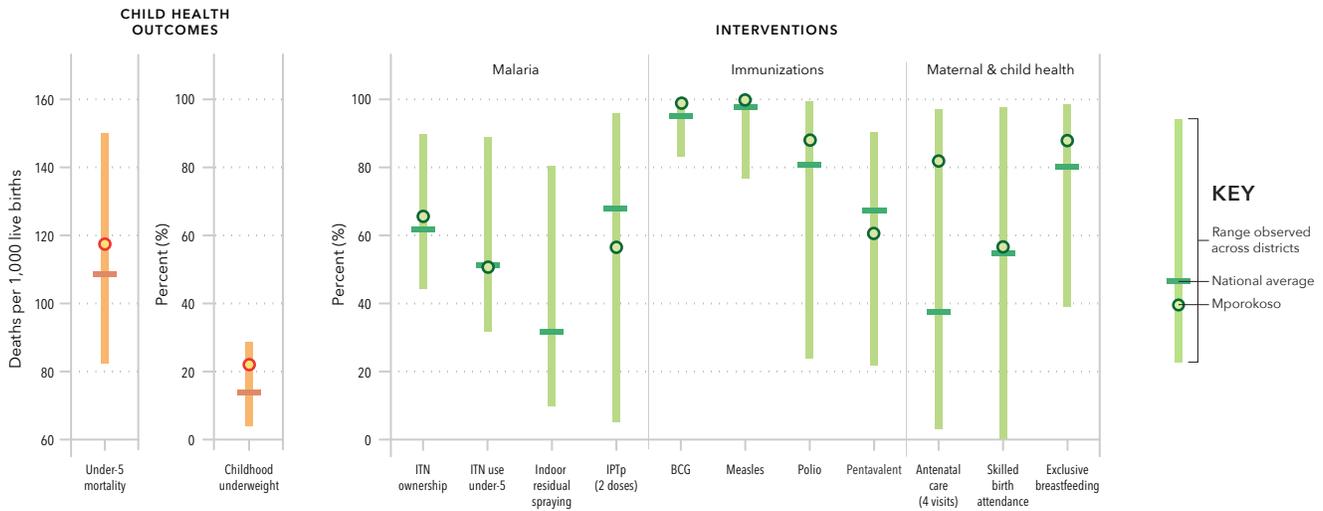
Skilled birth attendance slowly increased from 21% in 1990 (95% CI: 8%, 42%) to 38% in 2004 (95% CI: 21%, 57%),

but then declined to 26% in 2010 (95% CI: 3%, 72%). This level of SBA coverage was lower than the national average of 55% in 2010, and Mpika's consistently low levels of skilled birth attendance over time are cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1999, after which coverage steadily increased to 91% in 2010 (95% CI: 84%, 96%), far exceeding the national average of 80% for that year.



Mporokoso



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Mporokoso started IRS after 2010.

SUMMARY

Mporokoso substantially reduced all-cause under-5 mortality and childhood underweight, but levels of both child health outcomes remained higher than the national average for 2010. Further, the district's level of underweight was among the highest in Zambia in 2010. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

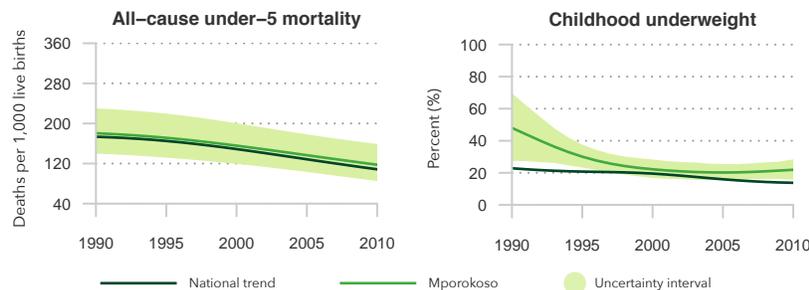
ITN coverage was quickly scaled up in Mporokoso, and the district brought coverage of exclusive breastfeeding above the national average in 2010. Coverage of routine immunizations remained high in 2010, with BCG and measles coverage rising to among the highest levels in Zambia. Impressively, Mporokoso increased ANC4 coverage over time, which is in stark contrast to the dramatic declines observed at

the national level. It is likely that much could be learned from the district's antenatal programs.

However, amidst these gains, some troubling trends were identified and warrant further attention. IPTp2 coverage declined considerably from its peak in 2006, and pentavalent coverage remained below the national average in 2010. Although skilled birth attendance gradually increased over time, its coverage remained lower than optimal.

In 2010, Mporokoso generally met or exceeded national levels across interventions, with the exceptions of IPTp2 and pentavalent coverage. In comparison with the national averages, Mporokoso showed higher levels of mortality and underweight.

CHILD HEALTH OUTCOMES

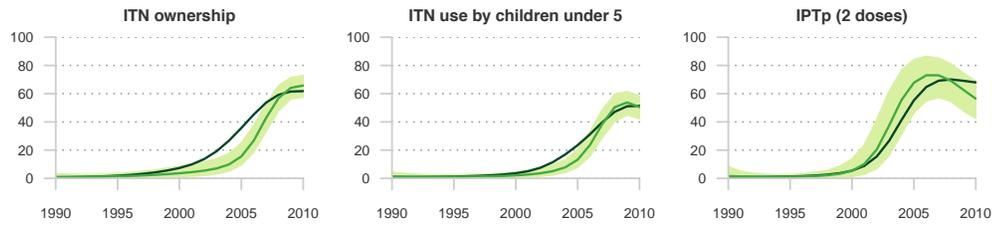


From 1990 to 2010, Mporokoso recorded a significant reduction in all-cause under-5 mortality, dropping 35% from 180 deaths per 1,000 live births in 1990 (95% CI: 142, 228) to 118 in 2010 (95% CI: 87, 157). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight substantially declined from 48% in 1990 (95% CI: 28%, 69%) to

22% in 2010 (95% CI: 16%, 28%). While this level of underweight was well above the national average of 14% in 2010, Mporokoso made much progress in bringing down childhood underweight from very high levels in the 1990s. Nevertheless, much work remains, as the district's prevalence of underweight remained among the highest in Zambia for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2004, after which coverage rapidly increased to 66% in 2010 (95% CI: 58%, 73%), slightly exceeding the national average of 62%.

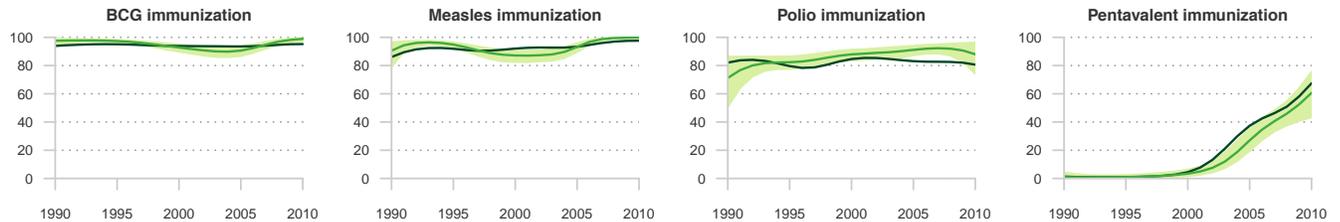
ITN use by children under 5 years old quickly rose to 54% in 2009 (95% CI: 45%, 62%), but slipped to 51% in 2010 (95% CI: 42%, 58%), equaling the national average for 2010. The difference between ITN ownership and use (15 percentage points) was higher in Mporokoso than what was observed at

the national level (11 percentage points) for 2010.

IRS coverage trends are not included because Mporokoso did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly increased to 73% in 2007 (95% CI: 57%, 85%). IPTp2 coverage then declined, dropping to 56% in 2010 (95% CI: 43%, 69%) and falling below the national average of 68%.

IMMUNIZATIONS



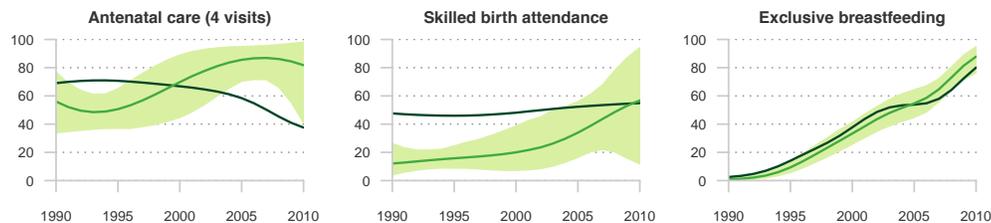
BCG immunization decreased from 98% in the early 1990s to 90% in the mid-2000s, but rebounded to 99% in 2010 (95% CI: 97%, 100%), far exceeding the national average of 95%. This level of coverage was among the highest in Zambia for 2010.

Measles immunization fell from 96% in the mid-1990s to 87% in the early 2000s before rising to 100% in 2009 (95% CI: 99%, 100%). This level of measles coverage was maintained through 2010, exceeding the national average of 98% and rising to among the highest in Zambia in 2010.

Coverage of polio immunization increased from 71% in 1990 (95% CI: 50%, 86%) to 92% in the mid-2000s, after which coverage fell to 88% in 2010 (95% CI: 74%, 96%). Nonetheless, this level of polio coverage remained higher than the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Mporokoso in 2005, coverage increased to 35% in 2006 (95% CI: 27%, 43%) and 61% in 2010 (95% CI: 43%, 76%), which was lower than the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 48% in 1993 (95% CI: 37%, 61%) to 87% in the mid-2000s. Coverage slipped to 82% in 2010 (95% CI: 41%, 98%), but remained one of the highest levels of ANC4 in Zambia in 2010. Further, Mporokoso did not experience the same steady decline in ANC4 documented at the national level, suggesting that much could be learned from the district's ANC4 programming approaches.

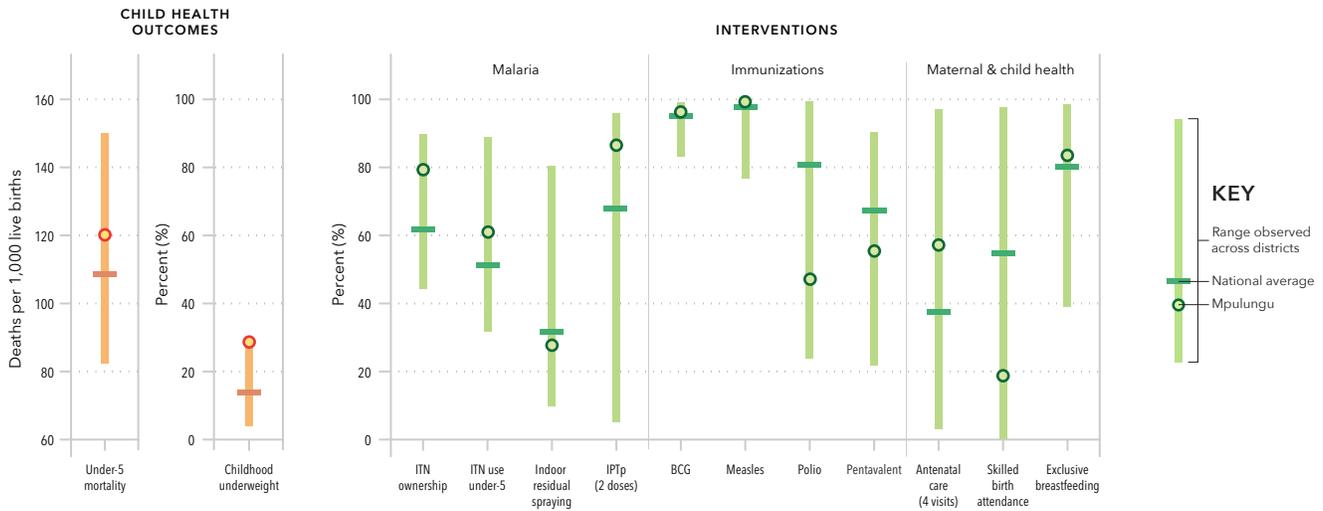
Skilled birth attendance increased from 12% in 1990 (95% CI: 4%, 26%) to 57% in 2010 (95% CI: 12%, 94%), which was comparable to the national average of 55%. This progress is

notable given that SBA coverage had been consistently lower than the national average until the early 2000s; nonetheless, the district's level of SBA remained lower than optimal.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage steadily increased to 88% in 2010 (95% CI: 77%, 95%), exceeding the national average of 80%.



Mpulungu



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Mpulungu substantially reduced all-cause under-5 mortality and childhood underweight from very high levels in the 1990s. Nonetheless, both child health outcomes were much higher than the national average in 2010, with childhood underweight being among the highest in Zambia in 2010. Prioritizing ways to accelerate gains for child health outcomes should be considered.

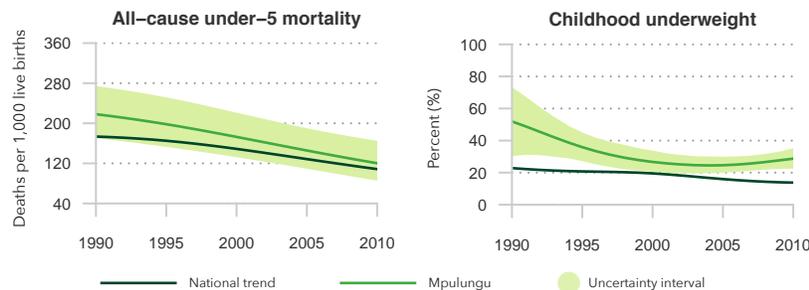
The district was able to scale up and sustain high levels of ITNs and IPTp2 through 2010. BCG coverage remained high, and measles immunization recovered from declines during the mid-2000s. Mpulungu quickly expanded coverage of exclusive breastfeeding in recent years.

However, amidst these gains, some worrisome trends were identified and warrant further attention. IRS coverage

marginally increased in 2010, and polio immunization dropped to some of the lowest levels in Zambia. The pentavalent vaccine was minimally scaled up, with its coverage being among the lowest in the country for 2010. ANC4 coverage started to increase in the early 2000s, but progress stalled in recent years. Alarming, skilled birth attendance fell to very low levels after making steady gains during the 1990s.

In 2010, Mpulungu generally met or exceeded national levels for malaria interventions and maternal and child health interventions (excluding skilled birth attendance), but equaled or fell below for immunizations (with the exception of measles coverage). In comparison with the national average, Mpulungu showed higher levels of mortality and underweight.

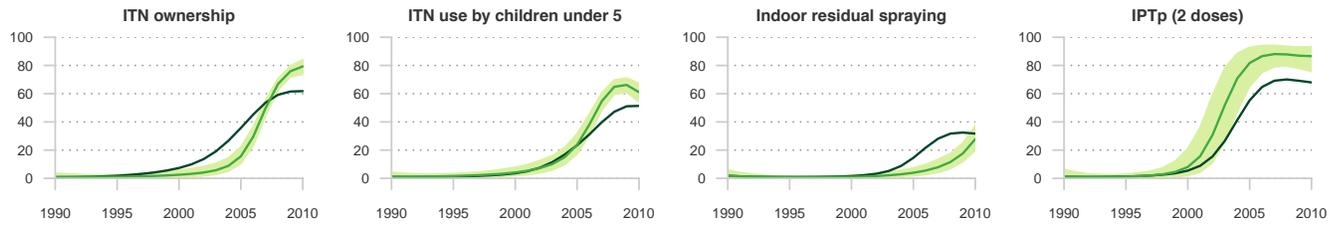
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mpulungu recorded a significant reduction in all-cause under-5 mortality, dropping 45% from 218 deaths per 1,000 live births in 1990 (95% CI: 172, 272) to 122 in 2010 (95% CI: 88, 163). In 2010, the district's under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight substantially decreased from 52% in 1990 (95% CI: 31%, 72%) to 29% in 2010 (95% CI: 23%, 35%). While this level of underweight was among the highest in Zambia for 2010, Mpulungu made notable progress in reducing childhood underweight from very high levels in the 1990s.

MALARIA INTERVENTIONS



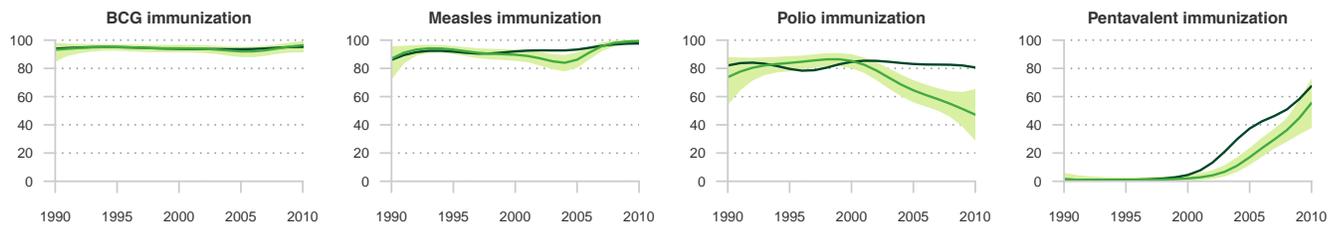
ITN ownership remained below 10% until 2005, after which coverage rapidly increased to 79% in 2010 (95% CI: 74%, 84%), far exceeding the national average of 62%.

ITN use by children under 5 years old rose to 66% in 2009 (95% CI: 61%, 71%), but slipped to 61% in 2010 (95% CI: 54%, 67%). This level of ITN use was much higher than the national average of 51% for 2010. The difference between ITN ownership and use (18 percentage points) was higher than what was observed nationally (11 percentage points) for 2010.

Mpulungu formally implemented IRS activities in 2010 and reached 28% of households that year (95% CI: 20%, 37%). This scale-up of IRS was on the lower end in comparison with other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 88% in 2007 (95% CI: 79%, 94%). IPTp2 coverage declined slightly to 87% in 2010 (95% CI: 76%, 93%), but remained well above the national average of 68% for that year.

IMMUNIZATIONS



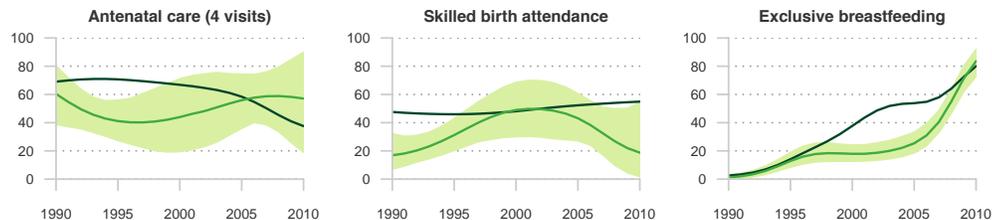
BCG coverage hovered around 95% until the mid-2000s, during which coverage decreased to 92%, but rebounded to 96% in 2010 (95% CI: 92%, 99%). This level of BCG coverage was comparable to the national average of 95% for 2010.

Measles immunization increased to 94% in the mid-1990s before decreasing to 84% in 2004 (95% CI: 79%, 89%). Coverage then climbed to 99% in 2009 (95% CI: 97%, 100%) and remained at this level through 2010. This level of coverage was slightly higher than the national average of 98% for 2010.

Coverage of polio immunization gradually rose from 74% in 1990 (95% CI: 55%, 87%) to 86% in the late 1990s, but then decreased, dropping to 47% in 2010 (95% CI: 30%, 65%) and falling to among the lowest levels of coverage in Zambia.

After the pentavalent vaccine was formally introduced in Mpulungu in 2005, coverage increased to 24% in 2006 (95% CI: 18%, 30%) and 55% in 2010 (95% CI: 38%, 72%), which was among the lowest levels in Zambia for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage declined from 60% in 1990 (95% CI: 39%, 80%) to 40% in the mid-1990s before rising to 59% in the late 2000s. Coverage slipped to 57% in 2010 (95% CI: 19%, 90%), which was higher than the national average of 37%. While Mpulungu did not experience the same dramatic decline in ANC4 coverage observed at the national level, its coverage still remained relatively low.

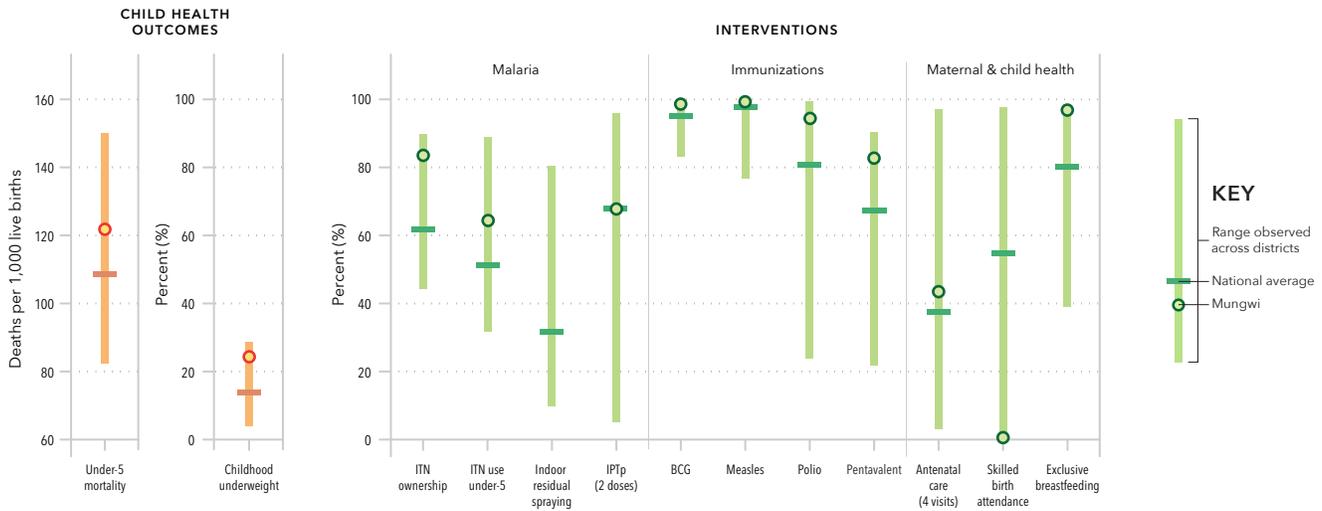
Skilled birth attendance increased from 17% in 1990 (95% CI: 7%, 32%) to 50% in the early 2000s, but then steadily de-

clined to 19% in 2010 (95% CI: 2%, 54%) and fell well below the national average of 55%. Mpulungu's decline in SBA coverage after a period of gains is cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 2003, after which coverage rapidly increased to 84% in 2010 (95% CI: 73%, 92%), exceeding the national average of 80%. The district's recent gains are notable given that its scale-up of coverage largely trailed behind the national trend until the late 2000s.



Mungwi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Mungwi started IRS after 2010.

SUMMARY

Mungwi substantially reduced all-cause under-5 mortality between 1990 and 2010, but its levels remained among the highest in the country in 2010. Minimal progress took place for childhood underweight, with Mungwi’s prevalence of underweight being one of the highest levels in Zambia in 2010. Prioritizing efforts to accelerate gains for child health outcomes, especially for underweight, should be considered.

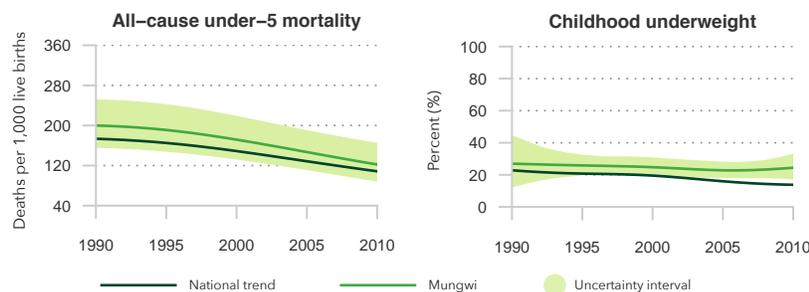
ITN coverage was scaled up to very high levels by 2010, while IPTp2 coverage closely followed the national trend. Exclusive breastfeeding increased to some of the highest levels in Zambia in 2010. Impressively, Mungwi recorded higher coverage for all immunizations—BCG, measles, polio, and pentavalent—than the national average in 2010, and was one

of the only districts in Zambia to consistently perform this well for all vaccines.

However, amidst these gains, two alarming trends emerged and warrant further attention. ANC4 coverage substantially decreased, falling from very high levels in the 1990s. Skilled birth attendance was consistently low during the 1990s, but declined to some of the lowest levels in Zambia during the 2000s.

In 2010, Mungwi generally met or exceeded national levels across interventions, with skilled birth attendance as the stark exception. In comparison with the national average, Mungwi showed much higher levels of mortality and underweight.

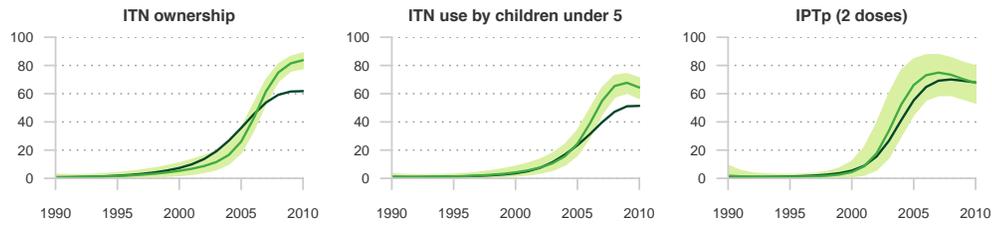
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mungwi recorded a significant reduction in all-cause under-5 mortality, dropping 39% from 200 deaths per 1,000 live births in 1990 (95% CI: 157, 250) to 122 in 2010 (95% CI: 90, 163). In 2010, the district’s under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia.

The proportion of children who were underweight gradually decreased from 27% in the early 1990s to 23% in 2003 (95% CI: 19%, 29%). Underweight stayed at 23% through 2008, after which prevalence increased to 24% in 2009 and 2010. This level of childhood underweight was among the highest in the country for 2010, and Mungwi’s minimal progress in reducing underweight is cause for concern.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage rapidly increased to 84% in 2010 (95% CI: 78%, 89%), rising to one of the highest levels in Zambia.

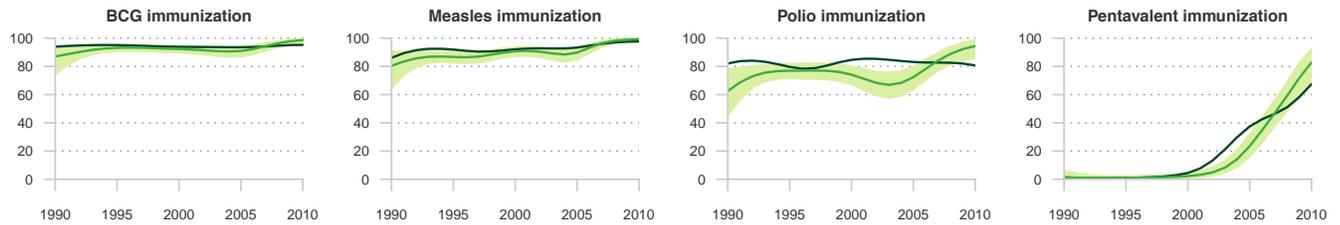
ITN use by children under 5 years old quickly rose to 68% in 2009 (95% CI: 61%, 74%), but dropped slightly to 64% in 2010 (95% CI: 57%, 71%). This level of ITN use was higher than the national average of 51% for 2010. The difference between ITN ownership and use (20 percentage points) was much higher in Mungwi than what was observed at the national

level (11 percentage points) for 2010.

IRS coverage trends are not included because Mungwi did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rose to 75% in 2007 (95% CI: 59%, 88%). IPTp2 coverage declined to 68% in 2010 (95% CI: 54%, 80%), equaling the national average for 2010.

IMMUNIZATIONS



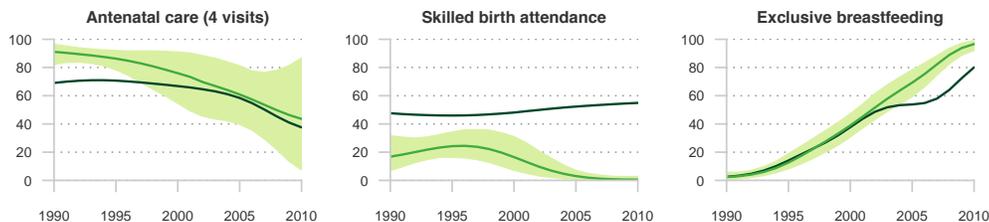
BCG immunization steadily increased from 87% in 1990 (95% CI: 75%, 94%) to 99% in 2010 (95% CI: 97%, 100%), and was among the highest levels in Zambia for that year.

Measles immunization increased from 80% in 1990 (95% CI: 64%, 91%) to 91% in the early 2000s. Coverage slipped below 90% in 2003 and 2004, but then increased to 99% in 2009 (95% CI: 97%, 100%) and remained at this level of coverage through 2010. Measles coverage in Mungwi was slightly higher than the national average of 98% for 2010.

Coverage of polio immunization increased to 77% in the mid- and late 1990s, but slipped below 70% from 2002 to 2004. Polio coverage then steadily climbed to 94% in 2010 (95% CI: 86%, 99%), which was much higher than the national average of 81% and among the highest in the country.

After the pentavalent vaccine was formally introduced in Mungwi in 2005, coverage increased to 35% in 2006 (95% CI: 26%, 44%) and 83% in 2010 (95% CI: 68%, 92%), far exceeding the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steadily decreased from 91% in 1990 (95% CI: 82%, 96%) to 44% in 2010 (95% CI: 8%, 86%), which was slightly higher than the national average of 37%. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Mungwi's levels of coverage fell nearly 50 percentage points during this time is particularly worrisome.

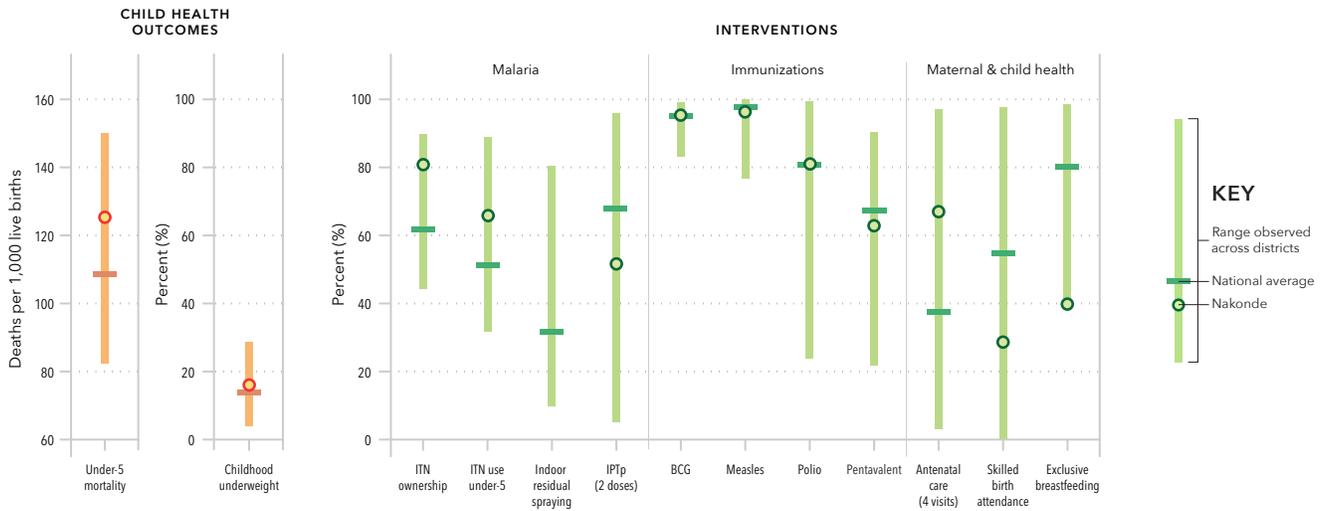
Skilled birth attendance slightly increased from 17% in 1990 (95% CI: 7%, 32%) to 25% in 1996 (95% CI: 16%, 36%), but quickly fell to 1% in 2007 (95% CI: 0% to 4%). SBA cov-

erage stayed at 1% through 2010, which was markedly lower than the national average of 55% and among the lowest in Zambia. Mungwi's extremely low levels of skilled birth attendance should be targeted for substantial improvement.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which it steadily increased to 97% in 2010 (95% CI: 92%, 99%). This level of exclusive breastfeeding far exceeded the national average of 80% and was among the highest in Zambia in 2010.



Nakonde



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Nakonde started IRS after 2010.

SUMMARY

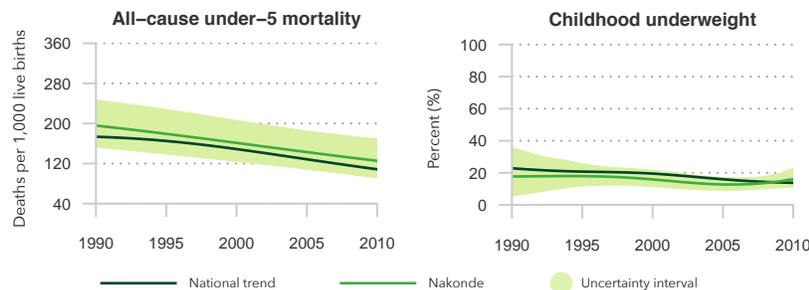
Nakonde substantially reduced all-cause under-5 mortality from 1990 to 2010, but its under-5 mortality remained one of the highest in Zambia for 2010. Minimal progress was made in reducing childhood underweight, and its prevalence even increased between 2006 and 2010. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

Nakonde increased ITN ownership to among the highest levels in Zambia for 2010, and ITN use in the district exceeded the national average in 2010. Pentavalent coverage rose to national levels in 2010, and coverage of routine immunizations remained high after rising from very low levels during the early 1990s.

However, amidst these gains, some troubling trends were identified and warrant further attention. IPTp2 coverage declined sharply after its peak in 2006, and ANC4 coverage decreased after a period of steadily rising. Exclusive breastfeeding dropped to among the lowest levels in Zambia for 2010, and skilled birth attendance remained at consistently low levels over time.

In 2010, Nakonde generally met or exceeded national levels for immunizations and malaria interventions (except for IPTp2 coverage), and fell below for maternal and child health interventions (except for ANC4). In comparison with the national average, Nakonde showed higher levels of mortality and underweight.

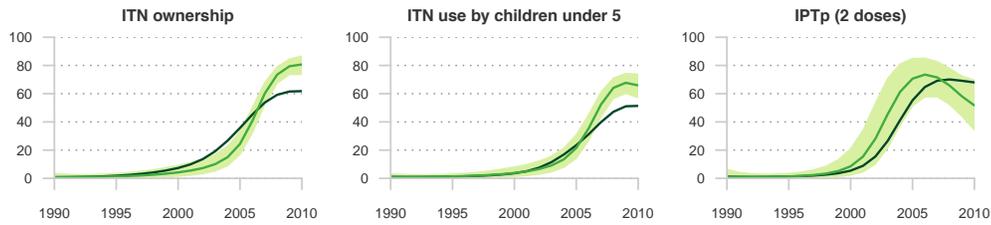
CHILD HEALTH OUTCOMES



From 1990 to 2010, Nakonde recorded a significant reduction in all-cause under-5 mortality, dropping 36% from 196 deaths per 1,000 live births in 1990 (95% CI: 154, 246) to 125 in 2010 (95% CI: 92, 168). In 2010, the district's under-5 mortality remained much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia for 2010.

The proportion of children who were underweight decreased from 18% in the 1990s to 13% in the mid-2000s, but then increased to 16% in 2010 (95% CI: 11%, 22%). This level of childhood underweight was slightly higher than the national average of 14% in 2010, and Nakonde's minimal progress in reducing underweight is cause for concern.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage rapidly increased to 81% in 2010 (95% CI: 74%, 87%), far exceeding the national average of 62% and rising to among the highest levels in Zambia.

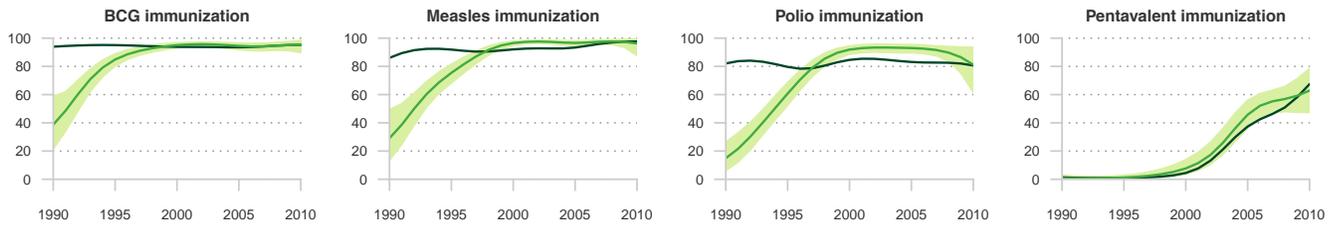
ITN use by children under 5 years old quickly rose to 68% in 2009 (95% CI: 60%, 74%), but slipped to 66% in 2010 (95% CI: 57%, 74%). This level of ITN use was much higher than the national average of 51% for 2010. The difference between ITN ownership and use (15 percentage points) was higher

in Nakonde than what was observed at the national level (11 percentage points) for 2010.

IRS coverage trends are not included because Nakonde did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly rose to 74% in 2006 (95% CI: 58%, 85%). IPTp2 coverage then decreased, dropping to 52% in 2010 (95% CI: 35%, 69%) and falling below the national average of 68%.

IMMUNIZATIONS



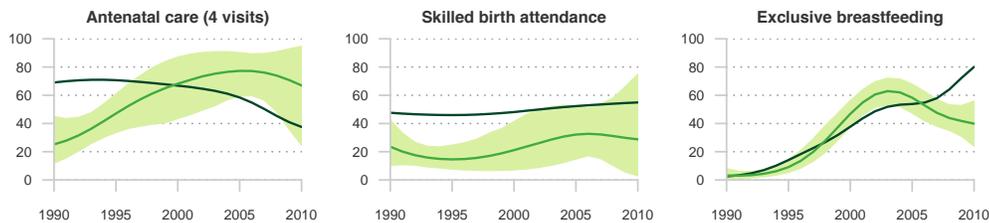
BCG immunization rapidly increased from 39% in 1990 (95% CI: 22%, 59%) to 96% in the early 2000s. Coverage decreased to 94% in 2006 and 2007, but rose to 95% in 2008 (95% CI: 91%, 97%) and remained at this level through 2010, equaling the national average.

Measles immunization quickly climbed from 29% in 1990 (95% CI: 14%, 49%) to 98% in 2002 (95% CI: 96%, 99%). Coverage hovered around 97% for several years before slipping to 96% in 2010 (95% CI: 88%, 99%), which was lower than the national average of 98%.

Polio immunization coverage rose from 15% in 1990 (95% CI: 6%, 26%) to 93% in 2001 (95% CI: 90%, 95%), which was sustained through 2006. Polio coverage then declined, dropping to 81% in 2010 (95% CI: 62%, 94%) yet still equaling the national average for that year.

After the pentavalent vaccine was formally introduced in Nakonde in 2005, coverage hovered around 55% through 2008 and then rose to 63% in 2010 (95% CI: 47%, 78%). This level of pentavalent coverage was lower than the national average of 67% for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steadily increased from 25% in 1990 (95% CI: 12%, 45%) to 77% in the mid-2000s, but then declined to 67% in 2010 (95% CI: 25%, 95%). Although Nakonde's recent decrease in ANC4 is worrisome, its levels of ANC4 coverage remained higher than the national average of 37% for 2010.

Skilled birth attendance slowly climbed from 15% in the mid-1990s to 33% in 2006 (95% CI: 17%, 51%) before dropping to 29% in 2010 (95% CI: 3%, 75%). This level of SBA was

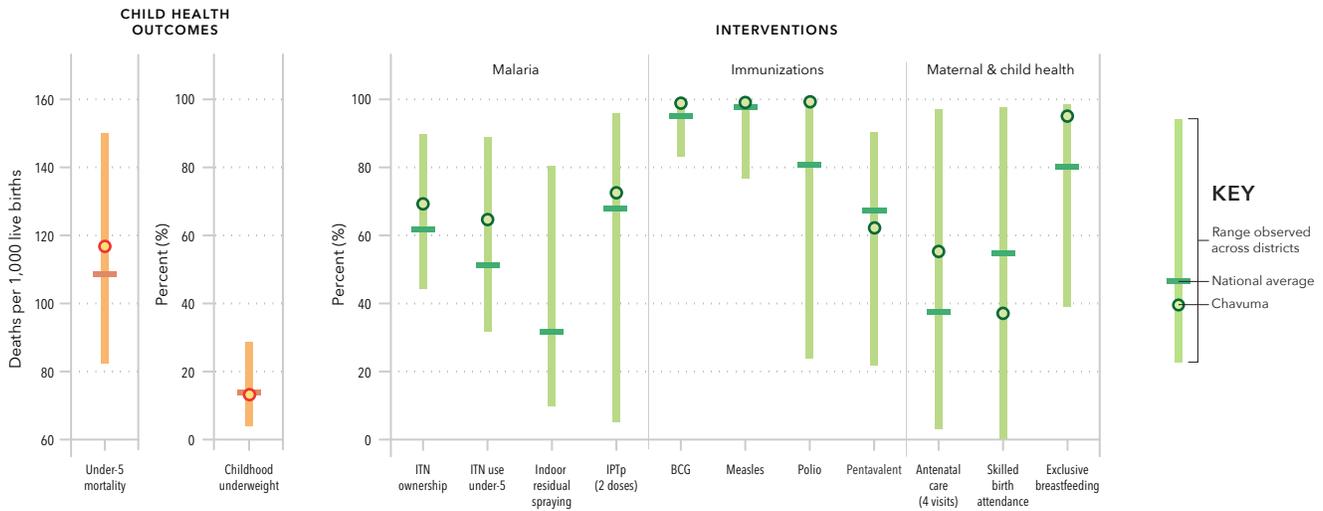
lower than the national average, and Nakonde's consistently low levels of skilled birth attendance are cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which coverage rapidly increased to 63% in 2003 (95% CI: 53%, 72%). Exclusive breastfeeding then decreased to 40% in 2010 (95% CI: 24%, 56%), falling well below the national average of 80%. This level of coverage was among the lowest in Zambia in 2010.

North-western province



Chavuma



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Chavuma started IRS after 2010.

SUMMARY

Chavuma reduced its all-cause under-5 mortality between 1990 and 2010, but the relative magnitude of the district's progress was quite low and mortality rates remained above the national average in 2010. Childhood underweight decreased in Chavuma, with the most progress occurring before 2005. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

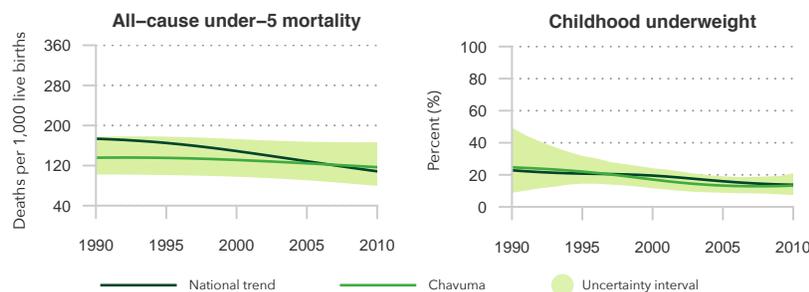
ITN coverage was scaled up to levels exceeding the national average in 2010, especially for ITN use. Pentavalent trends were similar to the national average by the late 2000s. Routine immunizations remained consistently high, with Chavuma having some of the highest levels of polio coverage in Zambia in 2010. After lagging behind the national scale-up

of exclusive breastfeeding, coverage increased to among the highest levels in Zambia in 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. IPTp2 coverage declined from its peak in 2007. Coverage of ANC4 and skilled birth attendance fell substantially during the 2000s, which is particularly worrisome given their high levels in the 1990s.

In 2010, Chavuma met or exceeded national levels across all interventions, except for the pentavalent vaccine and skilled birth attendance. In comparison with the national average, Chavuma showed higher levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES

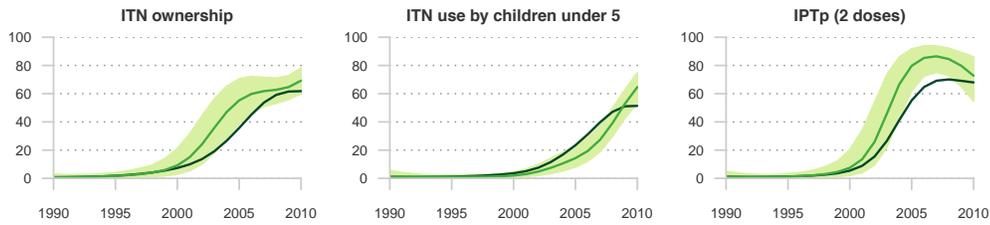


From 1990 to 2010, Chavuma recorded a relatively small reduction in all-cause under-5 mortality, dropping 14% from 136 deaths per 1,000 live births in 1990 (95% CI: 104, 175) to 117 in 2010 (95% CI: 82, 165); however, this decline was not statistically significant. In 2010, the district's level of under-5 mortality remained higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). This fairly

minimal progress in reducing under-5 mortality is cause for concern.

The proportion of children who were underweight decreased from 25% in 1990 (95% CI: 9%, 49%) to 13% in 2005 (95% CI: 9%, 18%). This level of childhood underweight was maintained through 2010, and was comparable to the national average of 14% for that year.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage rapidly increased to 69% in 2010 (95% CI: 60%, 78%), exceeding the national average of 62%.

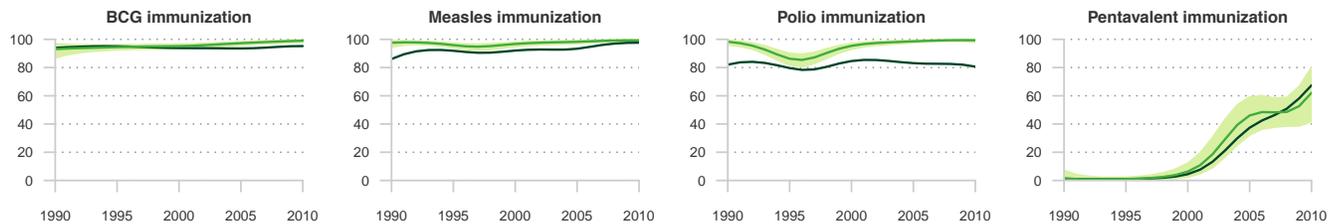
ITN use by children under 5 years old quickly increased to 65% in 2010 (95% CI: 53%, 75%), which was much higher than the national average of 51%. In 2010, the difference between ITN ownership and ITN use was quite low in Chavuma, which suggests that net use by children under 5 may be high among

households that have ITNs.

IRS coverage trends are not included because Chavuma did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage rapidly increased to 86% in 2007 (95% CI: 75%, 94%). IPTp2 coverage declined to 73% in 2010 (95% CI: 55%, 86%), but was still higher than the national average of 68%.

IMMUNIZATIONS



BCG immunization steadily rose from 93% in 1990 (95% CI: 87%, 97%) to 99% in 2009 (95% CI: 98%, 99%) and remained at this level through 2010, surpassing the national average of 95% and rising to among the highest in Zambia.

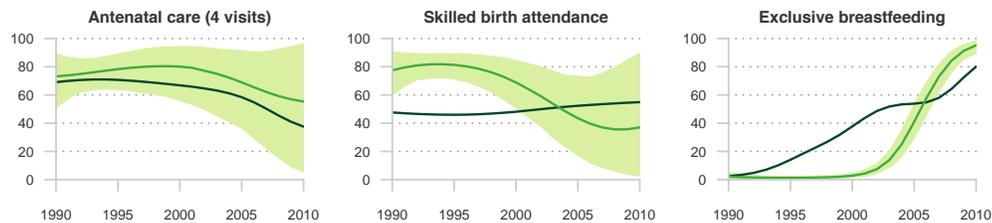
Measles immunization decreased from 98% in the early 1990s to 95% in the late 1990s, but steadily rose to 99% in 2006 (95% CI: 97%, 99%) and remained at this level through 2010. This level of measles coverage slightly exceeded the national average of 98% for 2010.

After briefly falling below 90% during the mid-1990s, polio immunization coverage increased to 99% in 2005 (95%

CI: 98%, 99%) and remained at this level through 2010. This level of coverage far exceeded the national average of 81% for 2010, and was among the highest in Zambia that year. Chavuma is considered a high-risk district for polio importation from neighboring countries, so maintaining high levels of polio immunization in the district is particularly important.

After the pentavalent vaccine was formally introduced in Chavuma in 2005, coverage hovered around 48% through 2008 and then increased to 62% in 2010 (95% CI: 42%, 80%). This level of pentavalent coverage remained lower than the national average of 67% for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage gradually increased from 73% in 1990 (95% CI: 51%, 89%) to 80% in 1997 (95% CI: 62%, 92%). Coverage remained at 80% through 2000, after which ANC4 declined to 55% in 2010 (95% CI: 6%, 96%). While coverage in Chavuma was higher than the national average of 37% in 2010, its levels remained lower than optimal.

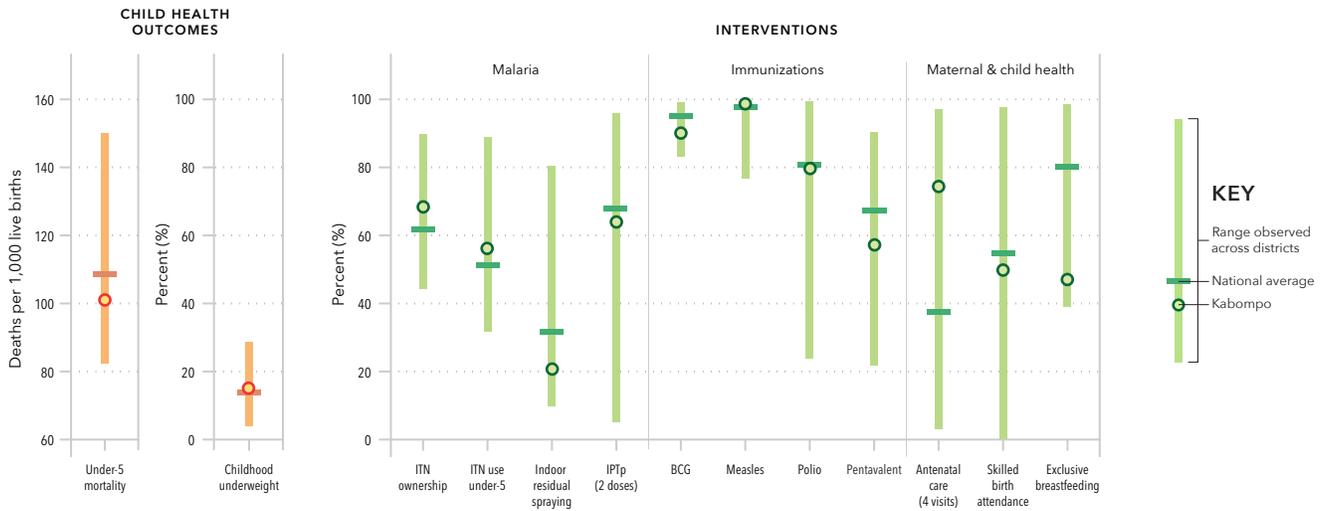
Skilled birth attendance increased to 80% in the mid-1990s, after which coverage decreased to 36% in the late 2000s, reaching 37% in 2010 (95% CI: 3%, 89%). This level

of SBA coverage was below the national average of 55% for 2010. This decline is worrisome given that Chavuma consistently exceeded the national trend during the 1990s.

The proportion of children who were exclusively breastfed remained below 20% until 2004, after which coverage rapidly increased to 95% in 2010 (95% CI: 90%, 98%). This level of exclusive breastfeeding far exceeded the national average of 80% for 2010 and was among the highest in Zambia.



Kabompo



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Kabompo substantially reduced all-cause under-5 mortality from 1990 to 2010, but recorded minimal progress in decreasing childhood underweight. Prioritizing ways to accelerate gains for child health outcomes, especially childhood underweight, should be considered.

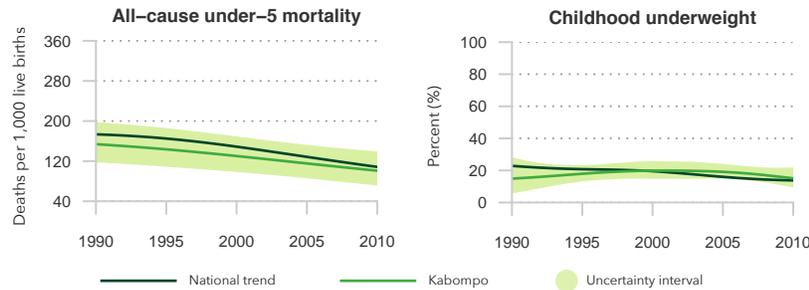
The district was able to rapidly scale up ITNs through 2010, and Kabompo documented high levels of measles immunization through the 2000s. Although ANC4 coverage was higher in the 1990s than it was in 2010, the district's levels remained among the highest in Zambia for 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. IRS remained low,

and IPTp2 coverage declined from its peak in 2007. The district's scale-up of the pentavalent vaccine lagged behind the national trend, and BCG coverage fell below the national average in 2010. Skilled birth attendance declined after a period of steady gains, and exclusive breastfeeding dropped sharply to among the lowest levels in Zambia.

In 2010, Kabompo met or fell below the national average across interventions, with the district's ITN coverage and levels of ANC4 as the clear exceptions. In comparison with the national average, Kabompo showed lower levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Kabompo recorded a significant reduction in all-cause under-5 mortality, dropping 34% from 154 deaths per 1,000 live births in 1990 (95% CI: 120, 196) to 101 in 2010 (95% CI: 73, 137). In 2010, the district's under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 15% in 1990 (95% CI: 6%, 28%) to 20% in 1999 (95% CI: 16%, 25%). Childhood underweight remained at 20% through 2003, after which levels declined to 15% in 2010 (95% CI: 10%, 21%), which was comparable to the national average of 14%.

MALARIA INTERVENTIONS



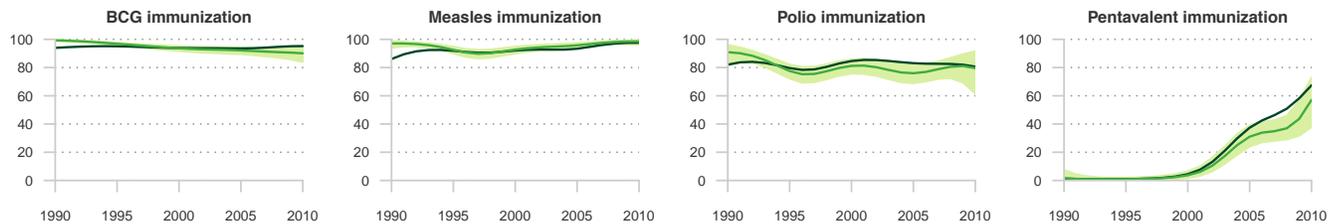
ITN ownership remained below 10% until 2001, after which coverage rapidly increased to 68% in 2010 (95% CI: 59%, 77%), exceeding the national average of 62%.

ITN use by children under 5 years old quickly rose to 56% in 2010 (95% CI: 47%, 65%), which was higher than the national average of 51%. In 2010, the difference between ITN ownership and use (12 percentage points) in Kabompo was comparable to what was observed at the national level.

Kabompo formally implemented IRS activities in 2010, and reached 21% of households that year (95% CI: 10%, 37%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rose to 73% in 2007 (95% CI: 61%, 84%). Coverage then decreased to 64% in 2010 (95% CI: 47%, 78%), which was lower than the national average of 68%.

IMMUNIZATIONS



BCG immunization decreased from 99% in the early 1990s to 90% in 2010 (95% CI: 84%, 94%), which was much lower than the national average of 95%.

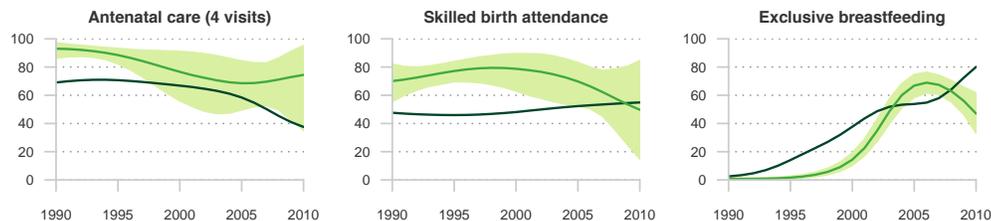
Measles immunization decreased from 97% in 1990 (95% CI: 94%, 99%) to 90% in the late 1990s before steadily rising to 99% in 2010 (95% CI: 96%, 100%), which was slightly higher than the national average of 98%.

Coverage of polio immunization varied over time, falling from 91% in 1990 (95% CI: 81%, 96%) to below 80% during the late 1990s. Aside from slipping below 80% in the mid-2000s, polio coverage hovered around 80% in the 2000s,

equaling 80% in 2010 (95% CI: 62%, 92%). This level of coverage was comparable to the national average of 81% in 2010. Kabompo is considered a high-risk district for polio importation from neighboring countries, so prioritizing efforts to increase and maintain high levels of polio immunization coverage in the district is likely to be important.

After the pentavalent vaccine was formally introduced in Kabompo in 2005, coverage increased to 37% in 2008 (95% CI: 29%, 46%) and 57% in 2010 (95% CI: 38%, 73%). This level of coverage was well below the national average of 67% in 2010, and was among the lowest in Zambia.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 93% in 1990 (95% CI: 86%, 97%) to 69% in the mid-2000s, but then slightly increased to 74% in 2010 (95% CI: 35%, 95%). This level of ANC4 coverage was among the highest in Zambia for 2010.

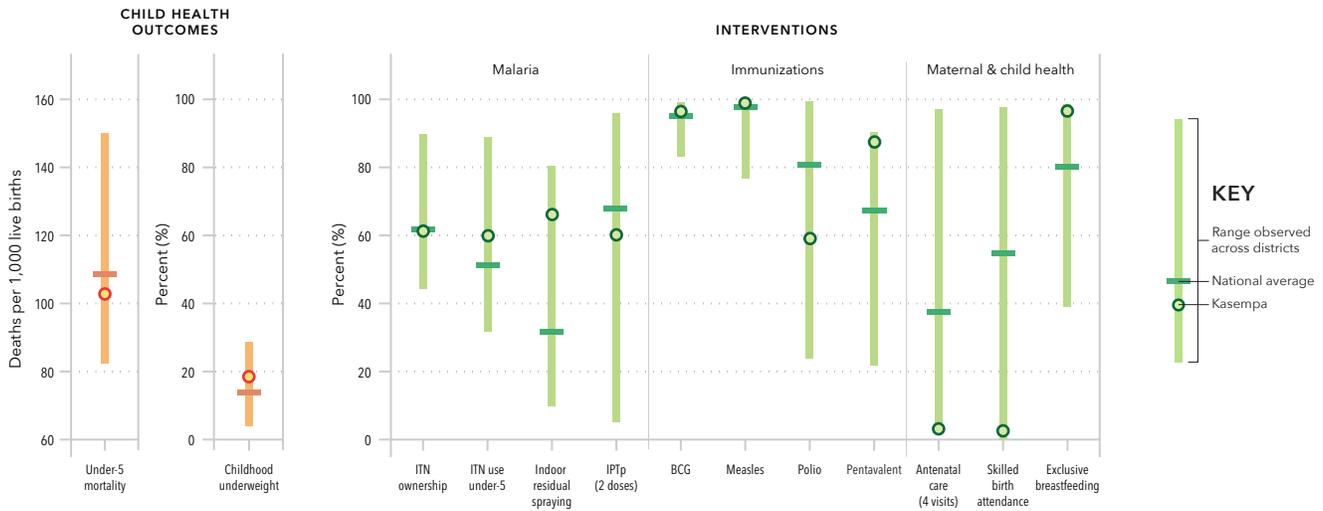
Skilled birth attendance gradually increased from 70% in 1990 (95% CI: 56%, 82%) to 79% in 1997 (95% CI: 69%, 87%). Coverage remained at 79% through 2000, after which SBA declined to 50% in 2010 (95% CI: 15%, 84%), falling slightly lower than the national average of 55%. Kabompo's down-

ward trend in SBA coverage was in direct contrast with the gradual increases observed at the national level.

The proportion of children who were exclusively breastfed remained below 20% until 2001, after which coverage climbed to 69% in 2006 (95% CI: 62%, 76%). However, exclusive breastfeeding then declined as quickly as it increased, dropping to 47% in 2010 (95% CI: 33%, 62%) and falling among the lowest levels in Zambia for that year. This decline in coverage in recent years is cause for concern.



Kasempa



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Kasempa reduced its all-cause under-5 mortality from 1990 to 2010, but the relative magnitude of the district’s progress was quite low. Childhood underweight substantially declined from very high levels, but its prevalence in Kasempa remained higher than the national average in 2010. Prioritizing ways to further accelerate gains in child health outcomes should be considered.

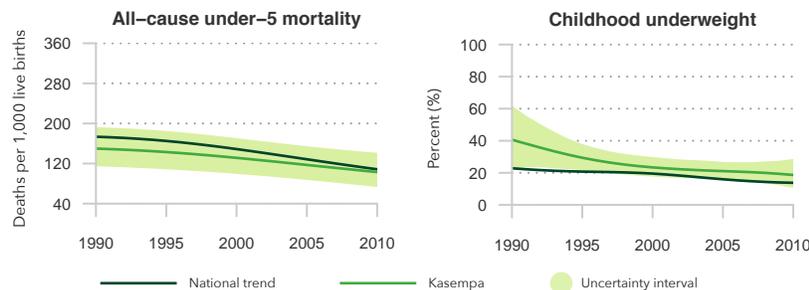
Kasempa scaled up IRS to among the highest levels in Zambia in 2010. A similar feat was achieved for coverage of the pentavalent vaccine and exclusive breastfeeding. Levels of BCG and measles immunization also remained high in 2010.

However, amidst these successes, several troubling trends

were identified and warrant further attention. IPTp2 coverage fell substantially from its peak in the mid-2000s, and polio immunization coverage steadily declined to very low levels. After achieving fairly high coverage in the late 1990s, ANC4 and skilled birth attendance drastically decreased to some of the lowest levels in Zambia.

In 2010, Kasempa generally met or exceeded national levels for malaria interventions and immunizations, but fell well below the national average for maternal and child health interventions (with the exception of exclusive breastfeeding). In comparison with the national average, Kasempa showed slightly lower levels of mortality and higher levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Kasempa recorded a reduction in all-cause under-5 mortality, dropping 31% from 150 deaths per 1,000 live births in 1990 (95% CI: 117, 191) to 103 in 2010 (95% CI: 75, 139); however, this decline was not statistically significant. In 2010, the district’s under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 41% in 1990 (95% CI: 23%, 61%) to 19% in 2009 (95% CI: 13%, 27%). Childhood underweight remained at 19% through 2010, which was higher than the national average of 14%. Kasempa’s progress is noteworthy given that its prevalence of underweight was nearly twice the national average in 1990; nonetheless, more work remains.

MALARIA INTERVENTIONS



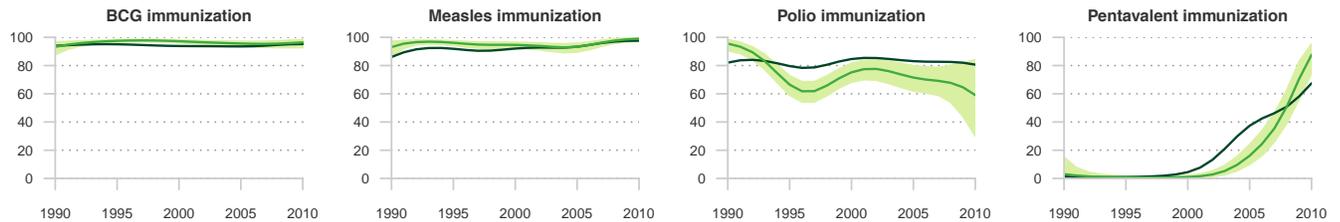
ITN ownership remained below 10% until 2002, after which coverage increased to 61% in 2010 (95% CI: 48%, 73%). This level of ITN ownership was comparable to the national average of 62% for 2010.

ITN use by children under 5 years old rapidly rose to 60% in 2010 (95% CI: 49%, 70%), which was higher than the national average of 51%. In 2010, the difference between ITN ownership and ITN use was quite low in Kasempa, which suggests that net use by children under 5 may be high among households that have ITNs.

Kasempa formally implemented IRS activities in 2008 and reached 47% of households that year (95% CI: 38%, 56%). In 2010, 66% of households were sprayed (95% CI: 57%, 75%), which was one of the highest levels of IRS coverage among the 54 districts that had IRS at that time.

The proportion of pregnant women who received IPTp2 remained below 10% until 1999, but rapidly rose to 97% in the mid-2000s. Coverage then fell to 60% in 2010 (95% CI: 33%, 82%), which was below the national average of 68%.

IMMUNIZATIONS



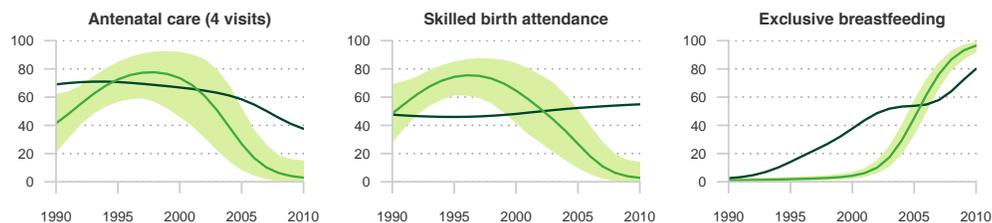
BCG coverage increased from 93% in 1990 (95% CI: 88%, 97%) to 98% during the mid- to late 1990s, but coverage then declined to 95% in the mid-2000s. BCG immunization rose to 96% in 2008 (95% CI: 93%, 98%) and remained at 96% through 2010, which was slightly higher than the national average of 95%.

Measles immunization rose to 97% during the mid-1990s but decreased to 93% in the mid-2000s. Coverage then increased to 99% in 2009 (95% CI: 97%, 100%) and remained at 99% through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization dropped from 96% in 1990 (95% CI: 91%, 98%) to 62% in 1996 (95% CI: 54%, 69%), but recovered to 78% in 2002 (95% CI: 70%, 84%). Polio coverage then declined to 59% in 2010 (95% CI: 30%, 84%), falling to among the lowest levels in the country.

After the pentavalent vaccine was formally introduced in Kasempa in 2005, coverage increased to 24% in 2006 (95% CI: 16%, 34%) and then rose to 88% in 2010 (95% CI: 75%, 95%). This level of coverage was among the highest in Zambia in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 41% in 1990 (95% CI: 22%, 62%) to 78% in 1998 (95% CI: 57%, 92%) before steeply falling to 3% in 2010 (95% CI: 0%, 15%), which was among the lowest in Zambia for that year. This precipitous drop in ANC4 coverage is quite worrisome given the district's gains during the 1990s.

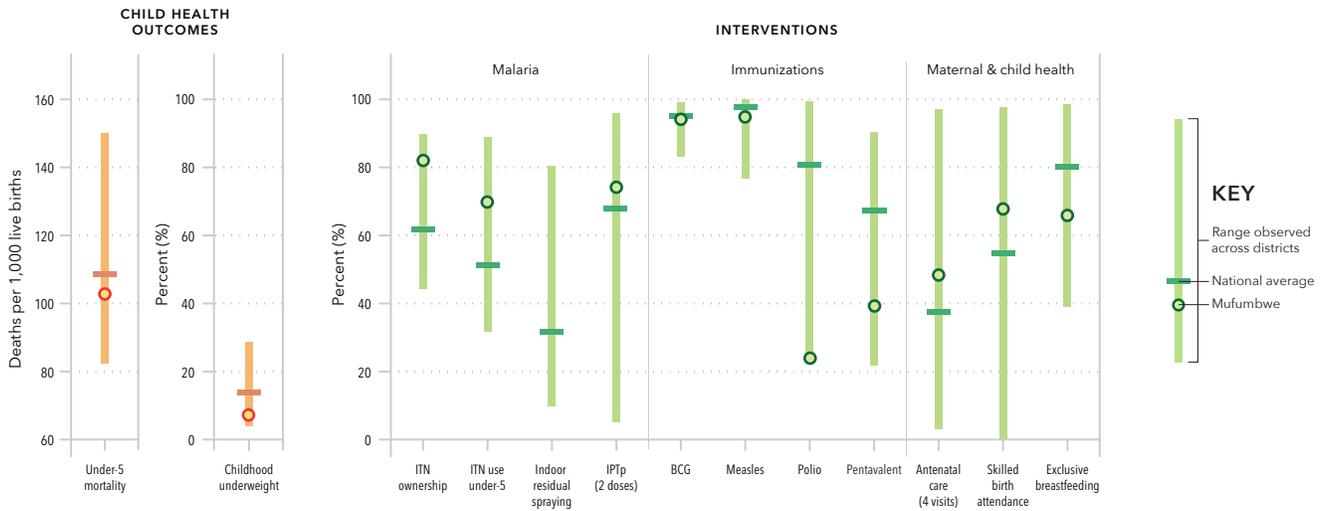
Skilled birth attendance rose from 48% in 1990 (95% CI: 29%, 69%) to 75% in the mid-1990s, but then quickly decreased to 3% in 2010 (95% CI: 0%, 14%). This level of SBA

coverage was among the lowest in Zambia in 2010, and the district's large decline in coverage during the 2000s is cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 2004, after which coverage rapidly increased to 97% in 2010 (95% CI: 93%, 99%), far exceeding the national average of 80% and rising to among the highest levels in Zambia for 2010.



Mufumbwe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Mufumbwe started IRS after 2010.

SUMMARY

Between 1990 and 2010, Mufumbwe substantially reduced all-cause under-5 mortality and childhood underweight, with the latter falling among the lowest in Zambia for 2010. Prioritizing efforts to maintain these rates of improvement in child health outcomes should be considered.

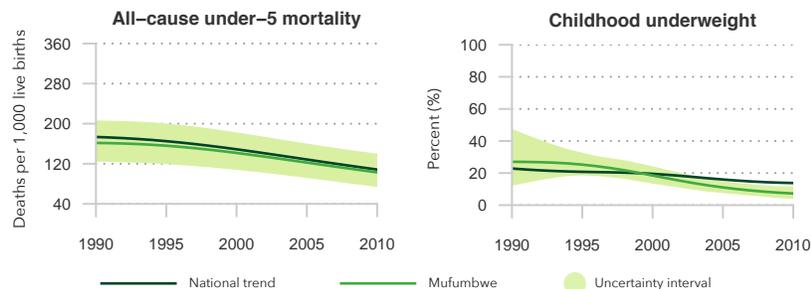
Mufumbwe increased ITN ownership and use to very high levels, rising to among the highest levels in Zambia for 2010. Moderately high coverage of BCG and measles immunization also was maintained. Mufumbwe was successful in greatly increasing skilled birth attendance after recording very low levels of coverage during the 1990s.

However, amidst these successes, several troubling trends were identified and warrant further attention. While IPTp2 coverage remained above the national average in 2010, its

levels decreased since 2007. The district had a very marginal scale-up of the pentavalent vaccine, and polio immunization plummeted to some of the lowest levels in Zambia. Exclusive breastfeeding remained below the national average in 2010, and alarmingly, ANC4 coverage dropped sharply after a period of substantial gains and sustained high levels of coverage during the late 1990s and early 2000s.

In 2010, Mufumbwe generally exceeded national levels for malaria interventions and maternal and child health interventions (except for exclusive breastfeeding). For immunizations, Mufumbwe's performance was more varied. In comparison with the national average, Mufumbwe showed lower levels of mortality and much lower levels of underweight.

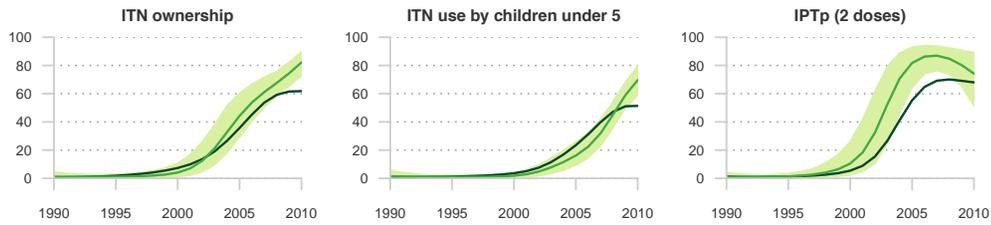
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mufumbwe recorded a significant reduction in all-cause under-5 mortality, dropping 36% from 162 deaths per 1,000 live births in 1990 (95% CI: 126, 204) to 103 in 2010 (95% CI: 76, 138). In 2010, the district's under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight steadily decreased from 27% in the early 1990s to 7% in 2010 (95% CI: 4%, 11%), which was well below the national average of 14%. In 2010, Mufumbwe had one of the lowest levels of childhood underweight in Zambia.

MALARIA INTERVENTIONS



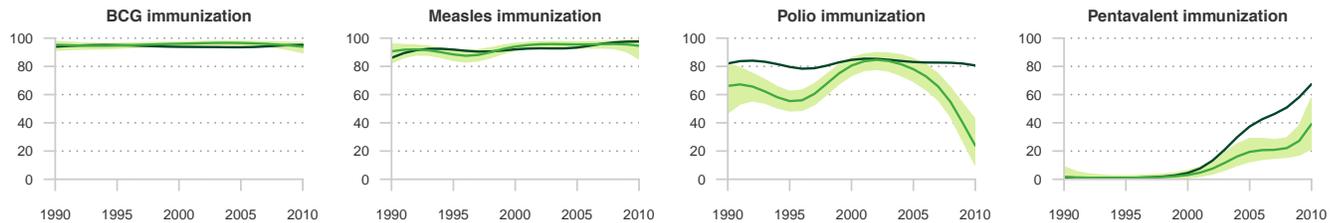
ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 82% in 2010 (95% CI: 73%, 90%), rising to among the highest levels in Zambia.

ITN use by children under 5 years old quickly rose to 70% in 2010 (95% CI: 59%, 80%), which was one of the highest levels in Zambia for 2010. The difference between ITN ownership and use (12 percentage points) in Mufumbwe was comparable to what was observed at the national level for 2010.

IRS coverage trends are not included because Mufumbwe did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2000, after which coverage quickly increased to 87% in 2007 (95% CI: 76%, 94%). IPTp2 coverage slipped to 74% in 2010 (95% CI: 52%, 89%), but remained above the national average of 68% for that year.

IMMUNIZATIONS



BCG coverage increased from 95% during the early to mid-1990s to 97% in 2003 (95% CI: 95%, 98%). This level of coverage was sustained through 2005, after which BCG immunization slipped to 94% in 2010 (95% CI: 90%, 97%), which was slightly lower than the national average of 95%.

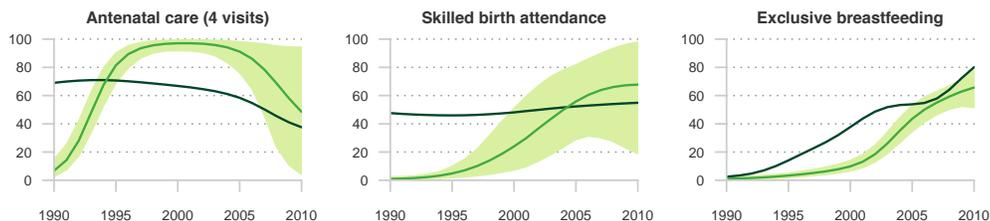
After hovering around 90% in the early 1990s, measles immunization dropped to 88% in the mid-1990s. Coverage rose to 96% in 2002 (95% CI: 94%, 97%) and remained at 96% until 2010, when measles coverage dipped to 95% (95% CI: 85%, 99%), which was lower than the national average of 98%.

Coverage of polio immunization decreased from 66% in 1990 (95% CI: 47%, 82%) to 55% in 1995 (95% CI: 49%, 62%),

but rebounded to 85% in 2002 (95% CI: 78%, 90%). Polio coverage remained over 80% until 2005, after which levels fell considerably to a low of 24% in 2010 (95% CI: 10%, 42%). This drastic drop in coverage left Mufumbwe with one of the lowest levels of polio immunization in Zambia for 2010.

After the pentavalent vaccine was formally introduced in Mufumbwe in 2005, coverage hovered around 20% through 2008 and then increased to 39% in 2010 (95% CI: 22%, 57%). This level of pentavalent coverage was among the lowest in Zambia for 2010. Mufumbwe's marginal scale-up of the pentavalent vaccine is cause for concern.

MATERNAL AND CHILD HEALTH INTERVENTIONS



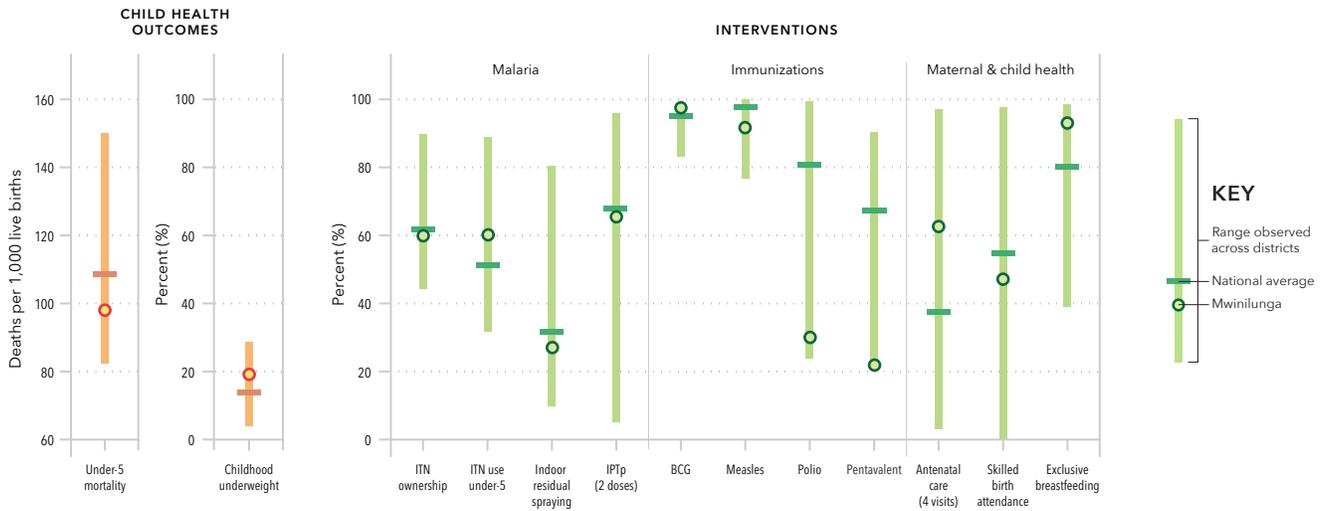
ANC4 coverage rapidly increased from 7% in 1990 (95% CI: 3%, 15%) to 97% in 1999 (95% CI: 92%, 99%). Coverage remained at 97% through 2002, after which ANC4 declined to 48% in 2010 (95% CI: 4%, 94%). While this level of coverage was higher than the national average of 37% in 2010, the district's gains in ANC4 during the 1990s and early 2000s were effectively reversed.

Skilled birth attendance remained below 10% until 1997, after which coverage steadily increased to 68% in 2010 (95% CI: 19%, 98%), exceeding the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 2003, after which coverage increased to 66% in 2010 (95% CI: 52%, 78%). This level of exclusive breastfeeding was among the lowest in Zambia in 2010.



Mwinilunga



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Mwinilunga reduced its all-cause under-5 mortality, but the relative magnitude of the district's declines was quite low. Childhood underweight substantially decreased, but still remained above the national average in 2010. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

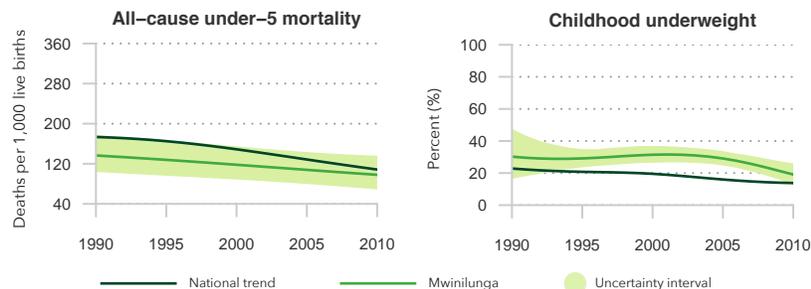
Coverage of ITNs reached or exceeded national levels in 2010, and Mwinilunga increased exclusive breastfeeding to very high levels. BCG immunization remained consistently high over time.

However, amidst these gains, several troubling trends were identified and warrant further attention. IPTp2 coverage declined since its peak in 2007, and measles coverage substantially declined from high levels during the 1990s. Marginal

gains took place for pentavalent coverage, and skilled birth attendance stayed at low levels. Polio immunization plummeted to some of the lowest levels in Zambia in 2010, which is particularly worrying given that Mwinilunga is considered a high-risk district for polio importation. After maintaining high levels of coverage in the 1990s, ANC4 coverage declined.

In 2010, Mwinilunga exceeded national levels for maternal and child health interventions (except for skilled birth attendance), but fell below the national average for malaria interventions and immunizations (with the exceptions of ITN use and BCG coverage). In comparison with the national average, Mwinilunga showed lower levels of mortality and higher levels of underweight.

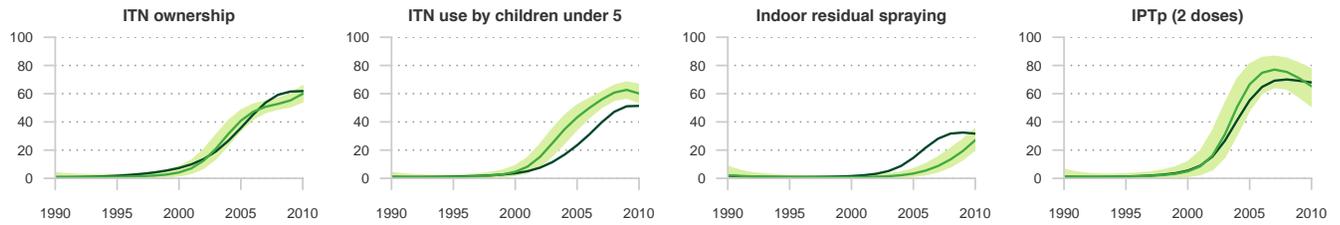
CHILD HEALTH OUTCOMES



From 1990 to 2010, Mwinilunga recorded a reduction in all-cause under-5 mortality, dropping 28% from 137 deaths per 1,000 live births in 1990 (95% CI: 106, 175) to 98 in 2010 (95% CI: 71, 134); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was well below the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight hovered around 30% during the 1990s, slightly increasing to 32% in 2001 (95% CI: 27%, 36%). Underweight then steadily decreased to 19% in 2010 (95% CI: 13%, 25%), but remained higher than the national average of 14% for that year.

MALARIA INTERVENTIONS



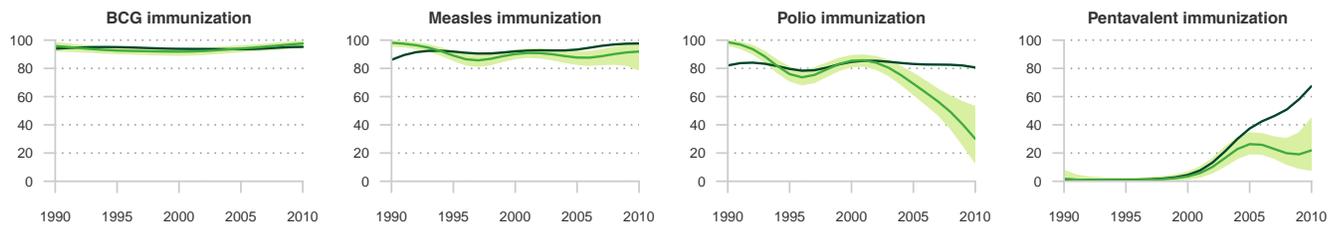
ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 60% in 2010 (95% CI: 54%, 66%), falling slightly lower than the national average of 62%.

ITN use by children under 5 years old climbed to 63% in 2009 (95% CI: 57%, 68%), but slipped to 60% in 2010 (95% CI: 54%, 67%). This level of ITN use was higher than the national average of 51% for 2010. ITN ownership equaled ITN use in Mwinilunga for 2010, which suggests that net use by children under 5 may be high among households that have ITNs.

Mwinilunga formally implemented IRS activities in 2010 and reached 27% of households that year (95% CI: 20%, 35%). This scale-up of IRS was on the lower end as compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage increased to 77% in 2007 (95% CI: 65%, 86%). IPTp2 coverage fell to 65% in 2010 (95% CI: 51%, 77%), which was slightly lower than the national average of 68%.

IMMUNIZATIONS



BCG coverage decreased from 96% in 1990 (95% CI: 92%, 98%) to 92% in the late 1990s and remained at this level until 2002, after which coverage steadily rose to 98% in 2010 (95% CI: 95%, 99%). This level of BCG immunization was higher than the national average of 95% for 2010.

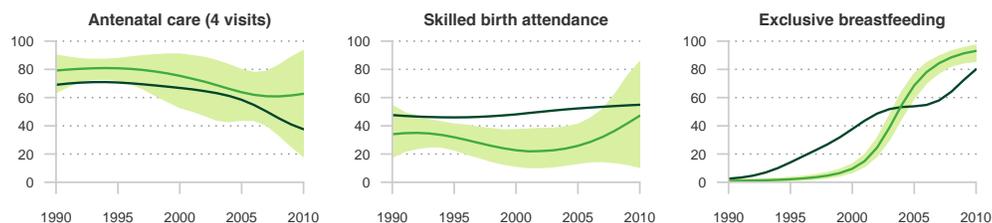
Measles immunization fell from 98% in 1990 (95% CI: 96%, 99%) to 86% in the mid-1990s. Coverage wavered around 90% for most of the 2000s, slightly increasing to 92% in 2010 (95% CI: 79%, 98%) but still remaining lower than the national average of 98% for 2010.

Polio immunization coverage dropped from 99% in 1990 (95% CI: 97%, 100%) to 74% in 1996 (95% CI: 69%, 78%). Polio

coverage increased and remained above 80% during the late 1990s and early 2000s, but then declined considerably to 30% in 2010 (95% CI: 14%, 53%), among the lowest in Zambia in 2010. Mwinilunga is considered a high-risk district for polio importation from neighboring countries, so addressing the district's faltering levels of polio coverage is likely to be important.

After the pentavalent vaccine was formally introduced in Mwinilunga in 2005, coverage hovered around 26% before declining to 19% in 2009 (95% CI: 9%, 34%). Pentavalent coverage increased slightly to 22% in 2010 (95% CI: 8%, 44%), but remained among the lowest levels in Zambia for 2010. Mwinilunga's very minimal scale-up of the vaccine is cause for concern.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage remained around 80% in the 1990s before falling to 63% in 2010 (95% CI: 18%, 93%). Although this level of ANC4 in 2010 remained higher than the national average of 37% in 2010, coverage still decreased nearly 20 percentage points between the 1990s and 2010.

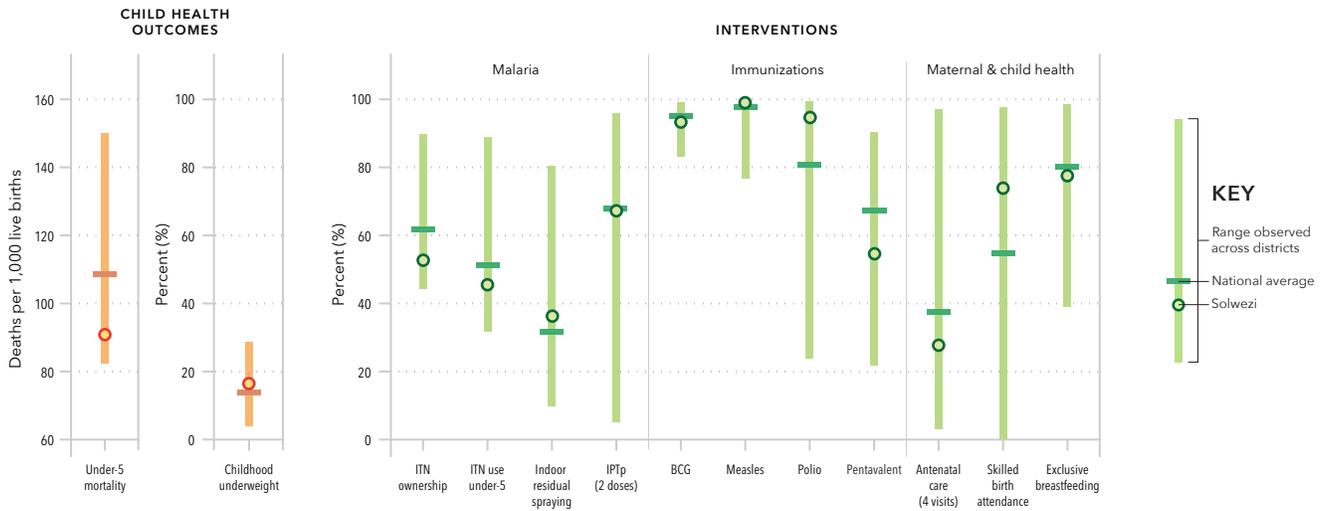
Skilled birth attendance decreased from 34% in 1990 (95% CI: 18%, 54%) to 22% in the early 2000s before gradu-

ally increasing to 47% in 2010 (95% CI: 11%, 85%). This level of SBA coverage still remained below the national average of 55% for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 2002, after which coverage quickly increased to 93% in 2010 (95% CI: 86%, 97%) and far exceeded the national average of 80% for that year.



Solwezi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

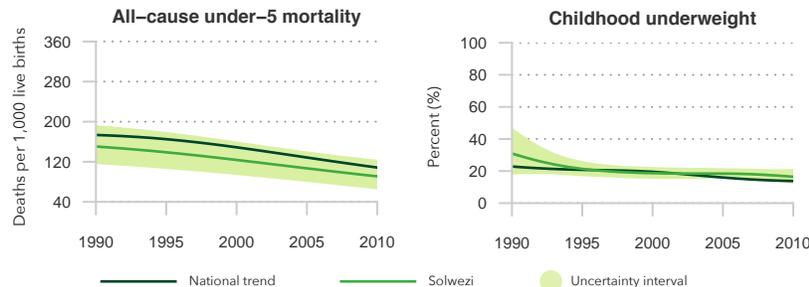
Between 1990 and 2010, Solwezi substantially reduced all-cause under-5 mortality and childhood underweight, with the district bringing its under-5 mortality to among the lowest levels in Zambia for 2010. However, the district's levels of underweight remained higher than the national average in the same year. Prioritizing ways to further accelerate gains for child health outcomes, especially childhood underweight, should be considered.

Solwezi's levels of IPTp2 and IRS closely followed the national trend through 2010. High coverage of measles immunization was achieved in 2010, and polio coverage increased to some of the highest levels in Zambia. Solwezi made steady progress in increasing skilled birth attendance, and coverage of exclusive breastfeeding reached national levels in 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. ITN ownership was among the lowest in Zambia for 2010. Coverage of the pentavalent vaccine was consistently lower than the national average since its introduction. After maintaining fairly high levels of coverage in the 1990s, ANC4 coverage substantially declined.

In 2010, Solwezi met or exceeded national levels for immunizations (with the exception of the pentavalent vaccine) and maternal and child health interventions (excluding ANC4), but equaled or fell below for malaria interventions (aside from IRS). In comparison with the national average, Solwezi showed much lower levels of mortality and slightly higher levels of underweight.

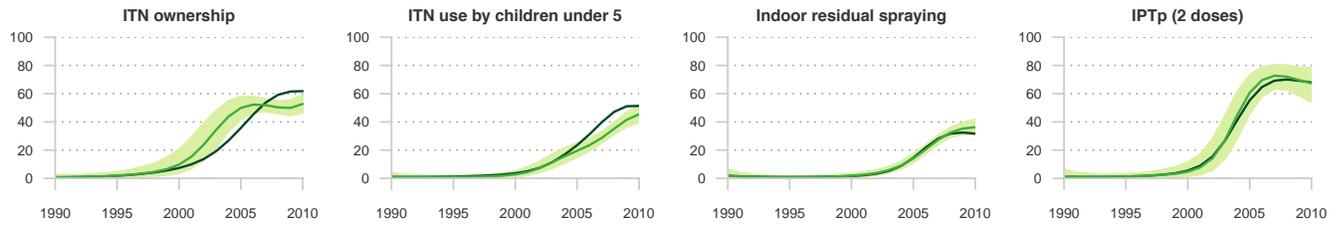
CHILD HEALTH OUTCOMES



From 1990 to 2010, Solwezi recorded a significant reduction in all-cause under-5 mortality, dropping 40% from 150 deaths per 1,000 live births in 1990 (95% CI: 117, 191) to 91 in 2010 (95% CI: 67, 122). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the lowest in Zambia.

The proportion of children who were underweight decreased from 31% in 1990 (95% CI: 18%, 46%) to 16% in 2010 (95% CI: 13%, 21%). This level of childhood underweight remained slightly higher than the national average of 14% in 2010, but Solwezi's progress in reducing the levels of underweight from its peak in 1990 is notable.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2000, after which coverage quickly increased to 52% in 2006 (95% CI: 46%, 58%). Ownership remained at 52% through 2007 before briefly slipping to 50% in 2008 and 2009. In 2010, ITN ownership rebounded to 53% (95% CI: 46%, 59%), but still fell well below the national average of 62% and was among the lowest in Zambia.

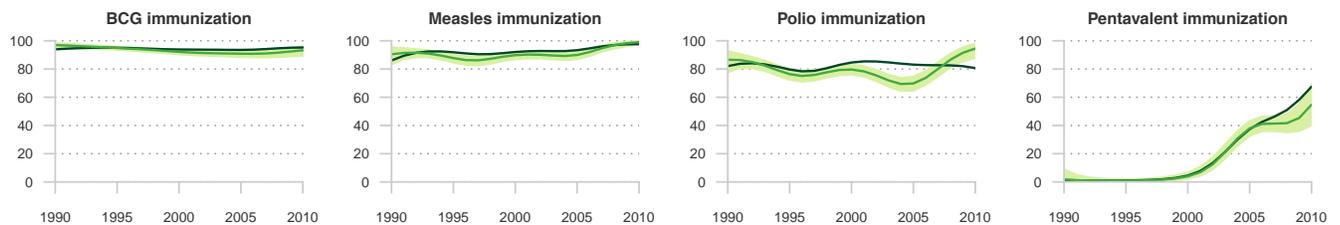
ITN use by children under 5 years old steadily increased to 45% in 2010 (95% CI: 40%, 52%), which was lower than then national average of 51%. The difference between ITN ownership and use (8 percentage points) was slightly lower in

Solwezi than what was observed at the national level (11 percentage points) for 2010.

Solwezi formally implemented IRS activities in 2006, and was one of the first 15 districts in Zambia to roll out IRS. Solwezi expanded coverage to 32% in 2008 (95% CI: 29%, 36%) and 36% in 2010 (95% CI: 31%, 42%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly increased to 73% in 2007 (95% CI: 63%, 81%). IPTp2 coverage declined to 67% in 2010 (95% CI: 54%, 79%), which was comparable to the national average of 68%.

IMMUNIZATIONS



BCG coverage declined from 97% in the early 1990s to 91% in 2002 (95% CI: 89%, 93%) and remained at this level through 2007. Coverage then increased to 93% in 2010 (95% CI: 89%, 96%), but remained below the national average of 95%.

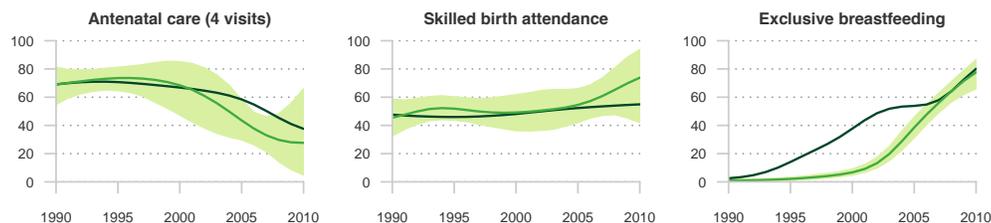
Measles immunization hovered around 90% until 2007, after which coverage increased to 99% in 2010 (95% CI: 97%, 100%), slightly exceeding the national average of 98%.

Coverage of polio immunization decreased from 87% in 1990 (95% CI: 78%, 93%) to 75% in 1996 (95% CI: 71%, 79%), but increased to 80% in 2000 (95% CI: 76%, 83%). Polio cov-

erage then briefly dropped to around 70% in the mid-2000s before steadily rising to 95% in 2010 (95% CI: 88%, 98%), one of the highest levels in Zambia that year.

After the pentavalent vaccine was formally introduced in Solwezi in 2005, coverage increased to 41% in 2006 (95% CI: 36%, 46%) and 55% in 2010 (95% CI: 40%, 70%), which was lower than the national average of 67% and among the lowest in Zambia. Solwezi's marginal scale-up of the pentavalent vaccine is cause for concern.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage remained between 69% and 74% in the 1990s, but fell to 28% in 2009 (95% CI: 9%, 56%) and remained at this level through 2010. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Solwezi's levels of coverage fell 40 percentage points in 10 years is particularly worrisome.

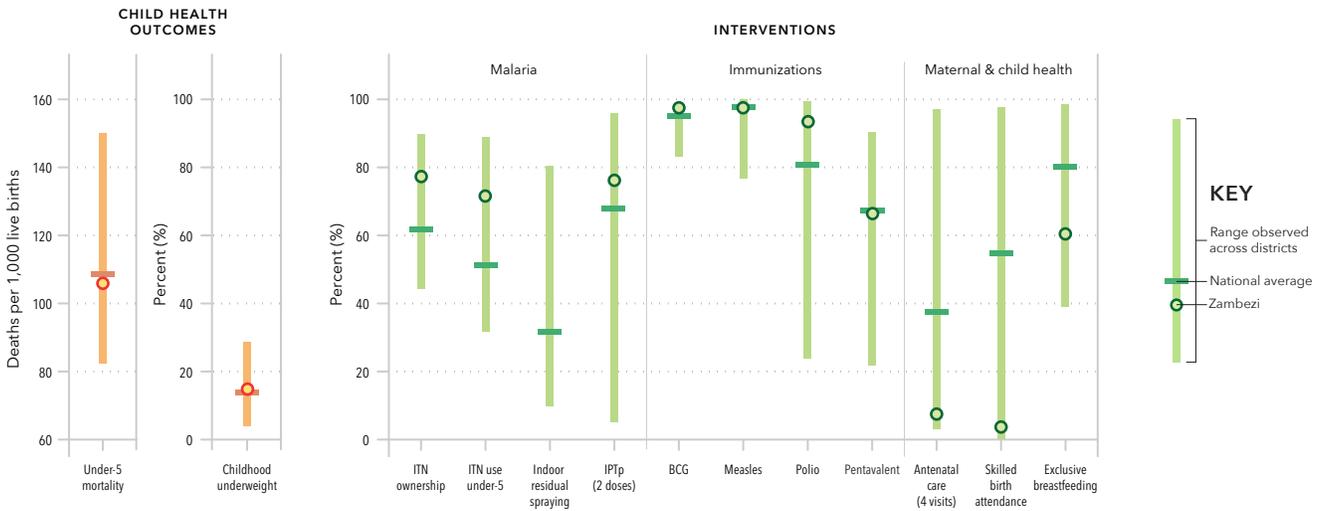
Skilled birth attendance hovered around 50% until 2004,

after which coverage increased to 74% in 2010 (95% CI: 42%, 94%). Solwezi's recent gains elevated its levels of SBA coverage above the national average of 55% for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 2003, after which coverage rose to 78% in 2010 (95% CI: 66%, 86%) and nearly equaled the national average of 80%.



Zambezi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Zambezi started IRS after 2010.

SUMMARY

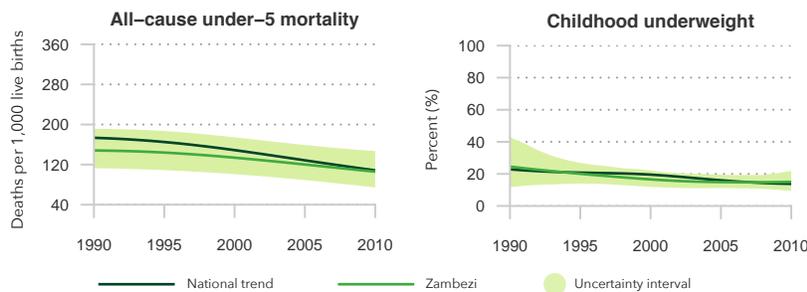
Zambezi reduced its all-cause under-5 mortality between 1990 and 2010, but the relative magnitude of the district's decline was low. While the proportion of children who were underweight also decreased from 1990 to 2010, Zambezi's levels of underweight remained unchanged from 2003 to 2010. Prioritizing efforts to accelerate gains for child health outcomes should be considered.

Zambezi sustained steady gains for malaria interventions, which contrasted with the stagnation or declines in coverage observed at the national level. In 2010, ITN use was among the highest in Zambia. High levels of BCG coverage were maintained, and polio immunization increased to among the highest levels in the country in 2010. The district was successful in increasing pentavalent coverage to the national average in 2010 after initially lagging behind national trends.

However, amidst these gains, several troubling trends were identified and warrant further attention. Gains in exclusive breastfeeding coverage stalled during the late 2000s. ANC4 coverage substantially declined to very low levels in 2010, and alarmingly, skilled birth attendance dropped from consistently high levels of coverage in the early 1990s to well below 10% coverage in 2010. For all three of these key maternal and child health interventions, Zambezi recorded some of the lowest levels of coverage in Zambia for 2010.

In 2010, Zambezi met or exceeded national levels for malaria interventions and immunizations, but fell well below for maternal and child health interventions. In comparison with the national average, Zambezi showed slightly lower levels of mortality and similar levels of underweight.

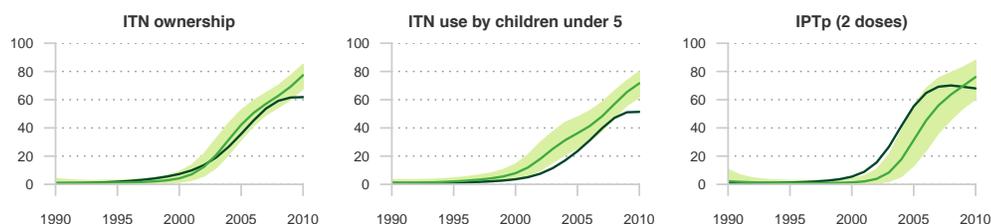
CHILD HEALTH OUTCOMES



From 1990 to 2010, Zambezi recorded a reduction in all-cause under-5 mortality, dropping 29% from 148 deaths per 1,000 live births in 1990 (95% CI: 115, 189) to 106 in 2010 (95% CI: 77, 145); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 24% in 1990 (95% CI: 12%, 42%) to 15% in 2003 (95% CI: 12%, 19%). This level of childhood underweight was maintained through 2010, which was comparable to the national average of 14% for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2002, after which coverage quickly increased to 77% in 2010 (95% CI: 68%, 85%) and far exceeded the national average of 62%.

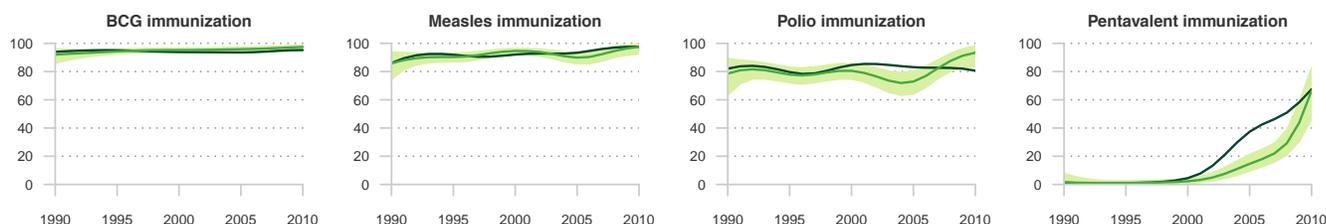
ITN use by children under 5 years old rapidly rose to 72% in 2010 (95% CI: 62%, 80%), which was among the highest levels in Zambia for that year. The difference between ITN ownership and ITN use was quite low in Zambezi in 2010, which suggests that net use by children under 5 may be high

among households that have ITNs.

IRS coverage trends are not included because Zambezi did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2004, after which coverage rapidly rose to 76% in 2010 (95% CI: 60%, 88%). This level of IPTp2 coverage was higher than the national average of 68%.

IMMUNIZATIONS



BCG coverage increased from 92% in 1990 (95% CI: 86%, 96%) to 97% in 2008 (95% CI: 95%, 98%). This level of coverage was maintained through 2010, and was higher than the national average of 95% for 2010.

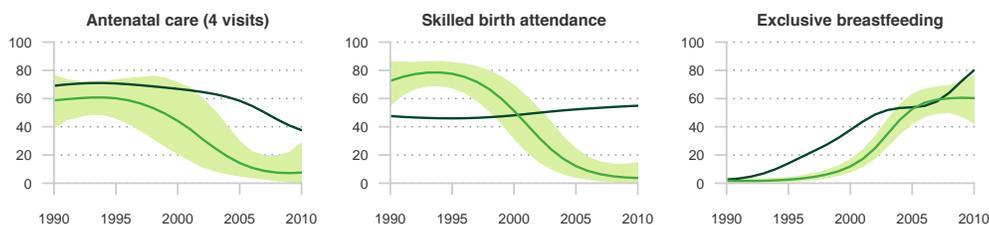
Aside from a small dip in coverage during the mid-2000s, measles immunization consistently increased from 86% in 1990 (95% CI: 75%, 94%) to 98% in 2010 (95% CI: 92%, 100%). This level of measles coverage equaled the national average for 2010.

Coverage of polio immunization largely hovered around 80% during the 1990s, after which coverage fell to 72% in

2004 (95% CI: 63%, 79%). Polio immunization then increased to 93% in 2010 (95% CI: 84%, 98%), which was among the highest levels of coverage in Zambia for that year. Zambezi is considered a high-risk district for polio importation from neighboring countries, so maintaining these high levels of polio immunization is important.

After the pentavalent vaccine was formally introduced in Zambezi in 2005, coverage increased to 18% in 2006 (95% CI: 13%, 25%) and 66% in 2010 (95% CI: 46%, 82%), essentially equaling the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage hovered around 60% until 1997, after which coverage dropped sharply to 8% in 2010 (95% CI: 1%, 28%), falling well below the national average of 37% and among the lowest in Zambia. The finding that Zambezi's levels of coverage fell over 50 percentage points between 1990 and 2010 is quite worrisome.

Skilled birth attendance increased to 78% in the mid-1990s, but then rapidly fell to 4% in 2009 (95% CI: 1% to 13%) and remained at 4% through 2010. This level of SBA coverage

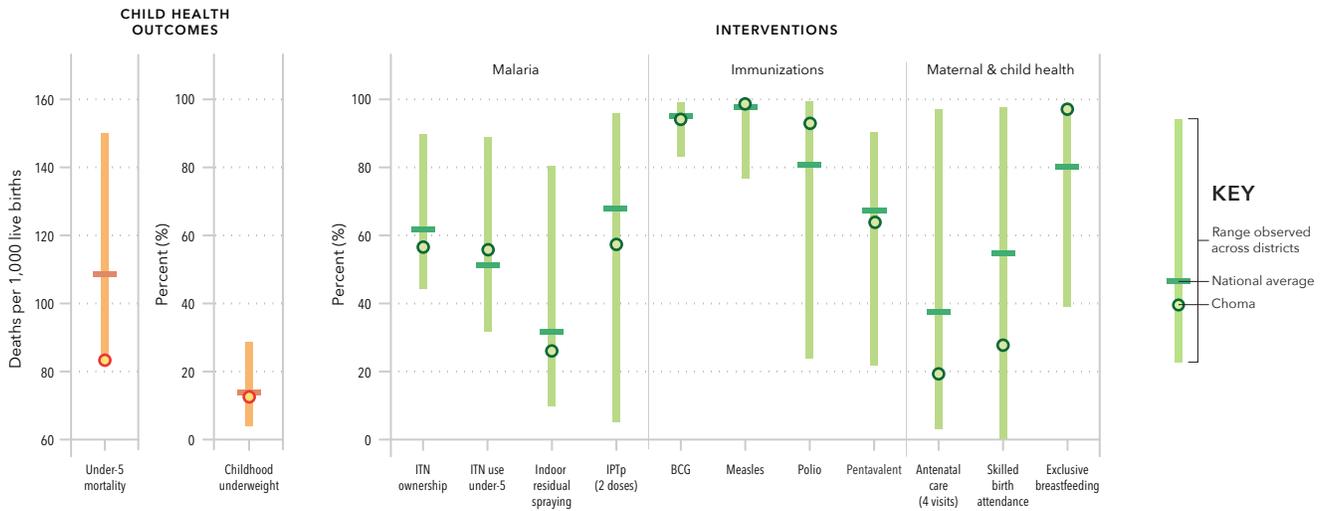
was among the lowest in Zambia in 2010, which is alarming given that Zambezi consistently recorded higher levels of SBA than the national average throughout the 1990s.

The proportion of children who were exclusively breastfed remained below 20% until 2002, after which coverage increased to 59% in 2007 (95% CI: 50%, 68%). Gains in exclusive breastfeeding then stalled, with coverage only reaching 60% in 2010 (95% CI: 43%, 76%), which was among the lowest levels in Zambia for that year.

Southern province



Choma



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

By 2010, all-cause under-5 mortality in Choma substantially decreased to among the lowest levels in Zambia. There was a more moderate decrease in childhood underweight from 1990 to 2010. Prioritizing ways to further accelerate gains for child health outcomes in the district should be considered.

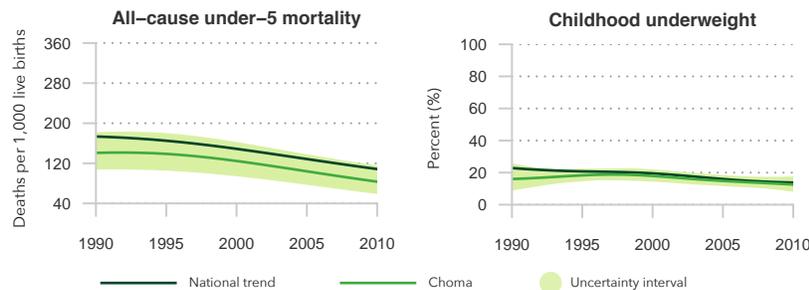
The district expanded coverage of the pentavalent vaccine after a period of slow gains, and exclusive breastfeeding coverage was among the highest in Zambia in 2010. Polio and measles immunization coverage also rose to high levels.

Amidst these gains, however, some troubling trends were identified and warrant further attention. IPTp2 coverage

largely stagnated during the late 2000s, and most malaria interventions decreased. Skilled birth attendance remained at very low levels, and after sustaining moderately high levels in the early 1990s, ANC4 coverage drastically declined.

In 2010, Choma generally met or exceeded the national average for immunizations (except for the pentavalent vaccine), but fell below the national average for malaria and MCH interventions; exclusive breastfeeding was the stark exception. Choma showed much lower levels of mortality and comparable levels of underweight relative to the national average.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Choma recorded a significant reduction in all-cause under-5 mortality, dropping 41% from 141 deaths per 1,000 live births in 1990 (95% CI: 109, 180) to 83 in 2010 (95% CI: 61, 114). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116), and was among the lowest in Zambia.

Childhood underweight increased from 16% in the early 1990s to 19% in the late 1990s. Prevalence then fell to 13% in 2008 (95% CI: 11%, 17%) and remained at this level through 2010. This level of underweight was comparable to the national average of 14% for 2010, but the district's progress lagged behind that seen at the national level.

MALARIA INTERVENTIONS



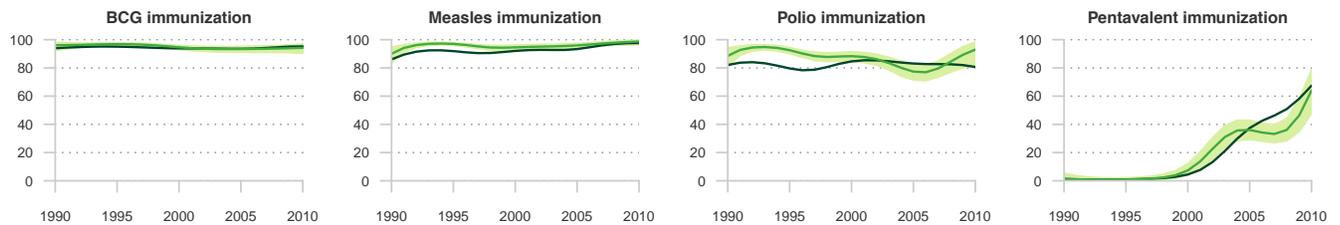
ITN ownership remained below 10% until 2001, after which coverage rapidly rose to 58% in 2009 (95% CI: 53%, 62%). ITN ownership slipped slightly in 2010, falling to 57% (95% CI: 51%, 62%) and below the national average of 62%.

ITN use by children under 5 years old rapidly increased to 57% in 2009 (95% CI: 51%, 62%) before slipping to 56% in 2010 (95% CI: 50%, 62%), which remained higher than the national average of 51%. In 2010, the difference between ITN ownership and ITN use was quite low in Choma, which suggests that net use by children under 5 may be high among households that have ITNs.

Choma formally implemented IRS activities in 2008, reaching 31% of households that year (95% CI: 25%, 38%). IRS coverage decreased to 26% in 2010 (95% CI: 22%, 31%), which left Choma on the lower end among the other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly rose to 59% in 2007 (95% CI: 48%, 69%). IPTp2 coverage then stagnated, falling slightly to 57% in 2010 (95% CI: 45%, 71%) and below the national average of 68%.

IMMUNIZATIONS



BCG immunization declined from 97% during the mid- to late 1990s to 93% in the mid-2000s. BCG coverage was at 94% from 2007 to 2010, falling slightly lower than the national average of 95%.

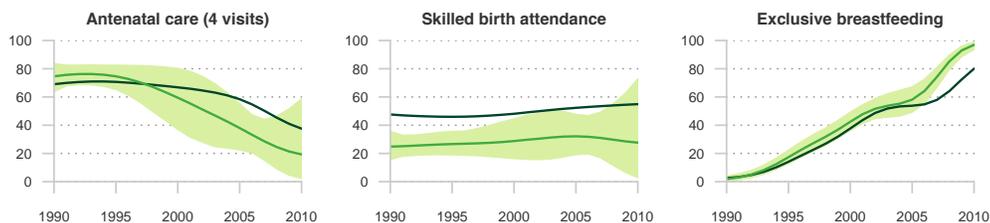
After rising from 90% in 1990 (95% CI: 84%, 95%), measles immunization remained between 94% and 97% until 2007. In 2010, coverage increased to 99% (95% CI: 96%, 100%), which was slightly higher than the national average of 98%.

Polio coverage declined from 95% in 1993 (95% CI: 93%,

96%) to 77% in 2005 and 2006. Polio immunization then rebounded, rising to 93% in 2010 (95% CI: 82%, 98%) and far exceeding the national average of 81% for that year.

After the pentavalent vaccine was formally introduced in Choma in 2005, coverage hovered between 33% and 36% through 2008, and then jumped to 64% in 2010 (95% CI: 48%, 79%). This was a slightly lower level of pentavalent coverage than the national average of 67% in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage decreased from 76% in the early 1990s to 19% in 2010 (95% CI: 2%, 58%), which was lower than the national average of 37% for 2010. ANC4 decreased dramatically throughout Zambia from 1990 to 2010, and the finding that the district's ANC4 coverage fell nearly 60 percentage points during this time is worrisome.

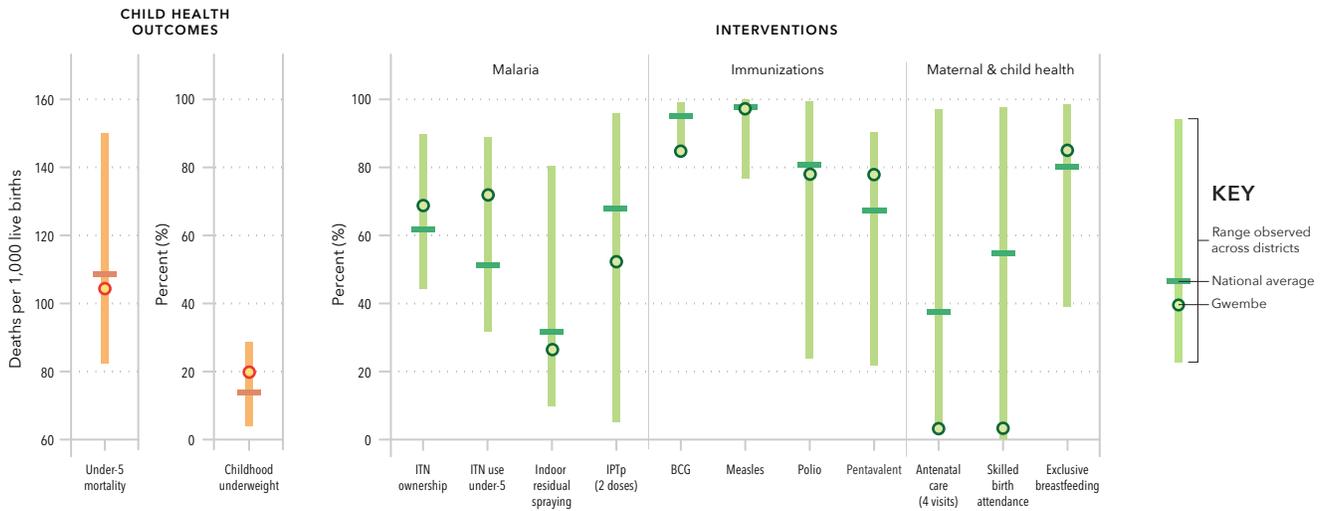
Skilled birth attendance remained between 25% and 32%

from 1990 to 2010. SBA coverage was 28% in 2010 (95% CI: 3%, 73%), which was lower than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage rapidly rose to 97% in 2010 (95% CI: 94%, 99%). In 2010, Choma's level of exclusive breastfeeding was much higher than the national average of 80%, and was among the highest in Zambia.



Gwembe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Gwembe reduced its all-cause under-5 mortality and levels of child underweight, but the latter actually increased during the 2000s. Prioritizing efforts to further accelerate gains for child health outcomes, especially underweight, should be considered.

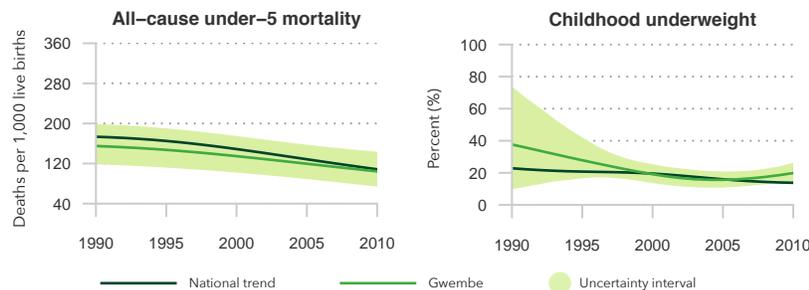
Gwembe rapidly scaled up ITN coverage, particularly ITN use. After periods of slower gains or stagnation, the district expanded coverage of the pentavalent vaccine and exclusive breastfeeding in 2010. Measles coverage remained high after a dip in coverage during the late 1990s.

Amidst these gains, however, several troubling trends were identified and warrant further attention. The scale-up of IPTp2 largely lagged behind the national trend, and BCG

immunization abruptly fell in 2010. Skilled birth attendance dropped substantially, and most alarmingly, ANC4 plummeted from very high levels in the 1990s to extremely low coverage in 2010.

In 2010, Gwembe generally met or exceeded the national average for immunizations, but generally fell well below the national average for maternal and child health interventions; exclusive breastfeeding was the stark exception. For malaria interventions, Gwembe had a more mixed performance. In comparison with the national average, Gwembe showed slightly lower levels of mortality and higher levels of childhood underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Gwembe recorded a reduction in all-cause under-5 mortality, dropping 33% from 155 deaths per 1,000 live births in 1990 (95% CI: 121, 197) to 104 in 2010 (95% CI: 76, 142); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 38% in 1990 (95% CI: 10%, 73%) to 16% from 2003 to 2006. Underweight increased during the mid-2000s, rising to 20% in 2010 (95% CI: 15%, 26%) and exceeding that year's national average of 14%. Despite its overall decline in underweight, the district's recent rise is troubling and warrants further attention.

MALARIA INTERVENTIONS



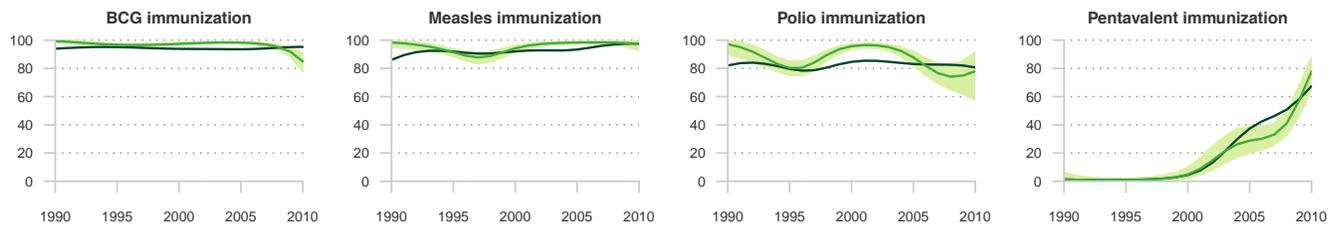
ITN ownership remained below 10% until 2005, after which coverage rapidly rose to 69% in 2010 (95% CI: 58%, 79%) and exceeded the national average of 62% for that year.

ITN use by children under 5 years old quickly rose to 72% in 2010 (95% CI: 61%, 81%), which was among the highest in the country. In 2010, the difference between ITN ownership and ITN use was quite low, which suggests that net use by children under 5 may be high among households that have ITNs.

Gwembe formally implemented IRS activities in 2010, and reached 26% of households that year (95% CI: 19%, 35%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, but rose to 46% in 2008 (95% CI: 30%, 64%). Gains in IPTp2 coverage slowed, reaching 52% in 2010 (95% CI: 34%, 69%) and falling below the national average of 68% for that year.

IMMUNIZATIONS



BCG immunization remained between 97% and 99% until 2008, after which coverage abruptly fell to 85% in 2010 (95% CI: 78%, 91%) and dropped to among the lowest levels in Zambia.

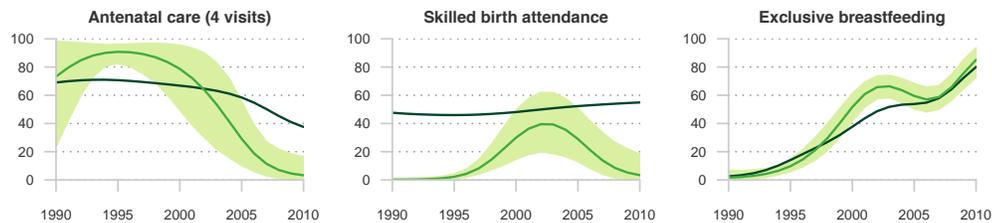
Measles immunization fell from 98% in the early 1990s to 88% in 1997 (95% CI: 83%, 91%), before steadily rising to 98% during the mid- to late 2000s. Coverage slipped to 97% in 2010 (95% CI: 93%, 99%), which was slightly lower than the national average of 98% for that year.

Polio coverage largely varied in the 1990s, falling from

97% in 1990 (95% CI: 90%, 100%) to 80% in 1995 and 1996 before rising well above 90% during the early and mid-2000s. Polio immunization dropped below 80% in the late 2000s, falling to 78% in 2010 (95% CI: 58%, 91%), which was slightly lower than the national average of 81%.

After the pentavalent vaccine was formally introduced in Gwembe in 2005, coverage increased to 30% in 2006 (95% CI: 22%, 39%) and 78% in 2010 (95% CI: 65%, 88%), which was higher than the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased to 90% or higher during the mid-1990s, but plunged to 3% in 2010 (95% CI: 0%, 17%), which was among the lowest levels of ANC4 in the country. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, but the magnitude of Gwembe's decline during this time (88 percentage points) is quite alarming.

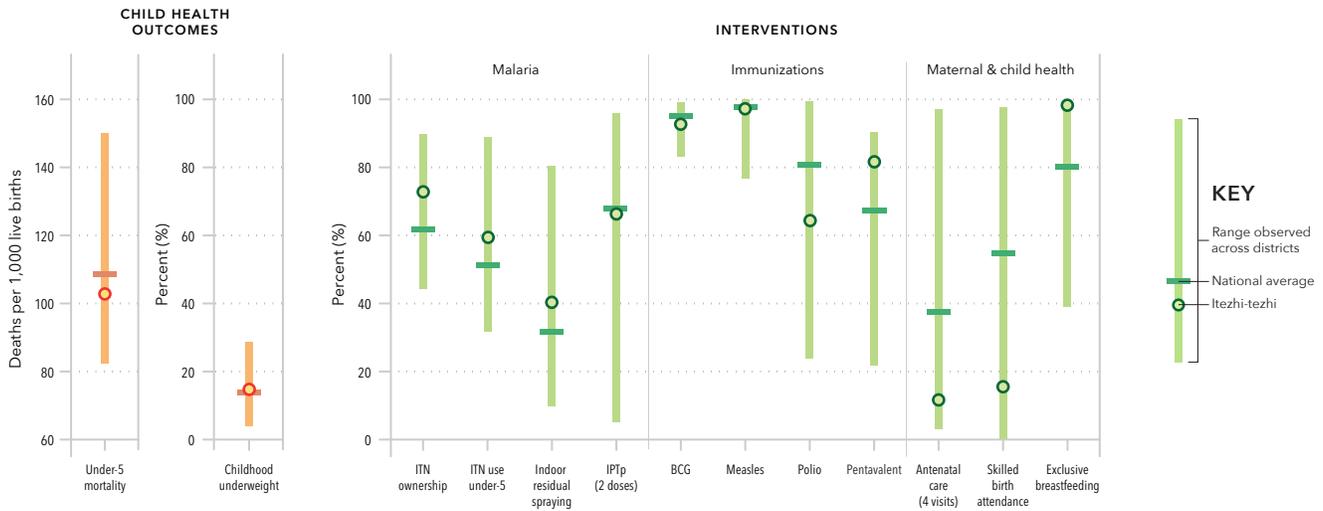
Skilled birth attendance increased to 40% in 2002 (95% CI: 20%, 62%), but quickly dropped to 3% in 2010 (95% CI:

0%, 18%), falling to among the lowest levels in Zambia. This finding is particularly troubling given the national trend of steady gains in SBA coverage.

The proportion of children who were exclusively breastfed rapidly increased from 15% in 1996 (95% CI: 9%, 21%) to 66% in 2002 (95% CI: 58%, 74%), but fell below 60% from 2006 to 2007. Coverage increased to 85% in 2010 (95% CI: 72%, 94%), exceeding the national average of 80%.



Itezhi-tezhi



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Itezhi-tezhi substantially reduced all-cause under-5 mortality and childhood underweight from 1990 to 2010. However, most of the declines in underweight took place during the 1990s, with minimal improvement in the 2000s. Prioritizing ways to further accelerate gains for child health outcomes, especially childhood underweight, should be considered.

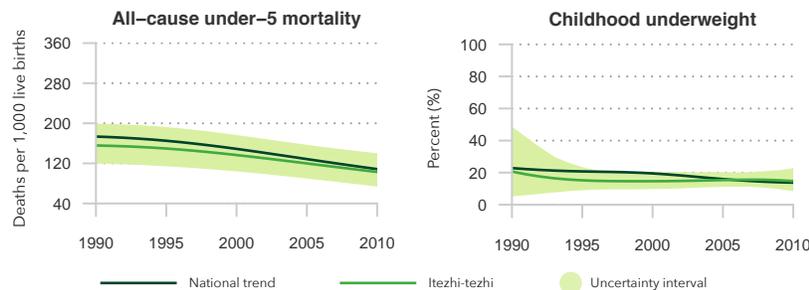
Malaria interventions generally were scaled up to levels higher than the national average, especially for ITN ownership. The district expanded coverage of the pentavalent vaccine to levels well above the national average in 2010. Exclusive breastfeeding reached some of the highest levels in Zambia, and high levels of measles immunization were maintained.

Amidst these gains, however, several troubling trends were identified and warrant further attention. IPTp2 coverage

fell from its peak during the mid-2000s, and BCG coverage slipped below the national average in 2010. After years of high coverage, polio immunization substantially declined during the late 2000s. Skilled birth attendance declined to even lower levels, and most alarmingly, ANC4 plunged from very high coverage in the 1990s to some of the lowest levels in Zambia.

In 2010, Itezhi-tezhi generally met or exceeded the national average for malaria interventions and immunizations (with the exception of polio coverage), but fell well below the national average for maternal and child health interventions; exclusive breastfeeding was the stark exception. In comparison with the national average, Itezhi-tezhi showed slightly lower levels of mortality and similar levels of childhood underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Itezhi-tezhi recorded a significant reduction in all-cause under-5 mortality, dropping 34% from 156 deaths per 1,000 live births in 1990 (95% CI: 122, 197) to 103 in 2010 (95% CI: 76, 138). In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight decreased from 21% in 1990 (95% CI: 6%, 48%) to 15% in 1995 (95% CI: 10%, 23%). Underweight hovered around 15% through 2010, which was comparable to the national average of 14%. The district's lack of overall progress between 1995 and 2010 is worrisome.

MALARIA INTERVENTIONS



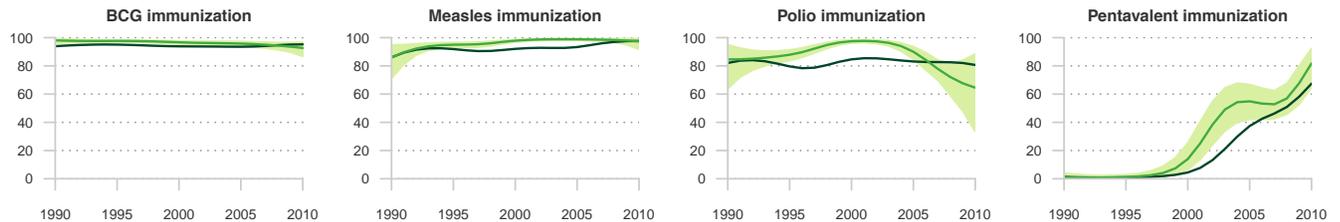
ITN ownership remained below 10% until 2001, after which coverage rapidly rose to 73% in 2009 (95% CI: 65%, 81%). Coverage was sustained at this level through 2010, far surpassing the national average of 62%.

The use of ITNs by children under 5 years old increased to 59% in 2009 (95% CI: 48%, 69%). This level of ITN use was sustained through 2010, exceeding the national average of 51%. The difference between ITN ownership and use (14 percentage points) was slightly higher than what was observed at the national level (11 percentage points) for 2010.

Itezhi-tezhi formally implemented IRS activities in 2010 and reached 41% of households that year (95% CI: 31%, 51%). This scale-up of IRS was on the higher end among other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001 but rapidly rose to 74% in 2007 (95% CI: 59%, 86%). IPTp2 coverage faltered, declining to 66% in 2010 (95% CI: 48%, 80%) and falling slightly lower than the national average of 68%.

IMMUNIZATIONS



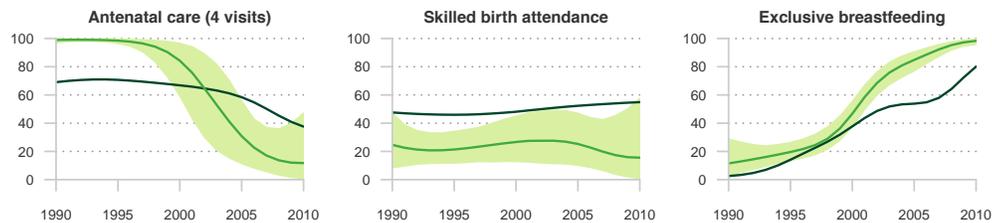
BCG immunization remained between 97% and 98% from 1990 to 2000, after which coverage declined to 93% in 2010 (95% CI: 87%, 97%) and fell lower than the national average of 95%.

Measles immunization rose from 86% in 1990 (95% CI: 71%, 95%) to 99% in 2002 (95% CI: 98%, 99%), which was sustained through 2007. Measles coverage slipped to 97% in 2010 (95% CI: 92%, 99%), which was slightly lower than the national average of 98%.

Coverage of polio immunization increased from 85% in the early 1990s to 98% in 2001 (95% CI: 96%, 99%), after which coverage steadily declined to 65% in 2010 (95% CI: 33%, 88%) and fell below the national average of 81%.

After the pentavalent vaccine was formally introduced in Itezhi-tezhi in 2005, coverage hovered around 60% for several years before it climbed to 82% in 2010 (95% CI: 65%, 92%). Itezhi-tezhi achieved a higher level of pentavalent coverage than the national average of 67% in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage remained between 98% and 99% from 1990 to 1996, but steeply dropped to 12% in 2009 (95% CI: 2%, 39%). ANC4 remained at 12% through 2010, which was among the lowest levels in Zambia for 2010. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Itezhi-tezhi's coverage declined more than 80 percentage points during this time is quite alarming.

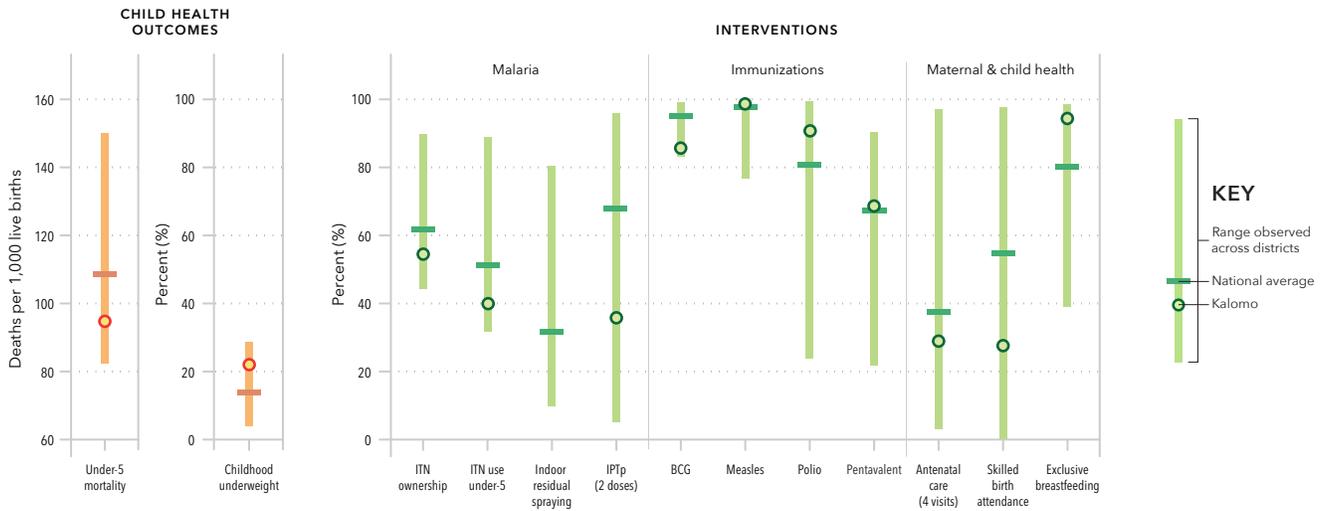
Skilled birth attendance gradually declined from 25% in 1990 (95% CI: 9%, 47%) to 16% in 2009 (95% CI: 2%, 50%). SBA

coverage remained at 16% through 2010, which was much lower than the national average of 55%. The district's consistently low rates of skilled birth attendance are cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage climbed to 81% in 2004 (95% CI: 73%, 87%). Coverage continued to increase, though at a slower pace, reaching 98% in 2010 (95% CI: 96%, 99%) and rising to among the highest levels in the country.



Kalomo



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Kalomo started IRS after 2010.

SUMMARY

Kalomo substantially reduced all-cause under-5 mortality between 1990 and 2010, bringing its levels to among the lowest in Zambia in 2010. The district's prevalence of childhood underweight increased in recent years, offsetting its progress during the early 2000s. Prioritizing ways to address this worrisome trend should be considered.

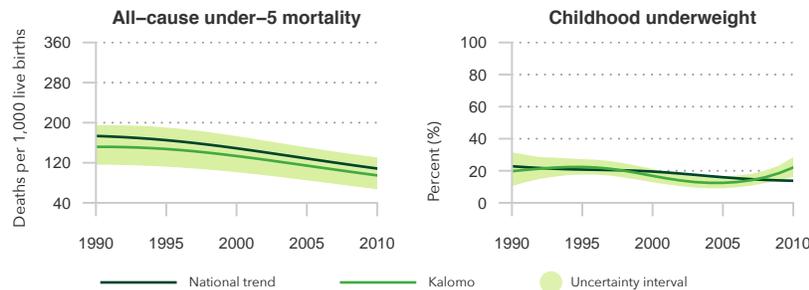
Kalomo successfully brought up coverage of the pentavalent vaccine to national levels after a period of stalled progress. Measles and polio immunization reached high levels in 2010, and exclusive breastfeeding coverage was consistently high in the 2000s.

Amidst these gains, however, some troubling trends were identified and warrant further attention. ITN ownership and

ITN use were much lower than the national average in 2010, and Kalomo had a marginal scale-up of IPTp2 coverage. BCG immunization abruptly fell in recent years, and skilled birth attendance remained at very low levels. Most alarmingly, after years of steady gains, ANC4 coverage dropped sharply.

In 2010, Kalomo generally met or exceeded the national average for immunizations (with the exception of BCG coverage), and fell below for malaria interventions and maternal and child health interventions (not including exclusive breastfeeding). In comparison with the national average, Kalomo showed much lower levels of mortality and much higher levels of childhood underweight.

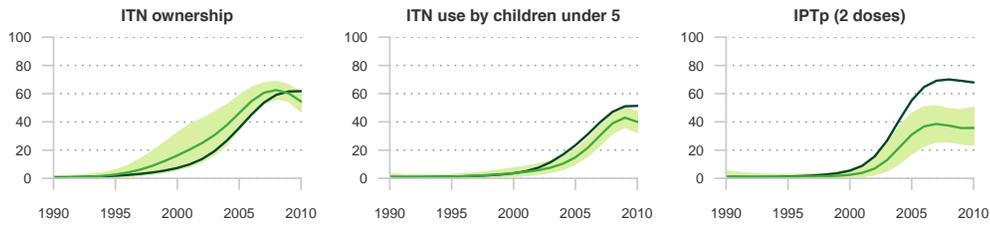
CHILD HEALTH OUTCOMES



From 1990 to 2010, Kalomo recorded a significant reduction in all-cause under-5 mortality, dropping 38% from 152 deaths per 1,000 live births in 1990 (95% CI: 118, 193) to 95 in 2010 (95% CI: 69, 129). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). Further, Kalomo had one of the lowest levels of under-5 mortality in Zambia for 2010.

The proportion of children who were underweight hovered around 20% in the 1990s, after which underweight fell to 12% in the mid-2000s. However, these gains were effectively reversed by 2010, with underweight rising to 22% in 2010 (95% CI: 17%, 28%), which was among the highest levels in Zambia. This trend is cause for concern, especially given the district's progress during the early to mid-2000s.

MALARIA INTERVENTIONS



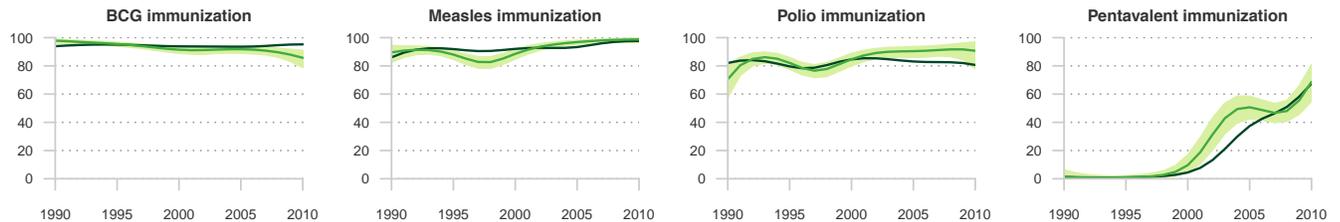
ITN ownership remained below 10% until 1999, after which coverage rapidly rose to 63% in 2008 (95% CI: 57%, 69%). ITN ownership faltered, decreasing to 54% in 2010 (95% CI: 47%, 61%), which was among the lowest levels in Zambia.

ITN use by children under 5 years old increased steadily to 43% in 2009 (95% CI: 36%, 50%). Net use dropped slightly to 40% in 2010 (95% CI: 33%, 47%), a level that was also among the lowest in Zambia. The difference between ITN ownership and use (14 percentage points) was slightly higher than what was observed at the national level (11 percentage points) in 2010.

IRS coverage trends are not included because Kalomo did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 gradually increased to 39% in 2007 (95% CI: 26%, 51%), after which coverage dropped to 36% in 2010 (95% CI: 24%, 50%). This level of coverage was among the lowest in Zambia for 2010, and Kalomo's marginal scale-up of IPTp2 is cause for concern.

IMMUNIZATIONS



BCG coverage declined from 98% in 1990 (95% CI: 96%, 99%) to 86% in 2010 (95% CI: 79%, 91%), which was among the lowest levels in Zambia for 2010.

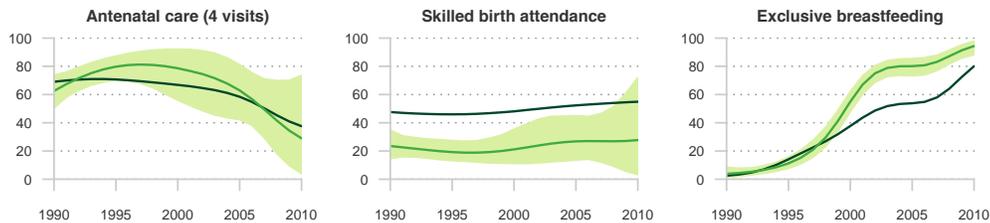
Measles immunization in Kalomo fell below 90% between 1995 and 2000, but coverage steadily increased to 99% in 2009 (95% CI: 97%, 100%) and was sustained through 2010. This level of coverage was slightly above the national average of 98%.

Coverage of polio immunization hovered around 80% during the 1990s. After 2000, polio coverage steadily in-

creased to 92% in 2008 and 2009, before slightly slipping to 91% in 2010 (95% CI: 78%, 97%). This level of coverage remained higher than the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Kalomo in 2005, coverage stagnated around 50% until 2009 and quickly climbed to 69% in 2010 (95% CI: 55%, 81%). This level of coverage was comparable to the national average of 67% in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 63% in 1990 (95% CI: 50%, 74%) to 81% during the late 1990s, but dropped to 29% in 2010 (95% CI: 4%, 74%), which was below the national average of 37%. The finding that Kalomo's levels of ANC4 fell 52 percentage points since the late 1990s is troubling.

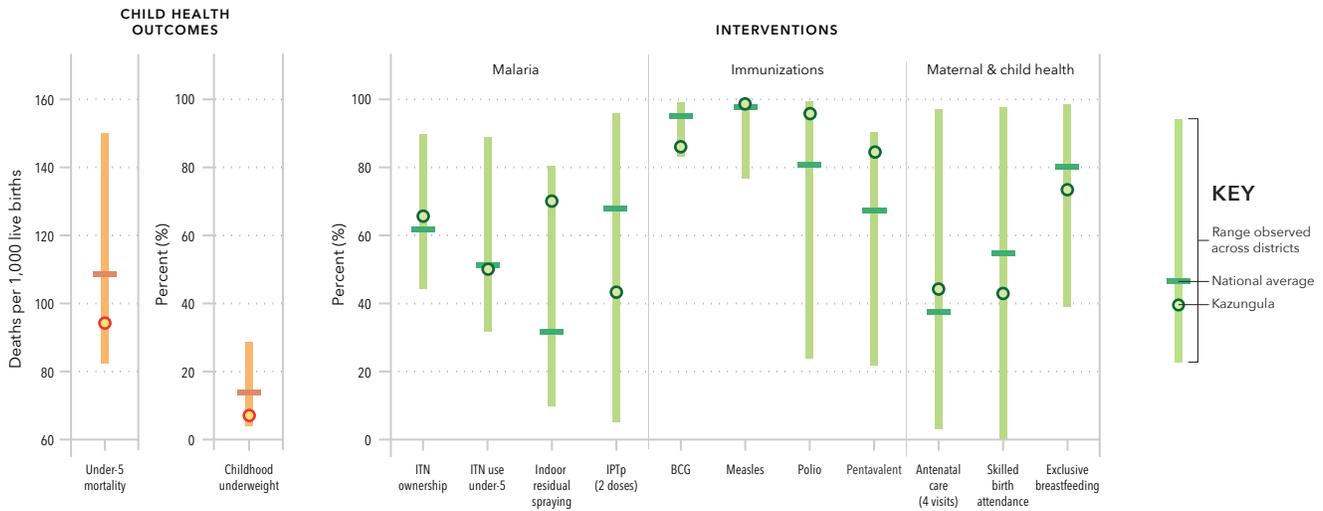
Skilled birth attendance fell below 20% during the mid-1990s, but slowly increased to 28% in 2010 (95% CI: 3%, 72%). Nonetheless, this level of SBA coverage was below the na-

tional average of 55% for 2010, and Kalomo's consistently low skilled birth attendance warrants further attention.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which coverage jumped to 80% in 2004 (95% CI: 74%, 85%). Coverage continued to rise, though at a slower pace, reaching 94% in 2010 (95% CI: 88% to 98%). This level of exclusive breastfeeding was among the highest in Zambia for 2010.



Kazungula



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Kazungula recorded substantial reductions in all-cause under-5 mortality and childhood underweight, bringing both to among the lowest in Zambia in 2010. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

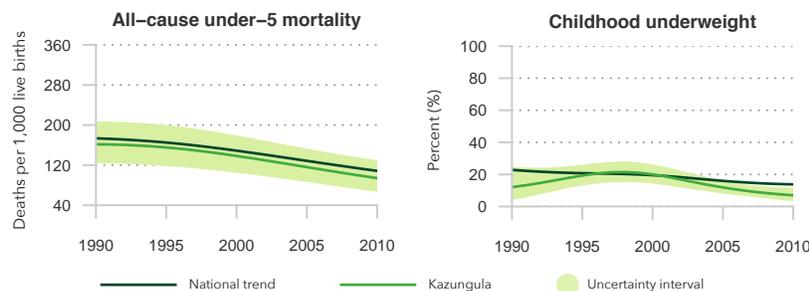
Kazungula reached very high levels of measles and polio immunization, with the latter being among the highest in Zambia. Coverage of exclusive breastfeeding and the pentavalent vaccine were successfully scaled up, and the district achieved high levels of IRS.

Amidst these gains, however, some troubling trends were identified and warrant further attention. IPTp2 coverage was

consistently lower than the national trend, and minimal progress was made in increasing ANC4. BCG immunization fell to some of the lowest levels in Zambia. Despite gains in coverage during the 2000s, skilled birth attendance remained lower than optimal.

In 2010, Kazungula met or exceeded the national average for malaria interventions and immunizations, with the exception of IPTp2 and BCG coverage. The district fell below the national average for maternal and child health interventions, excluding ANC4. In comparison with the national average, Kazungula showed much lower levels of mortality and childhood underweight.

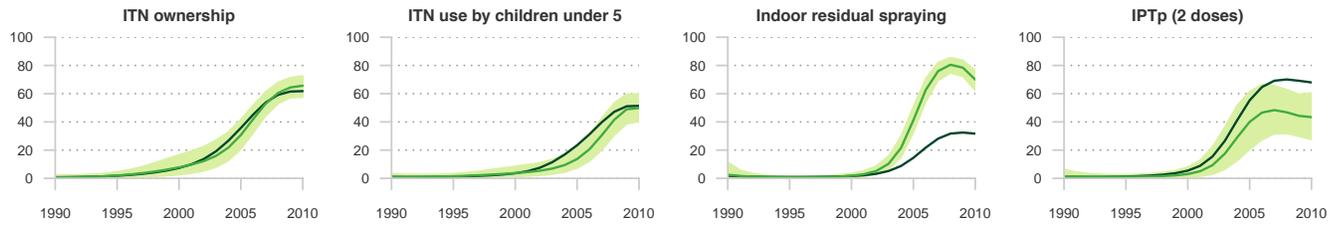
CHILD HEALTH OUTCOMES



From 1990 to 2010, there was a significant reduction in all-cause under-5 mortality in Kazungula, dropping 42% from 162 deaths per 1,000 live births in 1990 (95% CI: 126, 205) to 94 in 2010 (95% CI: 69, 128). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the lowest in the country.

The proportion of children who were underweight increased from 12% in 1990 (95% CI: 5%, 24%) to 21% during the late 1990s, but declined to a low of 7% in 2010 (95% CI: 4%, 11%). This level of childhood underweight was well below the national average of 14%, and was among the lowest in Zambia for 2010.

MALARIA INTERVENTIONS



ITN ownership remained under 10% until 2001, after which coverage rapidly rose to 66% in 2010 (95% CI: 58%, 73%), slightly exceeding the national average of 62%.

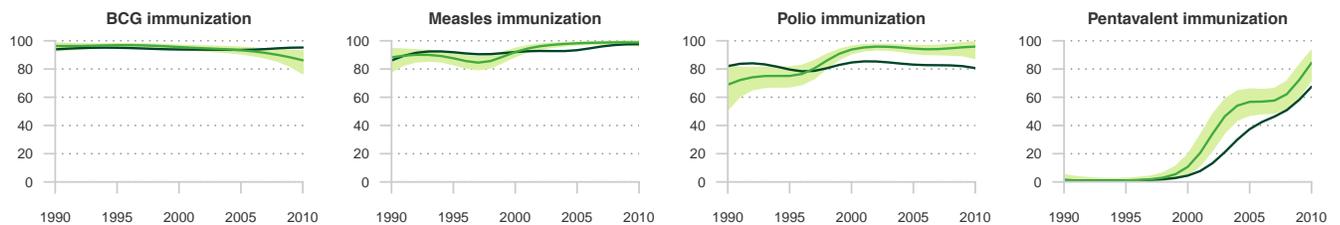
ITN use by children under 5 years old increased to 50% in 2010 (95% CI: 40%, 60%), which was comparable to the national average of 51%. The difference between ITN ownership and use (16 percentage points) was slightly higher in Kazungula than what was observed at the national level (11 percentage points) for 2010.

Kazungula formally implemented IRS activities in 2004, and was one of the first 15 districts in Zambia to roll out IRS.

Kazungula reached peak coverage for IRS in 2008, at 81% (95% CI: 75%, 86%), and fell to 70% in 2010 (95% CI: 62%, 77%). Despite this decline, the district had one of the highest levels of IRS in Zambia for 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, but rapidly rose to 48% in 2007 (95% CI: 32%, 66%). IPTp2 coverage decreased after 2007, dropping to 43% in 2010 (95% CI: 28%, 60%) and falling far below the national average of 68%. This level of IPTp2 was among the lowest in Zambia for 2010.

IMMUNIZATIONS



BCG immunization remained between 96% and 97% until 2001, after which coverage steadily declined to 86% in 2010 (95% CI: 77%, 93%), among the lowest levels in Zambia.

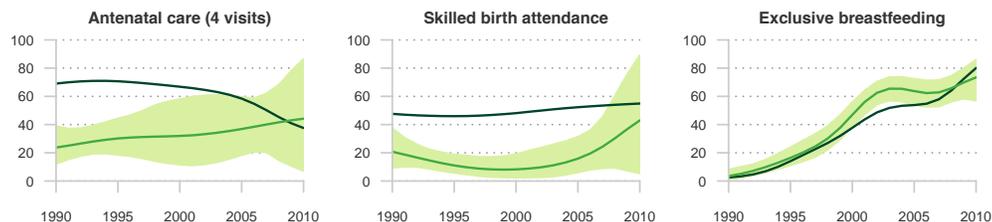
Measles immunization steadily increased from 88% in 1990 (95% CI: 78%, 94%) to 99% in 2006 (95% CI: 98%, 99%). This level of coverage was sustained through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization remained below 80% until 1997, after which polio coverage steadily climbed to 96%

in 2010 (95% CI: 88%, 99%), which was among the highest in Zambia for that year.

After the pentavalent vaccine was formally introduced in Kazungula in 2005, coverage hovered around 60% through 2008 and then increased to 84% in 2010 (95% CI: 72%, 93%). Kazungula achieved a much higher level of pentavalent coverage than the national average of 67%, and had among the highest levels in the country for 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage gradually increased from 24% in 1990 (95% CI: 12%, 39%) to 44% in 2010 (95% CI: 7%, 87%). Although this level of ANC4 was higher than the national average of 37% for 2010, the district's minimal progress in bringing ANC4 to higher levels is cause for concern.

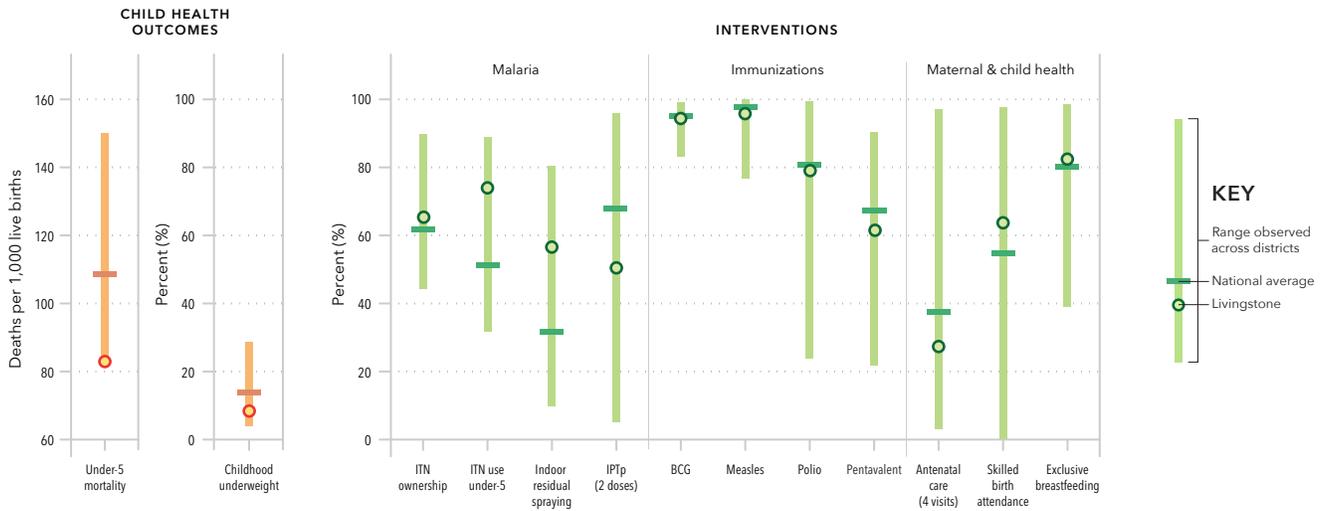
Skilled birth attendance fell below 10% during the late 1990s and early 2000s, but slowly increased to 43% in 2010

(95% CI: 5%, 89%). Nonetheless, the district's SBA coverage remained lower than the national average of 55% for 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage steadily increased to 65% in the mid-2000s. Gains slowed for a few years before rising to 73% in 2010 (95% CI: 57%, 86%), which was slightly lower than the national average of 80%.



Livingstone



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Livingstone substantially reduced all-cause under-5 mortality and childhood underweight to levels that were among the lowest in Zambia in 2010. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

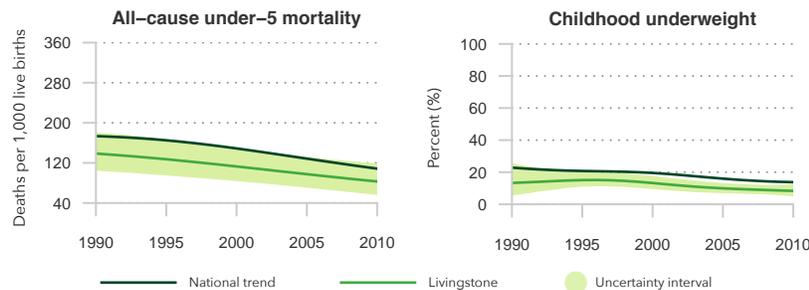
Livingstone expanded exclusive breastfeeding to a level comparable to the national average after stalled gains. ITNs and IRS were scaled up to high levels, especially for ITN use.

Amidst these gains, however, several troubling trends were identified and warrant further attention. IPTp2 coverage fell in recent years, and pentavalent coverage remained below

the national average in 2010. Coverage of BCG, measles, and polio immunizations fell below the national average in 2010. Skilled birth attendance steadily declined after maintaining high levels in the 1990s, and most alarmingly, high coverage of ANC4 dropped steeply to very low levels.

In 2010, Livingstone largely met or exceeded the national average across interventions, with IPTp2 coverage and ANC4 as the clear exceptions. For child health outcomes, Livingstone showed much lower levels of mortality and childhood underweight.

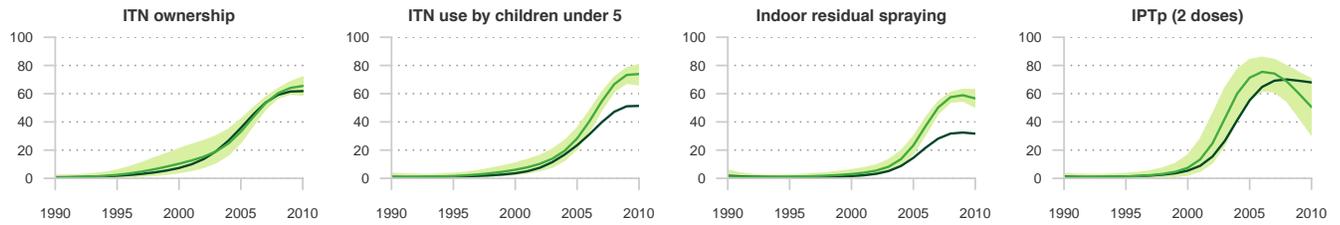
CHILD HEALTH OUTCOMES



From 1990 to 2010, Livingstone recorded a significant reduction in all-cause under-5 mortality, dropping 40% from 139 deaths per 1,000 live births in 1990 (95% CI: 107, 179) to 83 in 2010 (95% CI: 58, 117). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the lowest in Zambia.

The proportion of children who were underweight remained between 13% and 15% through 2000, after which underweight steadily decreased to 8% in 2010 (95% CI: 6%, 12%) and fell well below the national average of 14%. Further, this prevalence of underweight was among the lowest in Zambia for 2010.

MALARIA INTERVENTIONS



ITN ownership remained under 10% until 2000, after which coverage rapidly rose to 65% in 2010 (95% CI: 59%, 72%), slightly exceeding the national average of 62%.

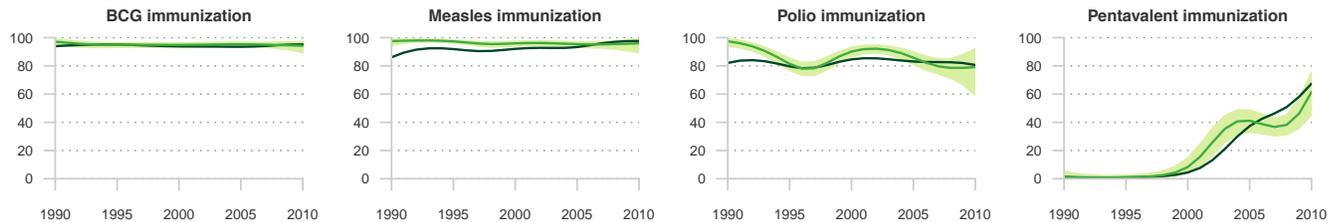
ITN use by children under 5 years old increased to 74% in 2010 (95% CI: 66%, 80%), which was among the highest in Zambia. Interestingly, ITN use by children under the age of 5 exceeded ITN ownership in 2010; this finding suggests that, among households with ITNs, net use by children under 5 is likely to be high.

Livingstone formally implemented IRS activities in 2003

and was one of the first 15 districts in Zambia to roll out IRS. Livingstone reached peak coverage for IRS in 2009 at 59% (95% CI: 55%, 63%), and fell slightly to 57% in 2010 (95% CI: 51%, 63%). Despite this decline, this level of IRS coverage was among the highest in Zambia for 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 75% in 2006 (95% CI: 62%, 86%). IPTp2 coverage decreased after 2007, dropping to 51% in 2010 (95% CI: 31%, 70%) and falling below the national average of 68%.

IMMUNIZATIONS



BCG immunization remained around 95% from 1990 to 2010; it was 94% in 2010 (95% CI: 89%, 97%), which was slightly below the national average of 95%.

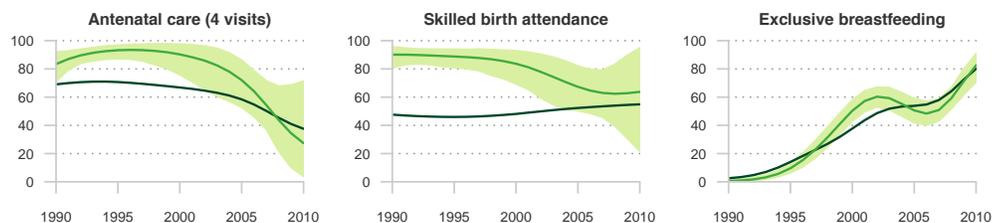
Levels of measles immunization remained between 95% and 98% from 1990 to 2010. There was 96% coverage in 2010 (95% CI: 89%, 99%), which was lower than the national average of 98%.

Coverage of polio immunization largely varied in the

1990s, with a high of 97% in 1990 (95% CI: 94%, 99%) and a low of 78% in the mid-1990s. Polio coverage exceeded 90% during the early 2000s, but declined to 79% in the late 2000s, falling slightly below the national average of 81%.

After the pentavalent vaccine was formally introduced in Livingstone in 2005, coverage hovered around 40% through 2008 and then increased to 61% in 2010 (95% CI: 45%, 75%), which was below the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage rose to 93% between 1994 and 1998, but began to fall rapidly by 2000, dropping to 27% in 2010 (95% CI: 4%, 71%) and below the national average of 37%. ANC4 decreased dramatically throughout Zambia from 1990 to 2010, and the finding that Livingstone's levels of coverage fell 66 percentage points since 1994 is worrisome.

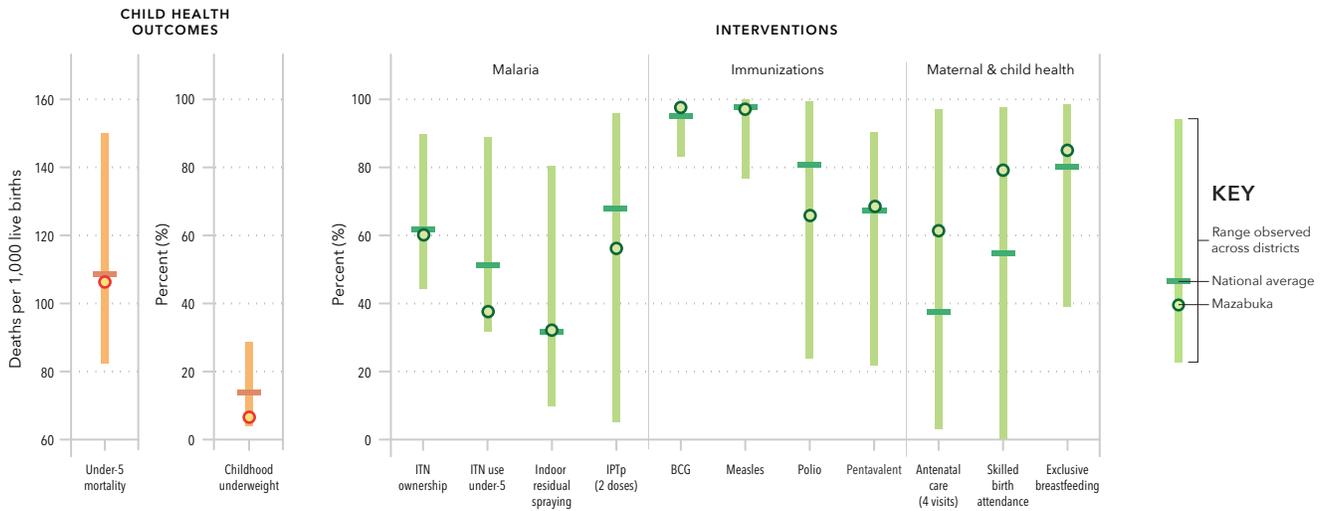
After remaining at 90% in the early 1990s, skilled birth attendance decreased to 64% in 2010 (95% CI: 22%, 95%). While this level of SBA coverage was higher than the national

average of 55% for 2010, the district's decline in SBA is cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1997, after which coverage rose to 60% in 2002 (95% CI: 53%, 67%). Coverage decreased soon after, falling below 50% in 2006. Exclusive breastfeeding then rebounded to 83% in 2010 (95% CI: 71%, 91%), slightly exceeding the national average of 80%.



Mazabuka



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

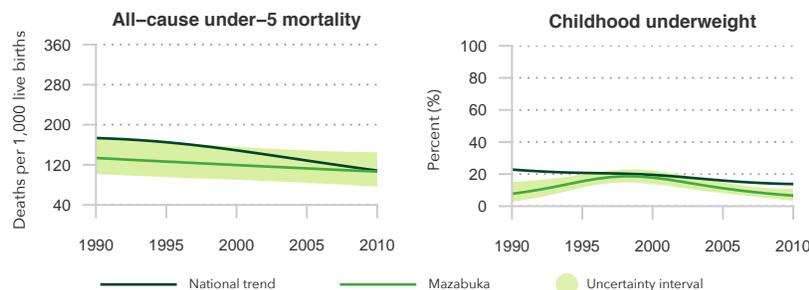
Between 1990 and 2010, Mazabuka reduced its all-cause under-5 mortality, but the magnitude of its decline was fairly low in comparison with the national trend. Childhood underweight decreased substantially in more recent years, dropping to among the lowest in Zambia for 2010. Prioritizing ways to further accelerate these rates of progress in child health outcomes, especially under-5 mortality, should be considered.

Mazabuka scaled up ITN ownership close to the national average in 2010. The district maintained moderately high levels of BCG and measles immunization, and brought up coverage of the pentavalent vaccine to national levels after stalled gains. High levels of exclusive breastfeeding were sustained through the 2000s, and skilled birth attendance increased in recent years.

Amidst these gains, however, some troubling trends were identified and warrant further attention. IRS and IPTp2 coverage fell in recent years, and ITN use was among the lowest in Zambia in 2010. Polio immunization declined sharply in the late 2000s, and ANC4 coverage substantially dropped from high levels during the early 1990s.

In 2010, Mazabuka generally met or exceeded the national average for immunizations and maternal and child health interventions, with polio coverage as the stark exception. Its performance for malaria interventions was more mixed. In comparison with the national average, Mazabuka showed slightly lower levels of mortality and much lower levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, all-cause under-5 mortality declined, dropping 20% from 134 deaths per 1,000 live births in 1990 (95% CI: 104, 171) to 106 in 2010 (95% CI: 78, 143); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was slightly lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 8% in 1990 (95% CI: 3%, 14%) to 19% in the late 1990s. Underweight then steadily declined, falling to 7% in 2009 and 2010, which was well below the national average of 14% and among the lowest levels in Zambia in 2010.

MALARIA INTERVENTIONS



ITN ownership remained under 10% until 2004, after which coverage rapidly rose to 60% in 2010 (95% CI: 54%, 66%), slightly below the national average of 62%. The district's scale-up of ownership generally lagged behind the national trend.

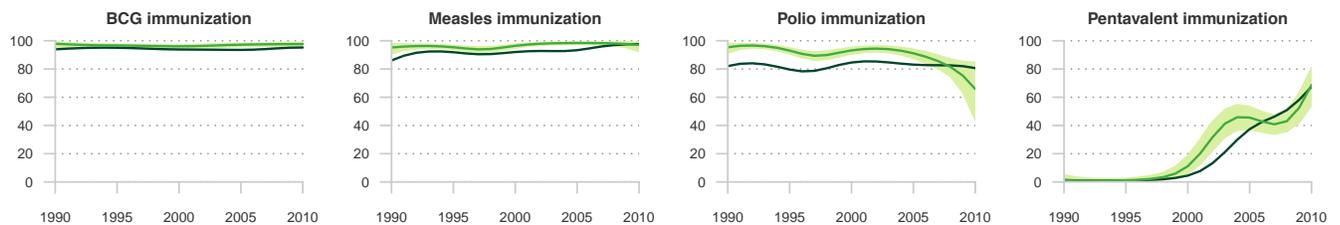
ITN use by children under 5 years old increased to 39% in 2009 (95% CI: 33%, 46%), but slipped to 38% in 2010 (95% CI: 31%, 45%). This level of ITN use was among the lowest in Zambia for 2010. The difference between ITN ownership and use (22 percentage points) was much higher in Mazabuka than what was observed at the national level (11 percentage

points) for 2010.

Mazabuka formally implemented IRS activities in 2006 and was one of the first 15 districts in Zambia to roll out IRS. Peak coverage occurred in 2008, at 44% (95% CI: 40%, 49%), with IRS decreasing to 32% in 2010 (95% CI: 26%, 39%).

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 68% in 2006 and 2007. However, IPTp2 coverage decreased after 2007, dropping to 56% in 2010 (95% CI: 43%, 69%) and falling below the national average of 68% for that year.

IMMUNIZATIONS



BCG immunization remained between 96% and 98% from 1990 to 2010; it was 98% in 2010 (95% CI: 95%, 99%), which was higher than the national average of 95%.

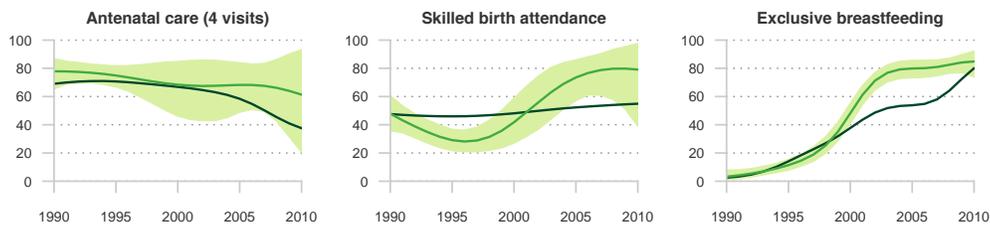
Measles immunization gradually increased from 95% in 1990 (95% CI: 91%, 98%) to 98% between 2002 and 2009. Coverage slipped to 97% in 2010 (95% CI: 92%, 99%), which was slightly lower than the national average of 98%.

Coverage of polio immunization largely remained above

90% between 1990 and 2005, but abruptly fell to 66% in 2010 (95% CI: 44%, 85%). This level of coverage was lower than the national average of 81% for 2010.

After the pentavalent vaccine was formally introduced in Mazabuka in 2005, coverage hovered around 40% through 2008 and then jumped to 69% in 2010 (95% CI: 54%, 81%). Mazabuka recorded a slightly higher level of pentavalent coverage than the national average of 67% in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage gradually declined from 78% in 1990 (95% CI: 65%, 87%) to 61% in 2010 (95% CI: 21%, 93%), which was higher than the national average of 37%. Even though this level of ANC4 coverage was among the highest in Zambia for 2010, the district's declining trend in ANC4 is worrisome.

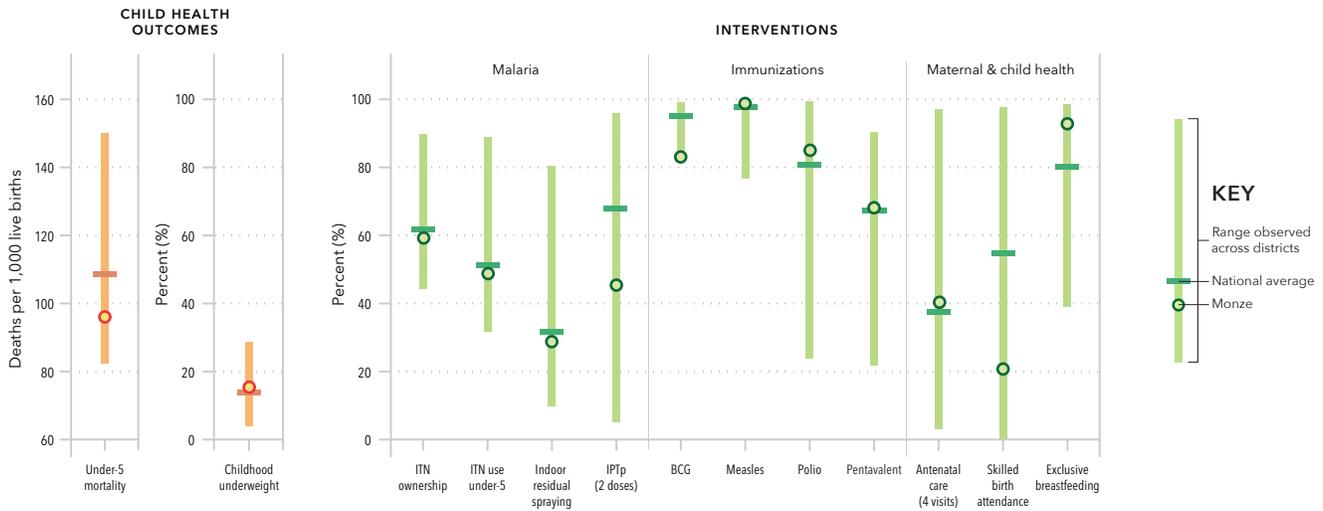
Skilled birth attendance steadily fell to 28% in 1996 (95% CI: 21%, 36%), but rose to 80% in 2008 and 2009. In 2010, SBA was at 79% (95% CI: 39%, 97%), which was above the national

average of 55%.

The proportion of children who were exclusively breastfed in Mazabuka remained below 20% until 1998, after which coverage rose to 80% in 2005 (95% CI: 73%, 85%). Coverage continued to increase, though more slowly, reaching 85% in 2010 (95% CI: 74%, 92%), which was slightly higher than the national average of 80%.



Monze



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Monze reduced its all-cause under-5 mortality and prevalence of childhood underweight, but the relative magnitude of the district’s progress was low. Prioritizing ways to accelerate gains for child health outcomes should be considered.

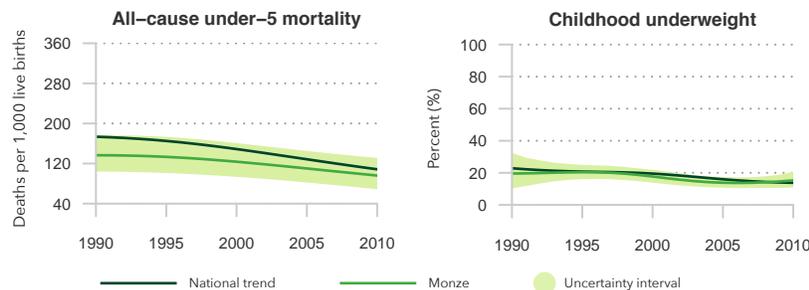
Monze scaled up ITN coverage close to the national average in 2010. The district maintained high levels of measles immunization, and polio coverage rebounded after recent declines. Coverage of the pentavalent vaccine was scaled up to national levels, and Monze maintained consistently high coverage of exclusive breastfeeding during the 2000s.

Amidst these gains, however, some troubling trends were

identified and warrant further attention. IPTp2 coverage and BCG immunization each fell to among the lowest levels in Zambia for 2010. Skilled birth attendance remained consistently low, and ANC4 coverage declined from high levels during the early 1990s.

In 2010, Monze generally met or exceeded the national average for immunizations and malaria interventions, with the exceptions of IPTp2 and BCG coverage. The district’s performance on maternal and child health interventions was more varied. In comparison with the national average, Monze showed lower levels of mortality and similar levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, all-cause under-5 mortality declined, dropping 30% from 137 deaths per 1,000 live births in 1990 (95% CI: 106, 175) to 96 in 2010 (95% CI: 71, 129); however, this decline was not statistically significant. In 2010, the district’s under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight largely remained at 20% in the 1990s, but decreased to 14% from 2004 to 2008. Underweight then increased slightly to 15% in 2009 and 2010, which was comparable to the national average of 14%.

MALARIA INTERVENTIONS



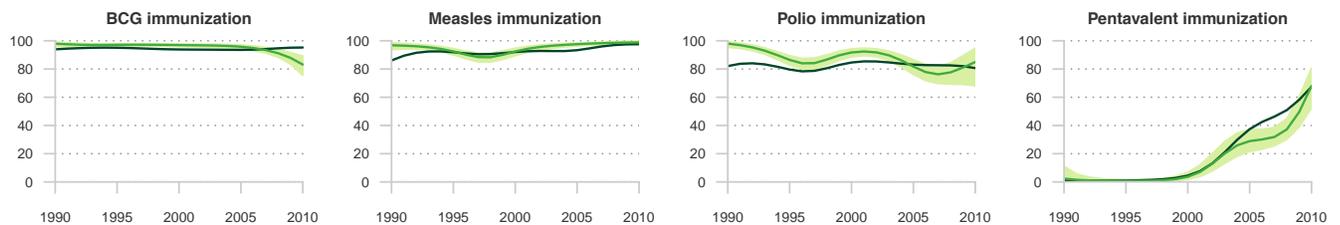
ITN ownership remained under 10% until 2003, after which coverage rapidly rose to 59% in 2010 (95% CI: 52%, 66%). This level of ITN ownership was slightly lower than the national average of 62% for 2010.

ITN use by children under 5 years old increased to 50% in 2009 (95% CI: 43%, 57%), and then slipped to 49% in 2010 (95% CI: 41%, 57%). This level of ITN use was slightly lower than the national average of 51% for 2010. Monze's difference between ITN ownership and use (10 percentage points) in 2010 was comparable to what was observed at the national level (11 percentage points) in 2010.

Monze formally implemented IRS activities in 2008, and reached 29% of households in 2010 (95% CI: 23%, 35%). This scale-up of IRS was about average compared to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly increased to 66% in 2006 (95% CI: 53%, 77%). However, IPTp2 coverage then decreased to 45% in 2010 (95% CI: 29%, 62%), falling much lower than the national average of 68%. This level of IPTp2 was among the lowest in Zambia for 2010.

IMMUNIZATIONS



BCG immunization remained above 95% until 2006, after which coverage quickly fell to 83% in 2010 (95% CI: 75%, 89%), among the lowest levels in Zambia.

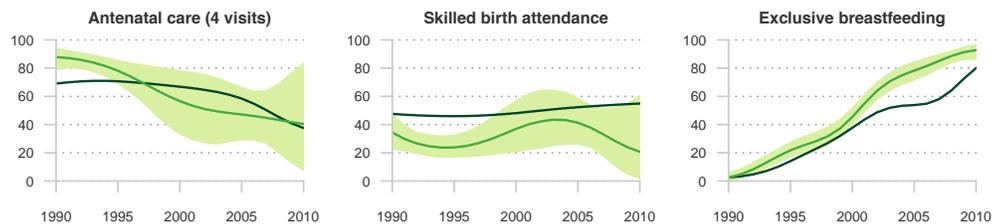
Measles immunization briefly fell below 90% in the late 1990s, but steadily rose to 99% in 2008 (95% CI: 97%, 99%). This level of measles coverage was sustained through 2010, and was slightly higher than the national average of 98%.

Coverage of polio immunization vacillated in the 1990s, from 98% in 1990 (95% CI: 95%, 99%) to 84% in the mid-

1990s, but remained around 90% from 1999 to 2002. Polio coverage fell below 80% from 2006 to 2008, but rebounded to 85% in 2010 (95% CI: 68%, 95%) and exceeded the national average of 81%.

After the pentavalent vaccine was formally introduced in Monze in 2005, coverage increased to 37% in 2008 (95% CI: 30%, 45%) and 68% in 2010 (95% CI: 52%, 81%). This level of pentavalent coverage was comparable to the national average of 67% in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steadily declined from 88% in 1990 (95% CI: 79%, 94%) to 40% in 2010 (95% CI: 8%, 83%), which was still slightly above the national average of 37%. This finding that Monze's levels of coverage fell nearly 50 percentage points between 1990 and 2010 is worrisome.

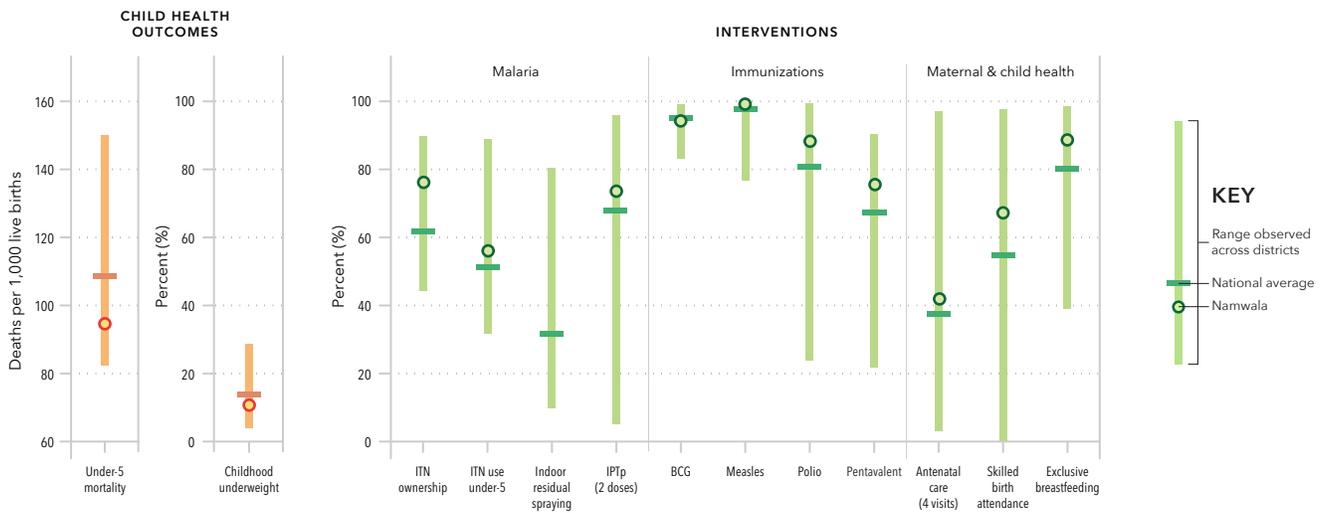
Skilled birth attendance remained low in the 1990s, between 24% and 34%, before rising slightly to 43% in the

mid-2000s. SBA coverage then fell to 21% in 2010 (95% CI: 2%, 61%), which was lower than the national average of 55%.

The proportion of children who were exclusively breastfed in Monze remained below 20% until 1995, after which coverage rose to 93% in 2010 (95% CI: 86%, 96%). This level of exclusive breastfeeding was much higher than the national average of 80% in 2010.



Namwala



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Namwala started IRS after 2010.

SUMMARY

Between 1990 and 2010, Namwala substantially reduced all-cause under-5 mortality and childhood underweight, bringing its mortality rates to among the lowest levels in Zambia for 2010. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

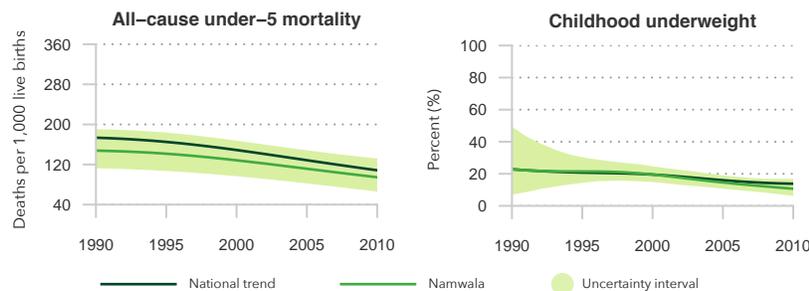
Namwala maintained high levels of routine immunizations, and expanded coverage of the pentavalent vaccine to national levels in 2010. ITN ownership and IPTp2 coverage were scaled up to very high levels in the mid-2000s, and the district sustained high coverage of exclusive breastfeeding during

the 2000s. Moderate gains were made in increasing skilled birth coverage.

Amidst these gains, however, some troubling trends were identified and warrant further attention. IPTp2 coverage fell from its peak during the mid-2000s, and coverage of ANC4 remained fairly low.

In 2010, Namwala generally met or exceeded the national average for all interventions. In comparison with the national average, Namwala showed much lower levels of mortality and lower levels of underweight.

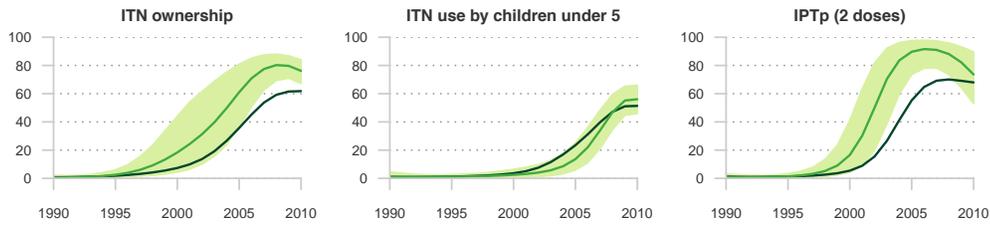
CHILD HEALTH OUTCOMES



From 1990 to 2010, Namwala recorded a significant reduction in all-cause under-5 mortality, dropping 36% from 148 deaths per 1,000 live births in 1990 (95% CI: 115, 188) to 95 in 2010 (95% CI: 68, 130). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the lowest in the country.

The proportion of children who were underweight steadily declined from 23% in 1990 (95% CI: 8%, 49%) to 11% in 2009 and 2010. This level of childhood underweight was below the national average of 14% for 2010.

MALARIA INTERVENTIONS



ITN ownership remained under 10% until 1999, after which coverage rose to 80% in 2008 (95% CI: 69%, 88%). Coverage was sustained at this level through 2009, after which ownership slipped to 76% in 2010 (95% CI: 67%, 84%). Nonetheless, this level of coverage still surpassed the national average of 62%.

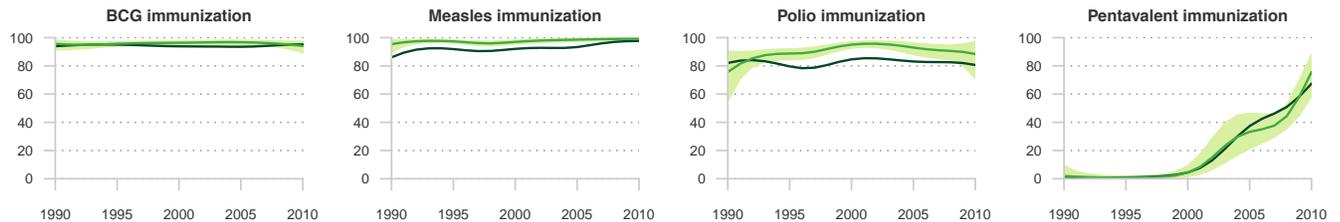
ITN use by children under 5 years old increased to 56% in 2010 (95% CI: 46%, 66%), which was slightly higher than the national average of 51%. The difference between ITN ownership and use (20 percentage points) was higher in Namwala

than what was observed at the national level (11 percentage points) for 2010.

IRS coverage trends are not included because Namwala did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2000, but rapidly rose to 92% in 2006 (95% CI: 78%, 98%). IPTp2 declined soon after, falling to 74% in 2010 (95% CI: 53%, 90%). While Namwala's level of IPTp2 coverage still exceeded the national average of 68% in 2010, its recent decrease is cause for concern.

IMMUNIZATIONS



BCG immunization remained between 95% and 97% from 1990 to 2010, but fell slightly to 94% in 2010 (95% CI: 89%, 97%) and below the national average of 95%.

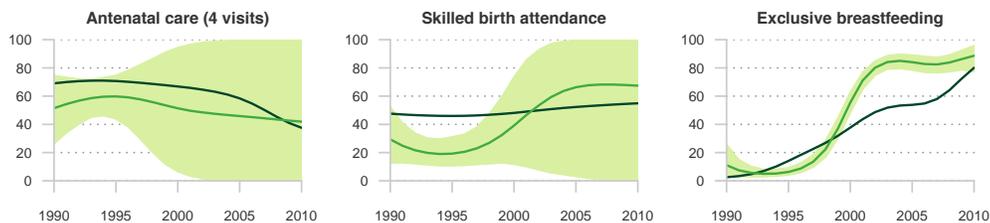
Measles immunization increased from 95% in 1990 (95% CI: 90%, 98%) to 99% in 2005 (95% CI: 97%, 99%). This level of measles coverage was sustained through 2010, and was slightly higher than the national average of 98%.

Polio immunization coverage steadily rose from 76% in 1990 (95% CI: 55%, 90%) to 96% in 2001 and 2002. Polio cov-

erage decreased after 2002, declining to 88% in 2010 (95% CI: 71%, 97%), but still remained above the national average of 81%.

After the pentavalent vaccine was formally introduced in Namwala in 2005, coverage hovered close to 40% through 2008 and then jumped to 76% in 2010 (95% CI: 59%, 88%). Namwala achieved a higher level of pentavalent coverage than the national average of 67% in 2010.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage reached 60% in the mid-1990s but gradually declined to 42% in 2010 (95% CI: 0%, 100%). While this level of ANC4 was slightly higher than the national average of 37%, the district's minimal progress in increasing ANC4 coverage warrants more attention.

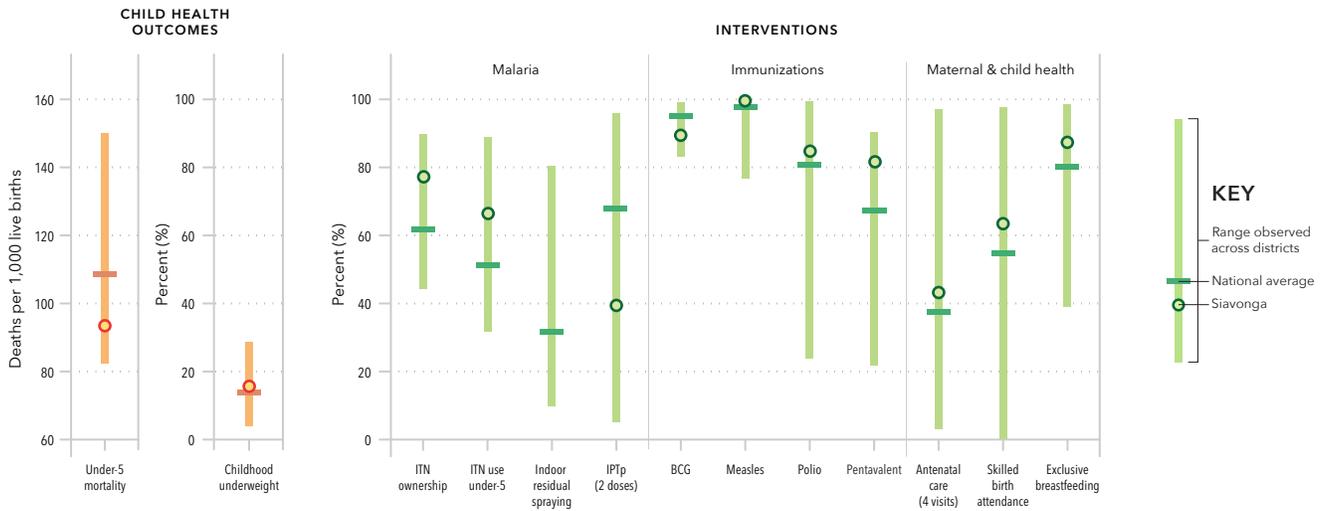
Skilled birth attendance remained below 30% until 1999, after which SBA coverage increased to 68% between 2006 and 2009. In 2010, SBA fell slightly to 67% (95% CI: 0%, 100%),

but remained higher than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage quickly increased to 80% in 2002 (95% CI: 75%, 85%). Exclusive breastfeeding continued to rise, though more slowly, reaching 89% in 2010 (95% CI: 77%, 96%) and exceeding the national average of 80% for that year.



Siavonga



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Siavonga started IRS after 2010.

SUMMARY

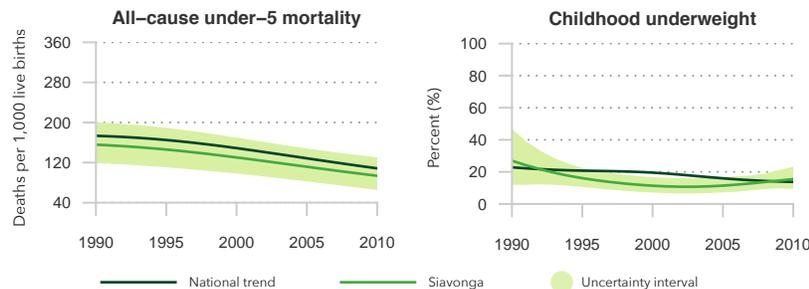
Between 1990 and 2010, Siavonga substantially reduced all-cause under-5 mortality and childhood underweight, bringing its levels of mortality to among the lowest in Zambia in 2010. However, underweight increased in recent years. Prioritizing efforts to accelerate gains for child health outcomes, especially childhood underweight, should be considered.

Measles and polio immunization coverage reached high levels in 2010, and Siavonga successfully scaled up the pentavalent vaccine. Exclusive breastfeeding coverage continued to rise after a period of stalled gains. High levels of ITN coverage, especially ITN use, were maintained through 2010.

Amidst these gains, however, some troubling trends were identified and warrant further attention. IPTp2 coverage fell considerably from its peak in the mid-2000s, and BCG coverage fell to among the lowest in Zambia in 2010. Gains in skilled birth attendance plateaued in the 2000s, and most alarmingly, high ANC4 coverage dropped sharply to very low levels.

In 2010, Siavonga largely met or exceeded the national average for all interventions, with the clear exceptions of BCG coverage and IPTp2. In comparison with the national average, Siavonga showed much lower levels of mortality and similar levels of underweight.

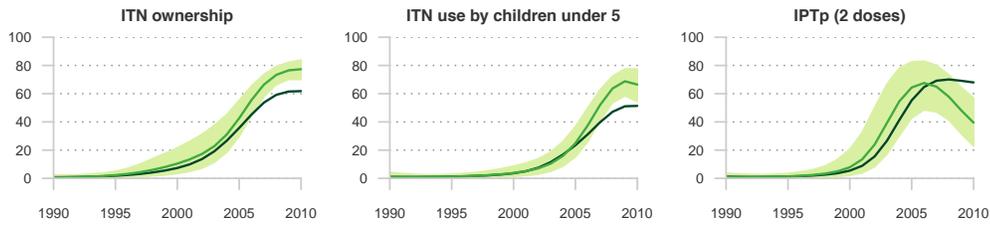
CHILD HEALTH OUTCOMES



From 1990 to 2010, Siavonga recorded a significant reduction in all-cause under-5 mortality, dropping 40% from 156 deaths per 1,000 live births in 1990 (95% CI: 121, 198) to 94 in 2010 (95% CI: 67, 129). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the lowest in Zambia.

The proportion of children who were underweight declined from 27% in 1990 (95% CI: 13%, 46%) to 11% from 2000 to 2005. Childhood underweight then increased to 15% in 2009 and 2010. This level of underweight was comparable to the national average of 14% for 2010, but the district's upward trend for underweight is cause for concern.

MALARIA INTERVENTIONS



ITN ownership remained under 10% until 2000, after which coverage rapidly rose to 77% in 2009 (95% CI: 70%, 82%). Coverage was sustained at this level through 2010, and was much higher than the national average of 62% for 2010.

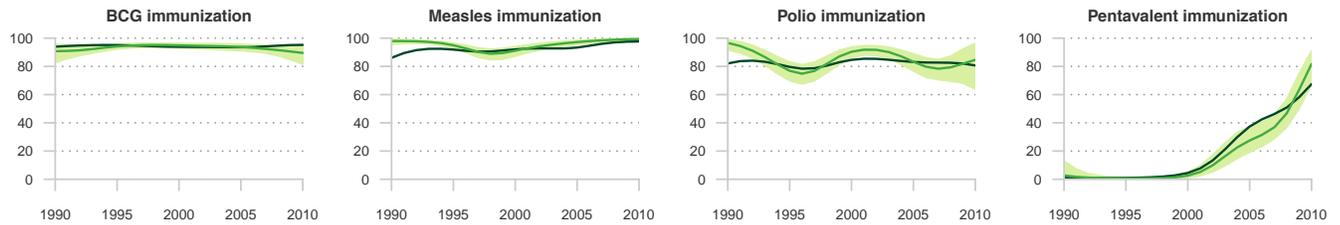
ITN use by children under 5 years old increased to 69% in 2009 (95% CI: 58%, 77%), but slipped to 66% in 2010 (95% CI: 54%, 78%). Despite this small decline, Siavonga's ITN use was among the highest in Zambia for 2010. The difference between ITN ownership and use (11 percentage points) was compara-

ble to what was observed at the national level in 2010.

IRS coverage trends are not included because Siavonga did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, but rapidly rose to 68% in 2006 (95% CI: 48%, 83%). IPTp2 then declined sharply to 39% in 2010 (95% CI: 23%, 57%), and was among the lowest levels of coverage in Zambia that year. This marked decline in IPTp2 coverage is worrisome and warrants further attention.

IMMUNIZATIONS



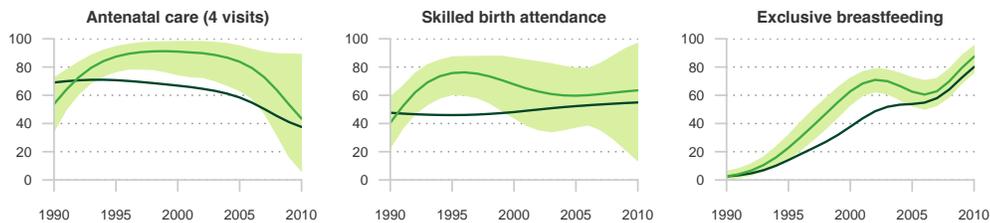
BCG coverage increased from 91% in the early 1990s to 95% in 1996 (95% CI: 93%, 96%). This level of coverage was sustained through 2001, after which BCG immunization decreased to 90% in 2010 (95% CI: 82%, 95%), falling to among the lowest levels in Zambia.

Aside from briefly falling below 90% in the late 1990s, measles immunization remained between 95% and 98% until 2008. Coverage increased to 99% (95% CI: 98%, 100%) and was sustained at this level through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization fell from 97% in 1990 (95% CI: 92%, 99%) to 75% in 1996 (95% CI: 68%, 81%) before rising above 90% again in the early 2000s. Polio coverage hovered around 80% in the mid- to late 2000s, increasing to 85% in 2010 (95% CI: 64%, 96%) and exceeding the national average of 81% for that year.

After the pentavalent vaccine was formally introduced in Siavonga in 2005, coverage increased to 37% in 2007 (95% CI: 29%, 46%) and 82% in 2010 (95% CI: 67%, 91%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased to 91% in 1997 (95% CI: 79%, 97%) and was sustained at this level until 2001, after which coverage fell to 43% in 2010 (95% CI: 7%, 89%). While this level of ANC4 was slightly higher than the national average of 37%, the district's drastic decline in ANC4 (over 45 percentage points in 10 years) is troubling.

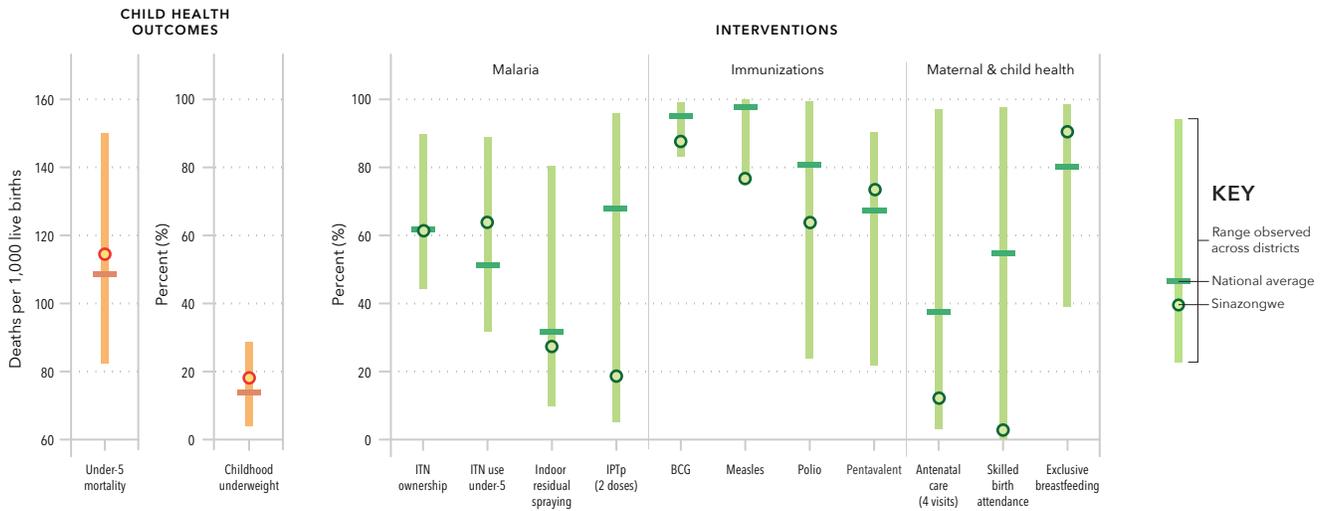
Skilled birth attendance increased to 76% in the mid-1990s, but decreased to 60% from 2004 to 2006. SBA coverage rose slightly to 63% in 2009 (95% CI: 22%, 93%) and

remained at this level through 2010. While this level of SBA was higher than the national average of 55% for 2010, the district's drop in SBA since the 1990s is cause for concern.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage increased to 71% in 2002 (95% CI: 63%, 79%). Gains in exclusive breastfeeding stalled for several years before rising to 87% in 2010 (95% CI: 76%, 95%), which was above the national average of 80%.



Sinazongwe



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Sinazongwe reduced its all-cause under-5 mortality and prevalence of childhood underweight from 1990 to 2010, but the relative magnitude of the district's progress was low, especially for underweight. Prioritizing ways to accelerate gains for child health outcomes should be considered.

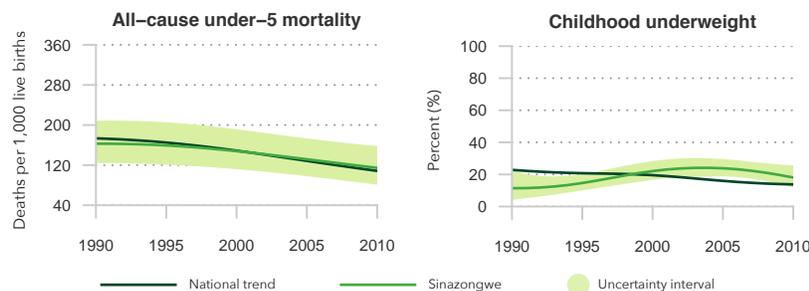
ITN coverage was scaled up to high levels, especially for ITN use. Sinazongwe expanded coverage of the pentavalent vaccine to national levels after a period of stalled gains. The district consistently had higher levels of exclusive breastfeeding than the national trend over time.

Amidst these gains, however, several troubling trends were identified and warrant further attention. IPTp2 coverage

plunged from its peak in 2005. Polio coverage fell substantially in the late 2000s, and Sinazongwe had some of the lowest levels of BCG and measles immunization in Zambia for 2010. Skilled birth attendance remained extremely low over time, and most alarmingly, high coverage of ANC4 steeply dropped to very low levels.

In 2010, Sinazongwe generally fell below the national average across interventions, with ITN use, pentavalent coverage, and exclusive breastfeeding as the exceptions. In comparison with the national average, Sinazongwe showed higher levels of mortality and underweight.

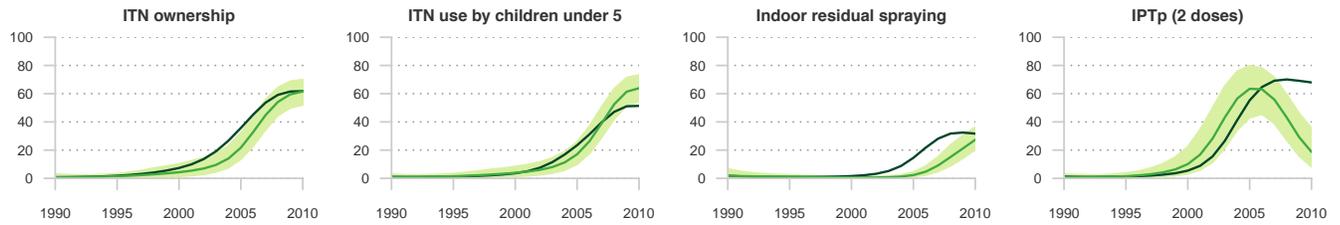
CHILD HEALTH OUTCOMES



From 1990 to 2010, all-cause under-5 mortality declined, dropping 30% from 163 deaths per 1,000 live births in 1990 (95% CI: 126, 207) to 115 in 2010 (95% CI: 83, 156); however, this decline was not statistically significant. In 2010, the district's under-5 mortality was higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 11% in the early 1990s to 24% in the mid-2000s. Childhood underweight declined to 18% in 2010 (95% CI: 12%, 25%), but still exceeded the national average of 14%. The district's minimal progress in improving childhood underweight is cause for concern.

MALARIA INTERVENTIONS



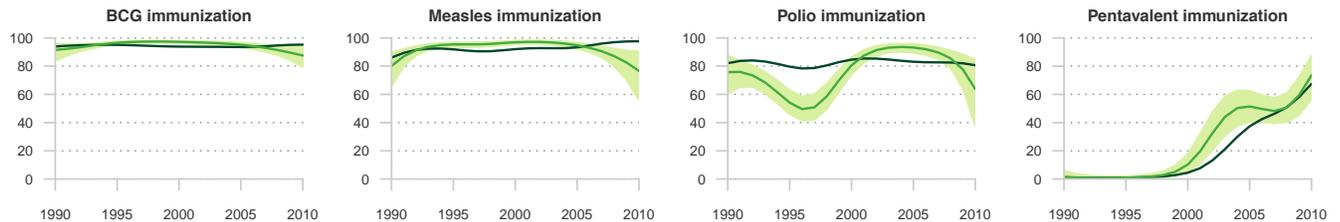
ITN ownership remained under 10% until 2003, after which coverage rapidly rose to 62% in 2010 (95% CI: 52%, 70%), equaling the national average.

ITN use by children under 5 years old increased to 64% in 2010 (95% CI: 54%, 73%), which was well above the national average of 51%. Interestingly, ITN use by children under the age of 5 exceeded ITN ownership in 2010; this finding suggests that, among households with ITNs, net use by children under 5 is likely to be high.

Sinazongwe formally implemented IRS activities in 2010 and reached 27% of households that year (95% CI: 20%, 36%). This scale-up of IRS was on the lower end compared to other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2000, but rapidly rose to 63% in the mid-2000s. IPTp2 coverage decreased after 2006, dropping to 19% in 2010 (95% CI: 8%, 36%), which was among the lowest levels in Zambia. The district's sharp decline in IPTp2 coverage warrants further attention.

IMMUNIZATIONS



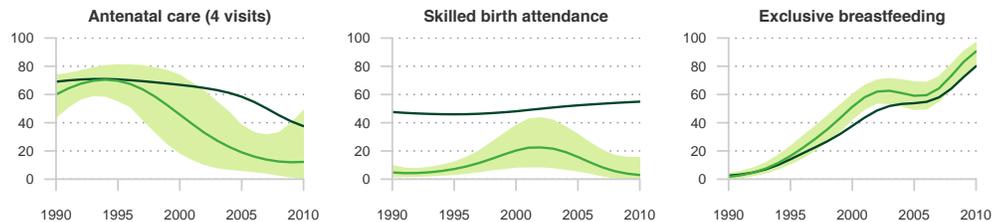
BCG immunization increased from 91% in 1990 (95% CI: 84%, 96%) to 97% in the mid-1990s, which was sustained through 2002. BCG coverage then declined, falling to 88% in 2010 (95% CI: 79%, 94%), which was among the lowest in Zambia.

Measles immunization exceeded 90% in 1992, rising to 97% in 2000 (95% CI: 95%, 98%) and remaining at this level through 2003. However, measles coverage declined rapidly, falling to 77% in 2010 (95% CI: 56%, 90%), among the lowest levels in the country.

Coverage of polio immunization largely varied in the 1990s and early 2000s, dropping to 50% in 1996 (95% CI: 41%, 59%) before rising above 90% from 2002 to 2007. Polio coverage decreased again, falling to 64% in 2010 (95% CI: 38%, 85%), which was lower than the national average of 81%.

After the pentavalent vaccine was formally introduced in Sinazongwe in 2005, coverage hovered around 50% through 2008 and then jumped to 74% in 2010 (95% CI: 56%, 87%), exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage steeply fell from 70% in the mid-1990s to 12% in 2009 (95% CI: 2%, 39%). Coverage remained at 12% through 2010, which was among the lowest in Zambia. ANC4 dramatically decreased throughout Zambia from 1990 to 2010, and the finding that Sinazongwe's levels of coverage fell nearly 60 percentage points during this time is troubling.

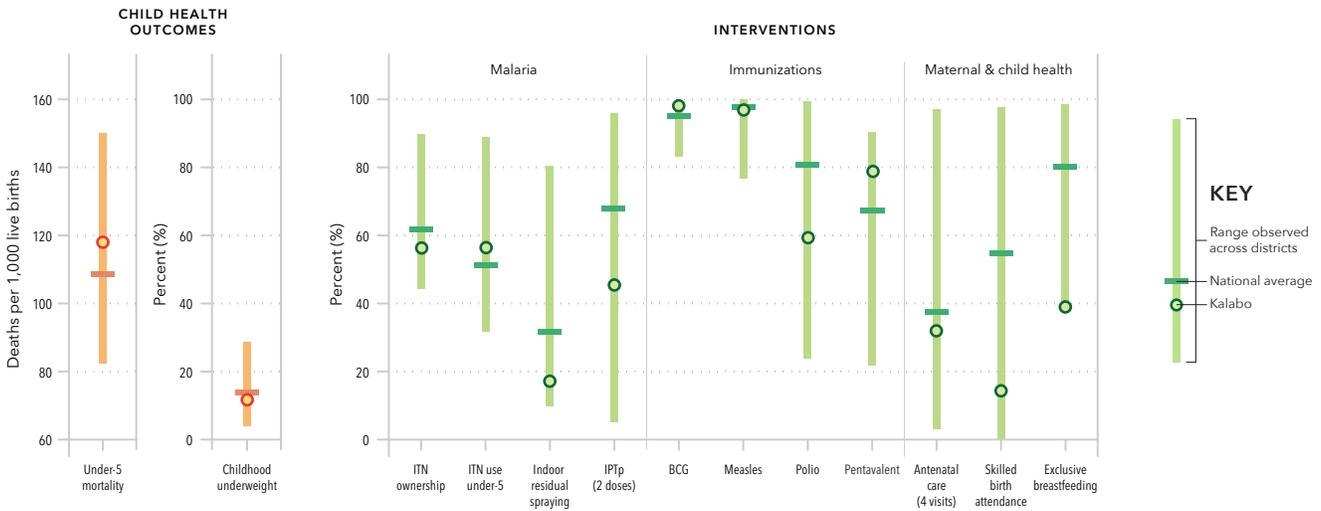
Skilled birth attendance stayed consistently very low, only rising to 22% in the early 2000s before dropping to 3% in 2010 (95% CI: 0%, 15%) and falling among the lowest levels in

Zambia. The district's extremely low SBA coverage from 1990 to 2010 is quite worrisome.

The proportion of children who were exclusively breastfed in Sinazongwe remained below 20% until 1996, after which coverage rose to 63% in 2003 (95% CI: 54%, 71%). Gains in coverage stalled, remaining around 60% through 2007, but then exclusive breastfeeding increased to 91% in 2010 (95% CI: 81%, 96%). This level of coverage was well above the national average of 80% for 2010.

Western province

Kalabo



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Between 1990 and 2010, Kalabo achieved substantial reductions in all-cause under-5 mortality and childhood underweight; however, its levels of under-5 mortality remained higher than the national average in 2010. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

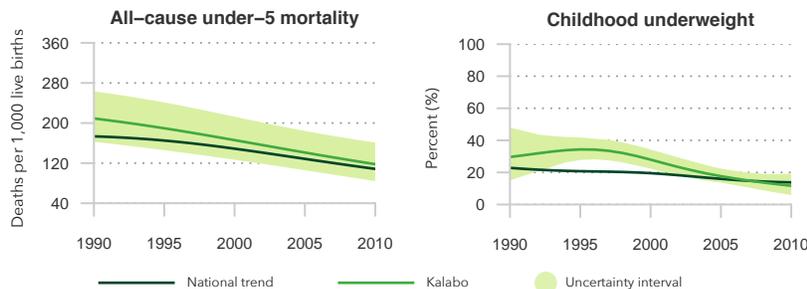
Kalabo increased BCG and measles immunization coverage to high levels, and scaled up the pentavalent vaccine to above the national average in 2010. Although ITN ownership peaked in 2006, ITN use rose through 2010.

However, amidst these gains, several worrisome trends were identified and warrant further attention. Gains in polio

coverage during the early 2000s were reversed, which is particularly worrying given that Kalabo is considered a high-risk district for polio importation. Exclusive breastfeeding dropped to among the lowest levels in Zambia. Skilled birth attendance fell to very low levels, and ANC4 coverage dramatically declined from high levels in the 1990s.

In 2010, Kalabo performed at or above the national average for routine immunizations (with the exception of polio coverage), but fell below for malaria interventions as well as maternal and child health interventions (except for ITN use). In comparison with the national average, Kalabo showed higher levels of mortality and slightly lower levels of underweight.

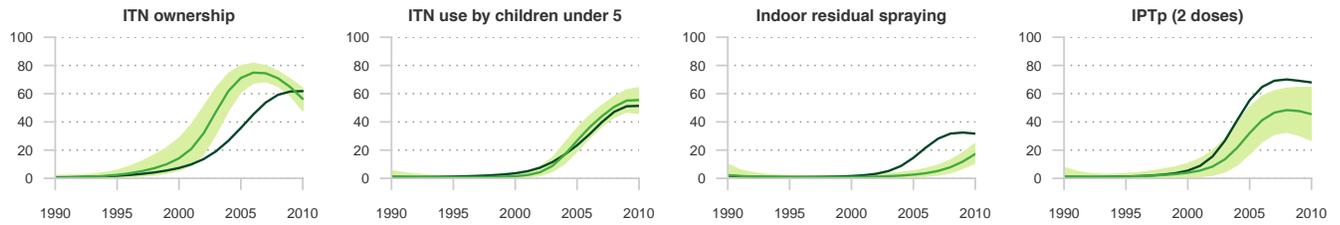
CHILD HEALTH OUTCOMES



From 1990 to 2010, Kalabo recorded a significant reduction in all-cause under-5 mortality, dropping 44% from 209 deaths per 1,000 live births in 1990 (95% CI: 165, 261) to 118 in 2010 (95% CI: 86, 159). However, the district's under-5 mortality in 2010 was higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 30% (95% CI: 16%, 47%) to 34% during the mid-1990s before steadily decreasing to 12% in 2010 (95% CI: 7%, 19%), which was slightly lower than the national average of 14%. This progress is particularly notable given that Kalabo consistently recorded higher levels of underweight than the national average until the mid-2000s.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 1999, after which coverage increased to 75% in 2006 (95% CI: 68%, 81%). However, ownership then fell to 56% in 2010 (95% CI: 48%, 64%), which was lower than the national average of 62%.

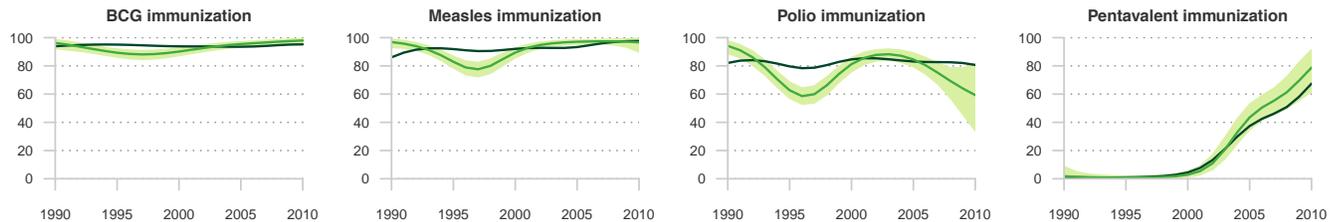
The use of ITNs by children under 5 years old increased to 56% in 2010 (95% CI: 46%, 64%), which was slightly higher than the national average of 51%. Kalabo's ITN use equaled ITN ownership in 2010, which suggests that net use by children under 5 is high among households that have ITNs.

Kalabo formally implemented IRS activities in 2010, and

reached 17% of households that year (95% CI: 11%, 25%). This level of IRS coverage was one of the lowest among the 54 districts that had IRS by 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, but increased to 48% in 2008 and 2009. Coverage fell slightly to 45% in 2010 (95% CI: 27%, 64%), which was much lower than the national average of 68% for that year. Compared with the rest of Zambia, Kalabo's scale-up of IPTp2 was modest.

IMMUNIZATIONS



BCG immunization fell from 96% in 1990 (95% CI: 92%, 98%) to 88% during the late 1990s, but coverage increased to 98% in 2009 (95% CI: 96%, 99%) and remained at this level through 2010. BCG coverage was higher than the national average of 95% for that year.

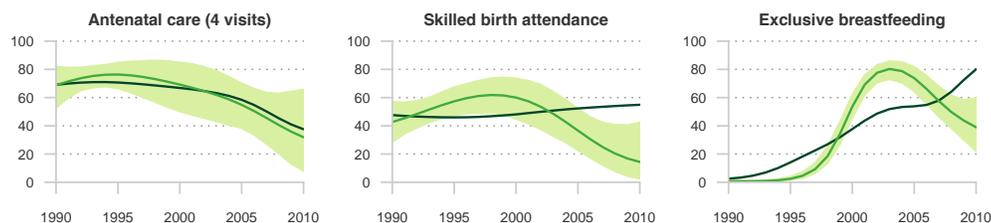
Measles immunization decreased from 97% in 1990 (95% CI: 93%, 99%) to 78% in 1997 (95% CI: 72%, 82%), but rebounded to 97% in 2004 (95% CI: 95%, 98%) and stayed at 97% through 2010. Nonetheless, Kalabo's measles coverage was slightly lower than the national average of 98% for 2010.

Polio immunization largely varied during the 1990s, drop-

ping from 94% in 1990 (95% CI: 89%, 98%) to 59% in 1996 (95% CI: 53%, 64%) and then rising to 88% in the early 2000s. Coverage steadily declined during the 2000s, dropping to 59% in 2010 (95% CI: 34%, 81%) and falling among the lowest in Zambia. Kalabo is considered a high-risk district for polio importation from neighboring countries, so addressing the district's faltering levels of polio coverage is likely to be important.

After the pentavalent vaccine was formally introduced in 2005, coverage increased to 50% in 2006 (95% CI: 42%, 59%) and 79% in 2010 (95% CI: 62%, 91%), which was higher than that year's national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 69% in 1990 (95% CI: 53%, 82%) to 76% in 1994 (95% CI: 68%, 83%). This level of coverage was sustained through 1997, after which ANC4 dropped to 32% in 2010 (95% CI: 8%, 66%), falling below the national average of 37%. The finding that Kalabo's levels of coverage declined more than 40 percentage points since 1997 is cause for concern.

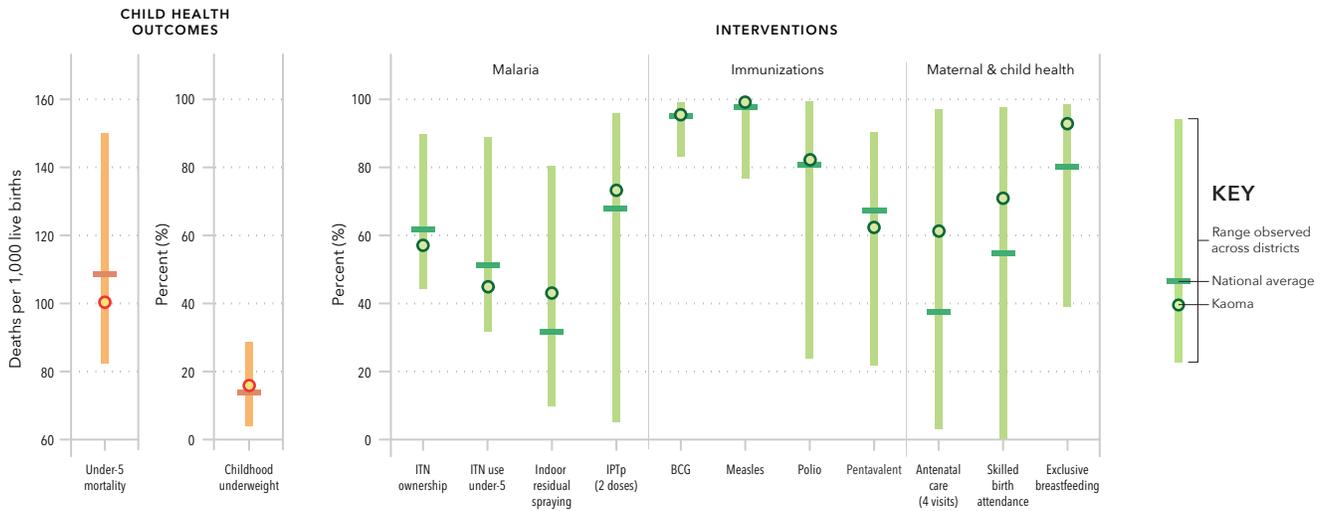
Skilled birth attendance increased from 43% in 1990

(95% CI: 29%, 57%) to 62% in 1998 (95% CI: 49%, 74%), but decreased to 14% in 2010 (95% CI: 2%, 42%), which was well below the national average of 55%.

The percentage of children who were exclusively breastfed remained below 20% until 1999, after which coverage increased to 80% in 2003 (95% CI: 73%, 86%). Exclusive breastfeeding then fell sharply to 39% in 2010 (95% CI: 22%, 60%), which was among the lowest in Zambia.



Kaoma



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

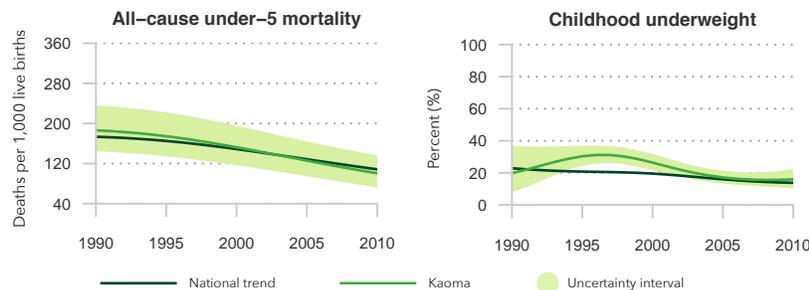
All-cause under-5 mortality and childhood underweight in Kaoma substantially decreased between 1990 and 2010, but the district's level of underweight still remained higher than the national average in 2010. Prioritizing ways to further accelerate gains for child health outcomes should be considered.

Kaoma scaled up IRS coverage and IPTp2 levels, which were above the national averages in 2010, and the district expanded exclusive breastfeeding coverage to some of the highest levels in Zambia. Coverage of the pentavalent vaccine increased soon after its introduction, and Kaoma maintained high levels of the other routine immunizations. Skilled birth attendance gradually increased over time in Kaoma, at levels consistently higher than the national average.

However, amidst these gains, some worrisome trends emerged. The district's levels of ITN ownership and use remained below the national average in 2010, and ANC4 coverage declined from very high levels in the early 1990s.

In 2010, Kaoma met or exceeded national levels for immunizations and for maternal and child health interventions. The district's performance for malaria interventions was more mixed. In comparison with the national average, Kaoma showed lower levels of mortality and slightly higher levels of underweight.

CHILD HEALTH OUTCOMES

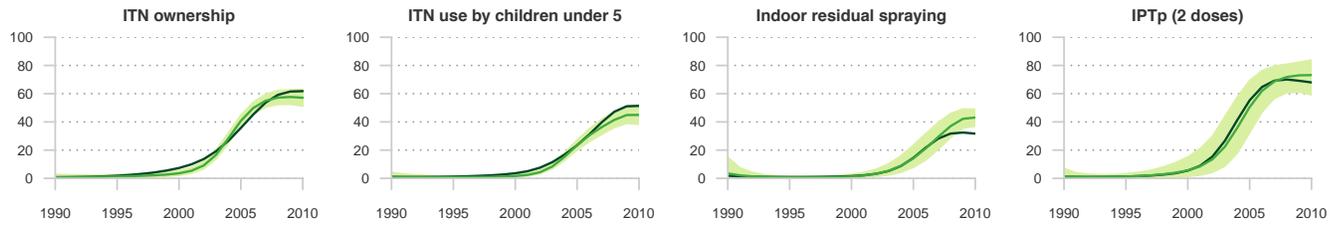


From 1990 to 2010, Kaoma recorded a significant reduction in all-cause under-5 mortality, dropping 46% from 186 deaths per 1,000 live births in 1990 (95% CI: 146, 234) to 100 in 2010 (95% CI: 74, 134). In 2010, the district's level of under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 20% in 1990 (95% CI: 9%, 36%) to a high of

31% in the mid-1990s. Underweight declined to 16% in 2006 (95% CI: 13%, 20%) and remained at this level through 2010, slightly exceeding the national average of 14%. Kaoma made substantial progress in reducing childhood underweight since the 1990s, but the district's prevalence of underweight remains high.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2003, after which coverage rapidly increased to a peak of 58% in 2009 (95% CI: 52%, 63%). Coverage decreased slightly to 57% in 2010 (95% CI: 51%, 63%), which was slightly lower than the national average of 62%.

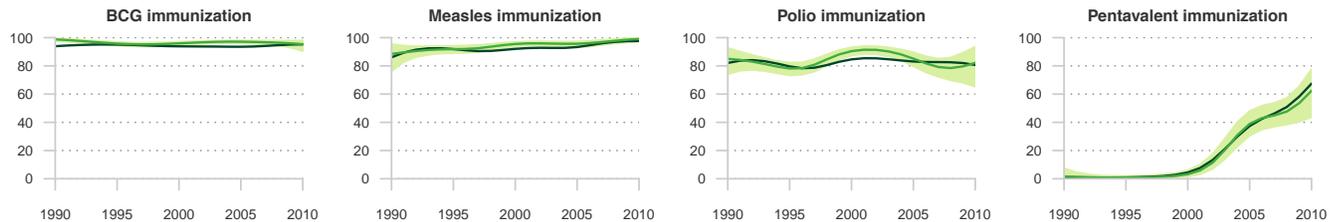
ITN use by children under 5 years old rose to 45% in 2009 (95% CI: 39%, 51%) and was maintained at 45% through 2010. Kaoma's level of ITN use in 2010 was lower than the national average of 51%. The difference between ITN ownership and use (12 percentage points) in Kaoma was comparable to what

was observed at the national level.

Kaoma formally implemented IRS activities in 2008, and reached 43% of households in 2010 (95% CI: 37%, 49%). This scale-up of IRS was about average compared to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage rapidly rose to 73% in 2009 (95% CI: 61%, 82%) and was sustained at this level through 2010. Kaoma's IPTp2 coverage in 2010 exceeded the national average of 68%.

IMMUNIZATIONS



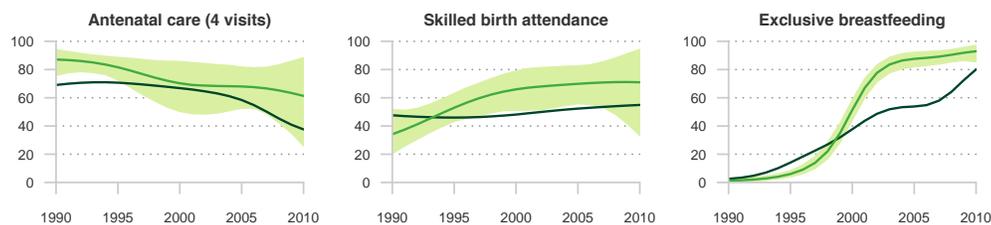
BCG coverage remained between 95% and 99% from 1990 to 2010. The highest level of BCG immunization took place in 1990, at 99% (95% CI: 98%, 100%), and the lowest (95%) occurred in the late 1990s. Coverage increased during the early 2000s, but slipped to 95% in 2010 (95% CI: 91%, 98%), equaling the national average.

Measles immunization increased from 88% in 1990 (95% CI: 76%, 95%) to 99% in 2009 (95% CI: 97%, 100%). This level of measles coverage was sustained through 2010, slightly exceeding the national average of 98%.

Coverage of polio immunization varied in the 1990s, rising above and falling below 80%, before reaching a high of 91% in the early 2000s. Polio coverage then dropped below 80%, but rose again to 82% in 2010 (95% CI: 65%, 94%), which was comparable to the national average of 81% for that year.

After the pentavalent vaccine was formally introduced in Kaoma in 2005, coverage increased to 45% in 2007 (95% CI: 37%, 54%) and 62% in 2010 (95% CI: 44%, 78%), which was lower than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS

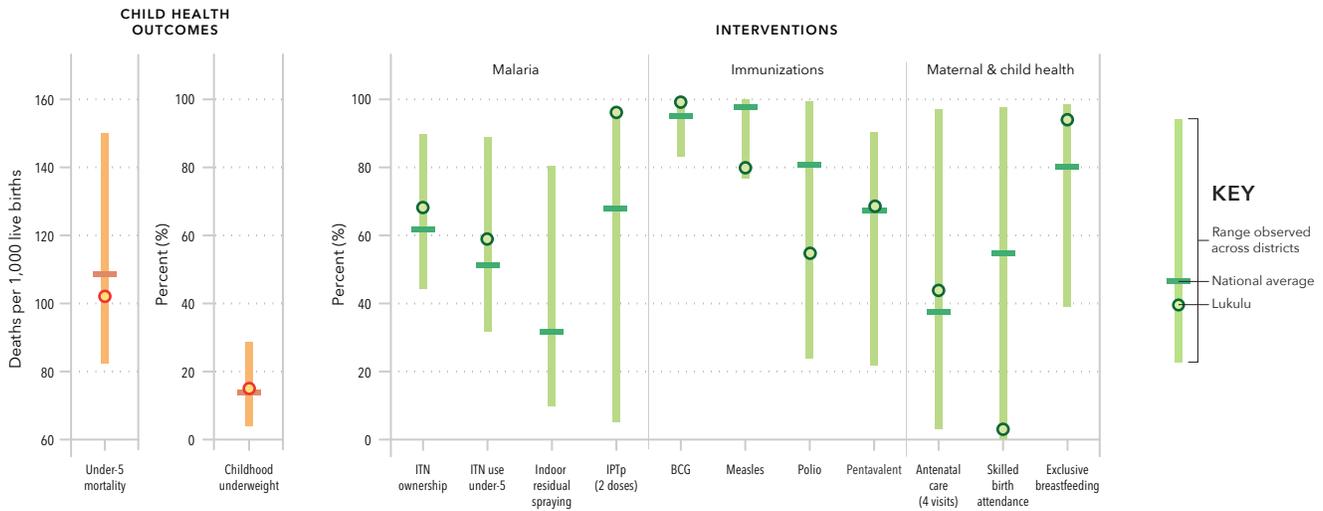


ANC4 coverage decreased from 87% in 1990 (95% CI: 76%, 94%) to 61% in 2010 (95% CI: 26%, 88%). ANC4 levels dramatically decreased throughout Zambia from 1990 to 2010, and while coverage in Kaoma was higher than the national average of 37% in 2010, its levels remained low.

Skilled birth attendance increased from 34% in 1990 (95% CI: 21%, 52%) to 71% in 2007 (95% CI: 54%, 85%). SBA coverage was sustained at 71% through 2010, which was higher

than the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage quickly increased to 88% in the mid-2000s. Levels of exclusive breastfeeding in the district continued to rise, reaching 93% in 2010 (95% CI: 86%, 97%) and far exceeding the national average of 80%.



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Lukulu started IRS after 2010.

SUMMARY

Between 1990 and 2010, Lukulu experienced substantial reductions in all-cause under-5 mortality and childhood underweight. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

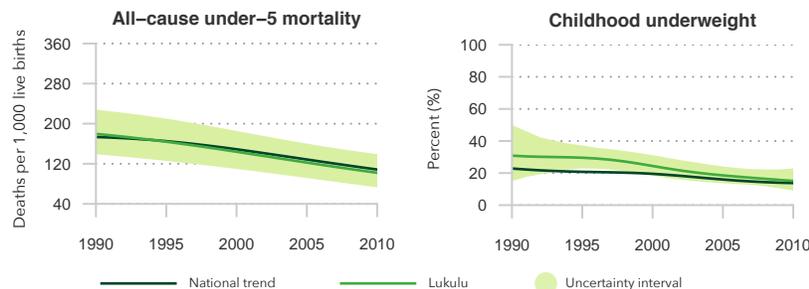
The district was able to rapidly scale up ITNs through 2010, and IPTp2 coverage climbed to some of the highest levels in the country in 2010. Lukulu had very high levels of BCG immunization, and was successful in expanding coverage of the pentavalent vaccine in recent years. Coverage of exclusive breastfeeding quickly increased to high levels, which were maintained through 2010.

However, amidst these gains, some troubling trends were identified and warrant further attention. In the late 2000s, polio immunization coverage abruptly dropped to some of

the lowest levels in Zambia, which is particularly worrying given that Lukulu is considered a high-risk district for imported polio. From 1990 to 2010, ANC4 coverage declined, and skilled birth attendance fell sharply to extremely low levels.

In 2010, Lukulu exceeded national levels for malaria interventions, as well as for maternal and child health interventions (with the stark exception of skilled birth attendance). For immunizations, Lukulu equaled or fell below the national average (except for BCG coverage and the pentavalent vaccine). In comparison with the national average, Lukulu showed lower levels of mortality and similar levels of underweight.

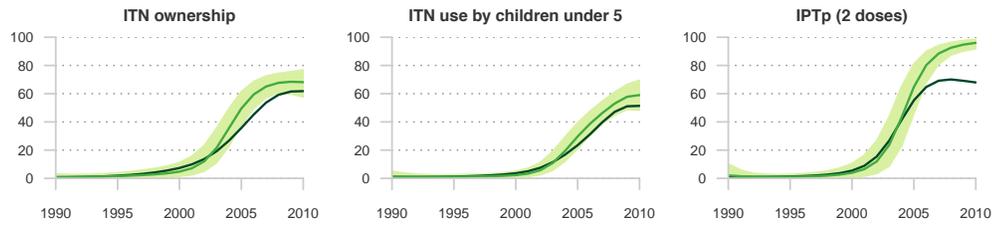
CHILD HEALTH OUTCOMES



From 1990 to 2010, Lukulu recorded a significant reduction in all-cause under-5 mortality, dropping 43% from 180 deaths per 1,000 live births in 1990 (95% CI: 141 to 226) to 102 in 2010 (95% CI: 75 to 137). In 2010, the district's under-5 mortality was lower than the national average of 109 deaths per 1,000 live births (95% CI: 104 to 116).

The proportion of children who were underweight substantially decreased from 31% in 1990 (95% CI: 16%, 49%) to 15% in 2010 (95% CI: 10%, 22%), which was comparable to the national average of 14% for 2010.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 68% in 2008 (95% CI: 60%, 74%). Ownership was sustained at 68% through 2010, rising above the national average of 62% for that year.

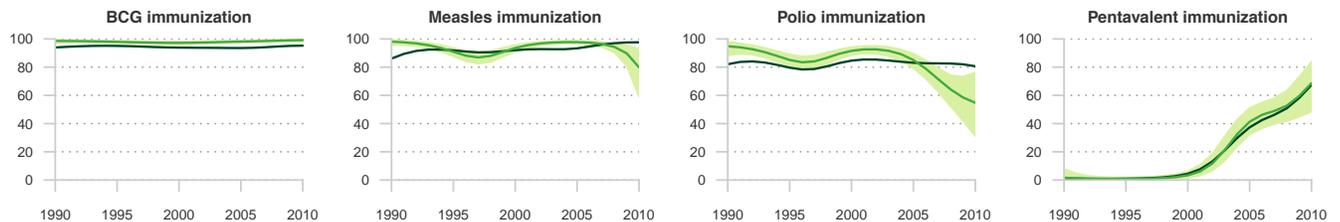
ITN use by children under 5 years old quickly rose to 59% in 2010 (95% CI: 48%, 69%), which was above the national average of 51%. The difference between ITN ownership and use (9 percentage points) in Lukulu was comparable to what was

observed at the national level.

IRS coverage trends are not included because Lukulu did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage quickly increased to 65% in 2005 (95% CI: 46%, 81%). Gains in coverage continued, with IPTp2 reaching 96% in 2010 (95% CI: 92%, 98%) and rising to one of the highest levels in Zambia.

IMMUNIZATIONS



BCG immunization hovered between 97% and 99% between 1990 and 2010, with the district rising to 99% coverage in 2007 (95% CI: 98%, 99%) and sustaining this level through 2010. Lukulu's BCG coverage was among the highest in the country for 2010.

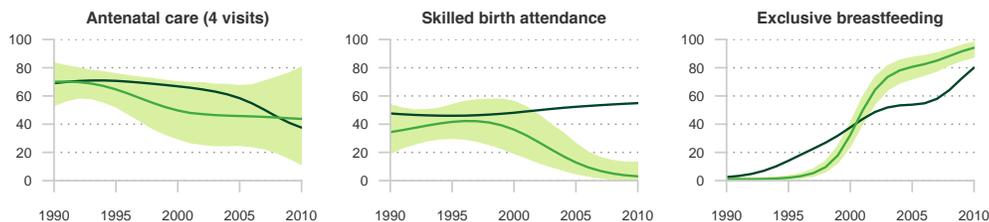
Measles immunization largely varied in the 1990s, ranging from 98% in the early 1990s to 87% in 1997 (95% CI: 82%, 91%). Coverage then steadily increased, reaching 98% again in the mid-2000s, but it abruptly dropped during the late 2000s. Measles coverage declined to 80% in 2010 (95% CI: 59%, 93%) and fell to among the lowest levels in Zambia.

Until the mid-2000s, coverage of polio immunization was

consistently higher than the national average, briefly dipping below 90% in the late 1990s before rising to 93% in the early 2000s. After 2002, polio coverage steadily declined, dropping to 55% in 2010 (95% CI: 31%, 76%), one of the lowest levels observed in Zambia for that year. Lukulu is considered a high-risk district for polio importation from neighboring countries, so addressing the district's faltering levels of polio coverage is likely to be important.

After the pentavalent vaccine was formally introduced in Lukulu in 2005, coverage increased to 46% in 2006 (95% CI: 37%, 55%) and 69% in 2010 (95% CI: 48%, 84%), which was slightly higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage remained at 70% until 1992, after which coverage steadily declined to 44% in 2009 (95% CI: 16%, 76%) and 2010. ANC4 levels dramatically decreased throughout Zambia from 1990 to 2010, and while coverage in Lukulu was higher than the national average of 37% in 2010, its levels remained low.

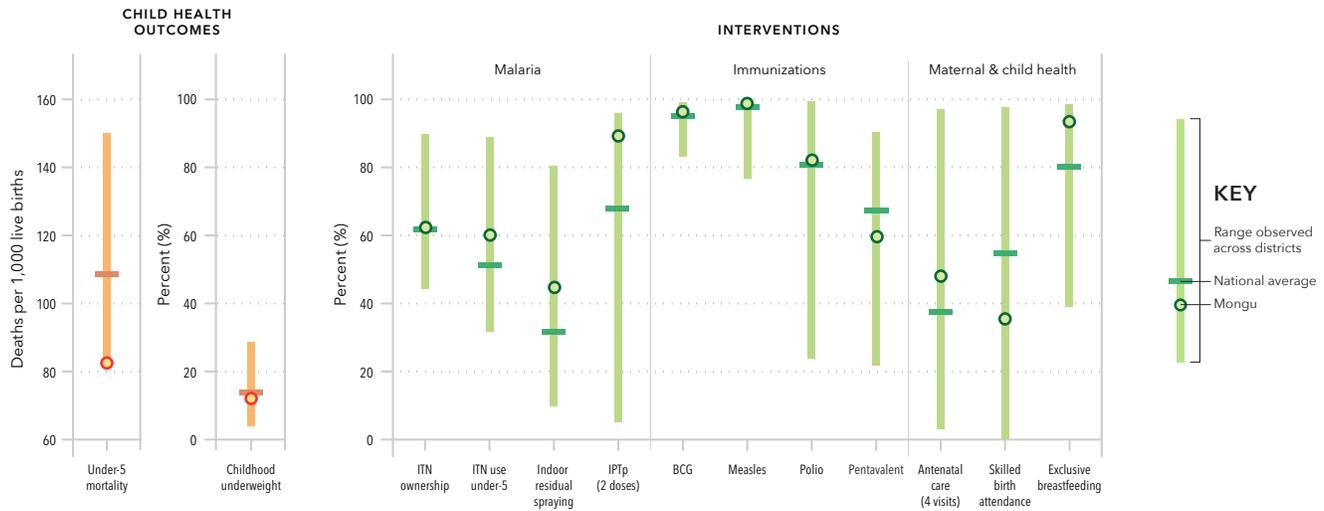
Skilled birth attendance slightly increased from 34% in 1990 (95% CI: 20%, 54%) to 42% in the mid-1990s before

dropping sharply to 3% in 2010 (95% CI: 0%, 13%), which was among the lowest levels in Zambia. This drastic decline in SBA is cause for concern and warrants immediate attention.

The proportion of children who were exclusively breastfed remained below 20% until 2000, after which coverage quickly increased to 81% in 2005 (95% CI: 72%, 87%). Coverage continued to rise, reaching 94% in 2010 (95% CI: 88%, 98%) and far exceeding the national average of 80%.



Mongu



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

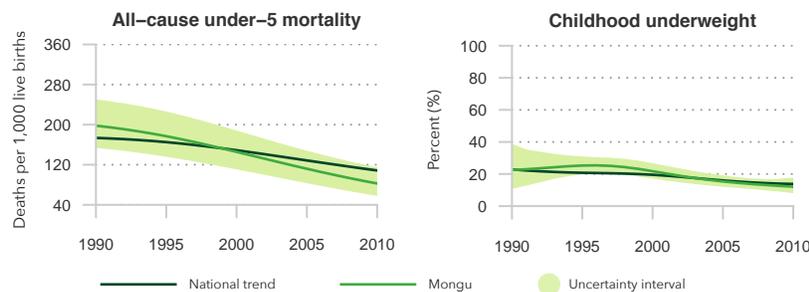
Mongu made substantial progress in reducing all-cause under-5 mortality, from levels above the national average in 1990 to among the lowest levels of under-5 mortality in Zambia in 2010. Childhood underweight also decreased, but not as dramatically. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

Mongu rapidly scaled up ITN ownership and IRS, and its levels of IPTp2 coverage were some of the highest in Zambia in 2010. Mongu expanded coverage of the pentavalent vaccine, and routine immunization coverage was generally high. Exclusive breastfeeding coverage in Mongu consistently exceeded the national level.

However, amidst these gains, some troubling trends were identified and warrant further attention. Coverage of ITNs and IRS peaked before 2010, and skilled birth attendance was consistently low. While ANC4 was higher than the national average in 2010, coverage in Mongu declined substantially since the 1990s.

In 2010, Mongu met or exceeded national levels of coverage for all interventions, except for the pentavalent vaccine and skilled birth attendance. In comparison with the national average, Mongu had much lower levels of mortality and slightly lower levels of underweight.

CHILD HEALTH OUTCOMES

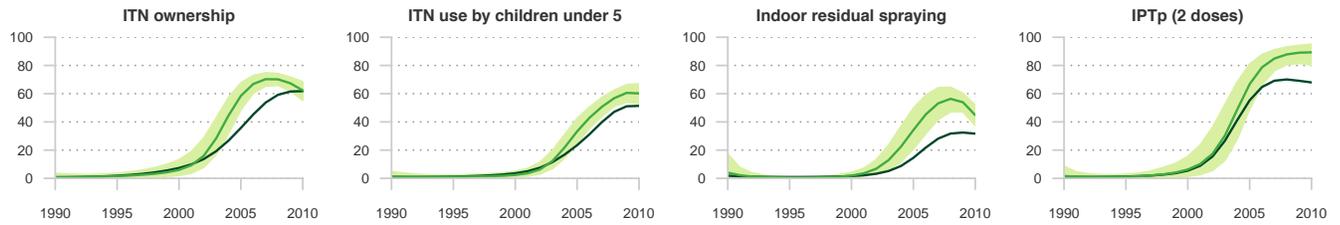


From 1990 to 2010, Mongu recorded a significant reduction in all-cause under-5 mortality, dropping 58% from 198 deaths per 1,000 live births in 1990 (95% CI: 156 to 248) to 83 in 2010 (95% CI: 60 to 113). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104 to 116), and was among the lowest in Zambia. This progress is particularly impressive

given that Mongu's under-5 mortality in 1990 was higher than the national average of 174 deaths per 1,000 live births (95% CI: 168 to 181).

The proportion of children who were underweight increased to 25% in the mid-1990s, but steadily decreased to a low of 12% in 2010 (95% CI: 9%, 17%), falling slightly below the national average of 14%.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2002, after which coverage quickly increased to 70% in 2007 (95% CI: 65%, 75%). Coverage remained at 70% through 2008, but ownership decreased to 62% in 2010 (95% CI: 55%, 68%). This level of ITN ownership equaled the national average in 2010.

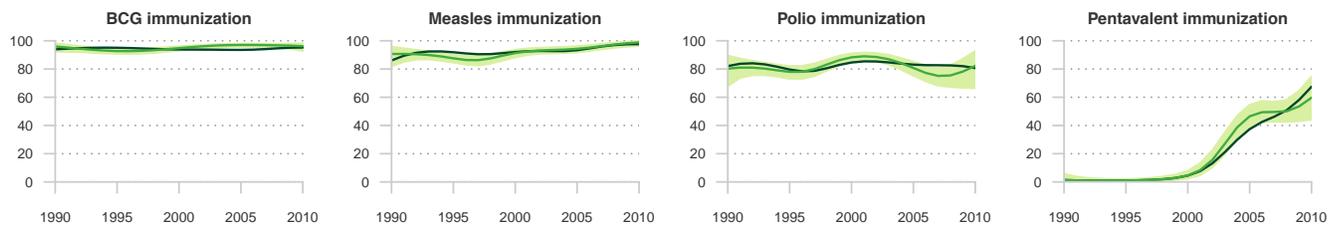
ITN use by children under 5 years old rose to 61% in 2009 (95% CI: 54%, 66%), but slipped to 60% in 2010 (95% CI: 53%, 67%). This level of ITN use in 2010 remained well above the national average of 51%. In 2010, the difference between ITN ownership and ITN use was quite low, which suggests that net use by children under 5 may be high

among households that have ITNs.

Mongu formally implemented IRS activities in 2008, and reached 56% of households that year (95% CI: 47%, 65%). While coverage decreased to 45% in 2010 (95% CI: 37%, 52%), this level of IRS was about average in comparison to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2001, after which coverage increased to 89% in 2009 (95% CI: 82%, 94%). IPTp2 remained at 89% through 2010, which was among the highest levels in Zambia for that year.

IMMUNIZATIONS



BCG immunization decreased from 96% in 1990 (95% CI: 92%, 98%) to 93% in the mid- to late 1990s, but increased to 96% in 2010 (95% CI: 93%, 98%), which was slightly higher than the national average of 95%.

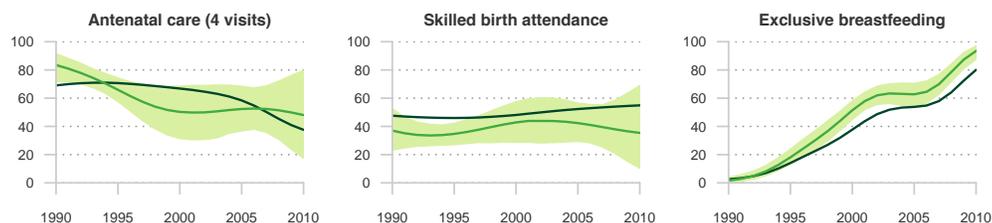
After slipping below 90% from 1994 to 1998, measles immunization steadily increased to 99% in 2010 (95% CI: 96%, 100%), which was slightly higher than the national average of 98%.

Coverage of polio immunization varied during the 1990s, rising above and falling below 80%, but reached 89% in the

early 2000s. Polio coverage then declined, dropping below 80% for a few years in the late 2000s before arriving at 82% in 2010 (95% CI: 66%, 93%). This level of coverage was comparable to the national average of 81%.

After the pentavalent vaccine was formally introduced in Mongu in 2005, coverage hovered around 50% through 2008 and then rose to 60% in 2010 (95% CI: 44%, 75%), which was below the national average of 67% for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage declined from 83% in 1990 (95% CI: 72%, 91%) to 48% in 2010 (95% CI: 18%, 80%). While coverage in Mongu was higher than the national average of 37% in 2010, its levels remained quite low.

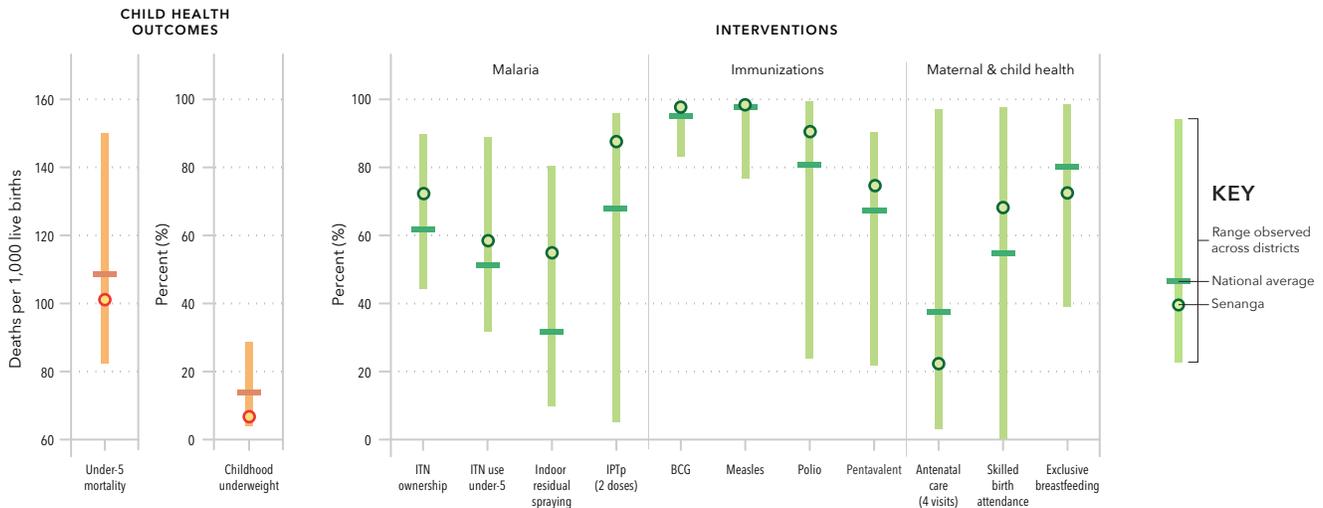
Skilled birth attendance increased from 34% during the mid-1990s to 44% in the early 2000s before declining to 35% in 2010 (95%: 10%, 69%). Mongu's SBA coverage was lower than the national average of 55% for 2010, and the district's consis-

tently low levels of skilled birth attendance are worrisome.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage rapidly increased to 62% in 2002 (95% CI: 56%, 68%). Gains in coverage slowed for a few years, but exclusive breastfeeding then escalated to 93% in 2010 (95% CI: 88%, 97%) and far exceeded the national average of 80%.



Senanga



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

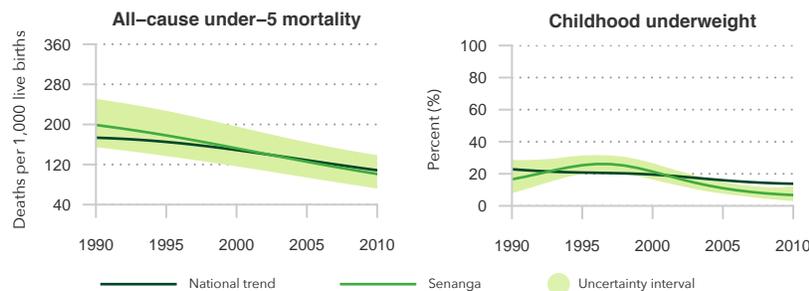
Senanga substantially reduced its all-cause under-5 mortality and childhood underweight between 1990 and 2010, bringing its levels of childhood underweight to among the lowest in Zambia in 2010. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

High levels of malaria interventions were achieved in 2010, and Senanga successfully scaled up the pentavalent vaccine to higher levels than the national average. The district maintained high levels of routine immunizations, and saw steady progress in increasing skilled birth attendance.

However, amidst these gains, some worrisome trends were identified and warrant further attention. Exclusive breastfeeding remained below the national average in 2010, and ANC4 steadily decreased over time.

In 2010, Senanga met or exceeded national levels of coverage for malaria interventions and immunizations, but fell below national levels for maternal and child health interventions (with the exception of skilled birth attendance). In comparison with the national average, Senanga showed lower levels of mortality and much lower levels of underweight.

CHILD HEALTH OUTCOMES



From 1990 to 2010, Senanga recorded a significant reduction in all-cause under-5 mortality, dropping 49% from 199 deaths per 1,000 live births in 1990 (95% CI: 157, 249) to 101 in 2010 (95% CI: 74, 137). In 2010, the district's under-5 mortality was lower than the national level of 109 deaths per 1,000 live births (95% CI: 104, 116).

The proportion of children who were underweight increased from 17% in 1990 (95% CI: 9%, 28%) to 26% in the mid-1990s, but steadily declined to 7% in 2009 (95% CI: 4%, 11%) and remained at 7% through 2010. This level of underweight was well below the national average of 14% in 2010, and was among the lowest levels in Zambia that year.

MALARIA INTERVENTIONS



ITN ownership remained below 10% until 2001, after which coverage rapidly increased to 76% in 2008 (95% CI: 70%, 80%). Ownership slipped to 72% in 2010 (95% CI: 64%, 80%), but still far exceeded the national average of 62%.

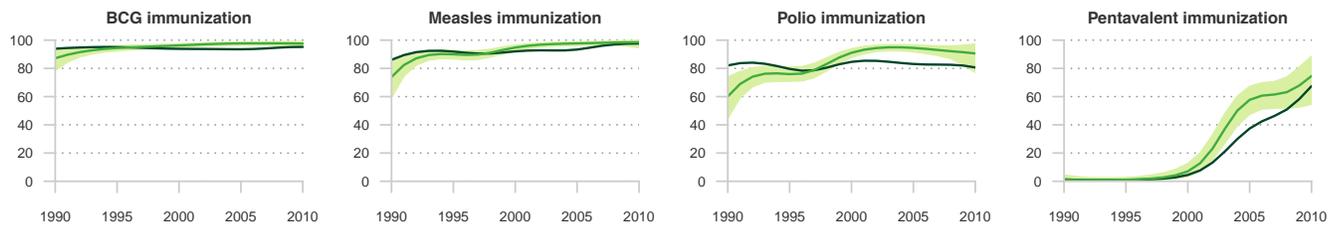
ITN use by children under 5 years old rose to 59% in 2009 (95% CI: 52%, 67%), but slipped to 58% in 2010 (95% CI: 49%, 68%). This level of ITN use was higher than the national average of 51% for 2010. The difference between ITN ownership and use (14 percentage points) was slightly higher than

what was observed nationally (11 percentage points) for 2010.

Senanga formally implemented IRS activities in 2008, and reached 55% of households in 2010 (95% CI: 48%, 62%). This scale-up of IRS was on the higher end compared to other districts that also began IRS in 2008.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, but rapidly increased to 88% in 2010 (95% CI: 75%, 95%). This level of IPTp2 coverage was among the highest in Zambia for 2010.

IMMUNIZATIONS



BCG immunization steadily increased from 87% in 1990 (95% CI: 79%, 93%) to 98% in 2004 (95% CI: 96%, 98%). This level of coverage was maintained through 2010, exceeding the national average of 95%.

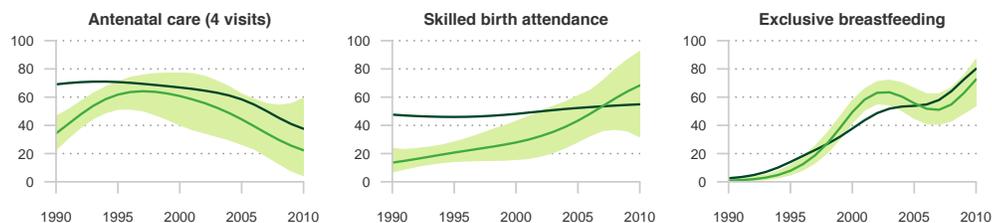
Measles immunization increased from 74% in 1990 (95% CI: 59%, 85%) to 98% in 2005 (95% CI: 96%, 99%). This level of coverage was sustained through 2010, equaling the national average.

Coverage of polio immunization rose from 60% in 1990

(95% CI: 45%, 74%) to 95% in the mid-2000s. Polio coverage slipped to 91% in 2009 (95% CI: 83%, 96%) and remained at 91% in 2010, which was higher than the national average of 81%.

After the pentavalent vaccine was formally introduced in Senanga in 2005, coverage increased to 61% in 2006 (95% CI: 51%, 70%) and 75% in 2010 (95% CI: 55%, 89%), which was higher than the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 34% in 1990 (95% CI: 23%, 46%) to 64% in the mid-1990s, after which coverage declined to 22% in 2010 (95% CI: 5%, 59%). This level of ANC4 was lower than the national average of 37% in 2010, and the finding that Senanga's levels of coverage fell over 40 percentage points since 1998 is worrisome.

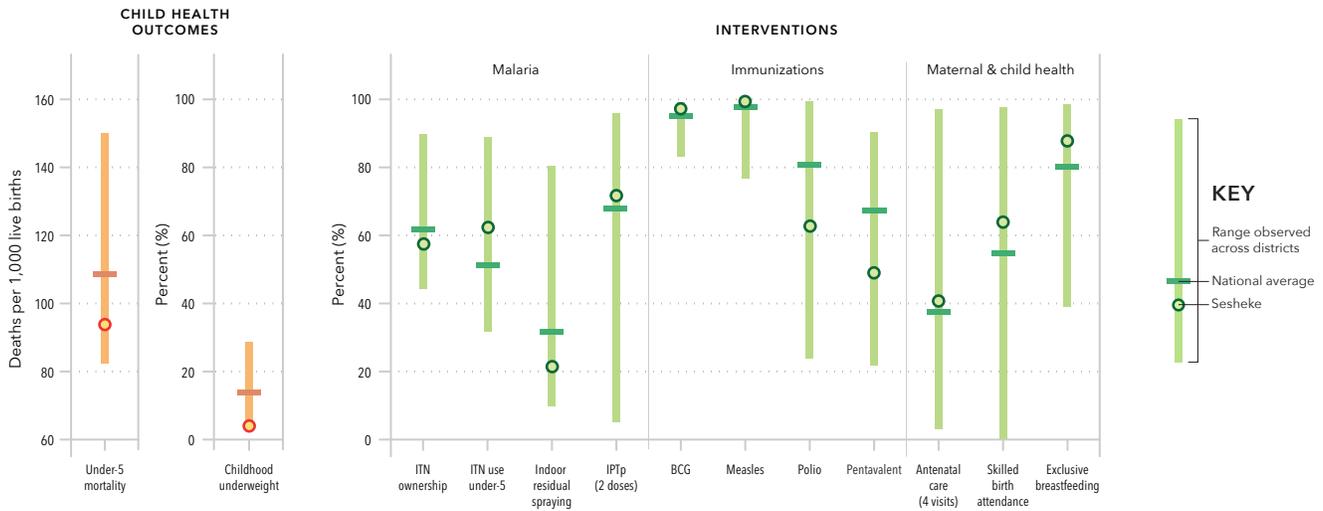
Skilled birth attendance steadily increased from 14% in 1990 (95% CI: 7%, 23%) to 68% in 2010 (95% CI: 32%, 92%), which was higher than the national average of 55%. Senanga's progress in expanding SBA coverage is notable given that the

district's levels of SBA were consistently well below the national trend from 1990 to 2000; however, the district should strive to further increase coverage.

The proportion of children who were exclusively breastfed remained below 20% until 1998, after which coverage rose to 63% in 2002 (95% CI: 55%, 71%). Gains in coverage then stalled, with exclusive breastfeeding falling to 51% in 2007 (95% CI: 41%, 62%), before rising to 73% in 2010 (95% CI: 54%, 86%). This level of coverage in 2010 was lower than the national average of 80%.



Sesheke



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green).

SUMMARY

Sesheke substantially reduced all-cause under-5 mortality and childhood underweight between 1990 and 2010, bringing both child health outcomes to some of the lowest levels in Zambia for 2010. Prioritizing ways to maintain these rates of progress in child health outcomes should be considered.

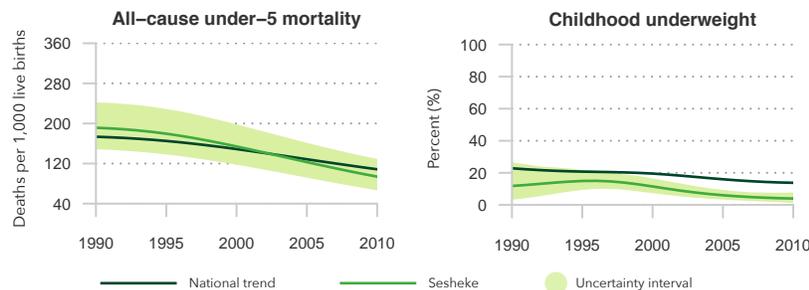
The district successfully scaled up IPTp2 and ITNs through 2010, and achieved particularly high levels of ITN use by children under 5 years old. Sesheke maintained high levels of BCG and measles immunization, and exclusive breastfeeding coverage also rose to high levels. Skilled birth attendance rebounded in 2010 after years of very low coverage.

However, amidst these gains, some troubling trends were identified and warrant further attention. The district made

marginal progress in increasing IRS coverage in 2010. The pentavalent vaccine was minimally scaled up in Sesheke, and polio immunization fell steeply in 2010, which is particularly worrying given that Sesheke is considered a high-risk district for polio importation. ANC4 coverage largely stagnated at low levels, and despite recent progress, SBA coverage remained lower than optimal.

In 2010, Sesheke exceeded national levels for maternal and child health interventions, but performed less consistently across malaria interventions and immunizations. In comparison with the national average, Sesheke showed much lower levels of mortality and underweight.

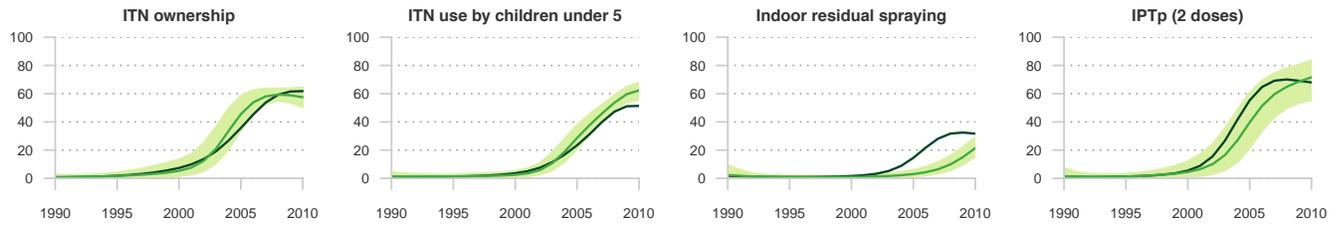
CHILD HEALTH OUTCOMES



From 1990 to 2010, Sesheke recorded a significant reduction in all-cause under-5 mortality, dropping 51% from 191 deaths per 1,000 live births in 1990 (95% CI: 150, 240) to 94 in 2010 (95% CI: 69, 127). In 2010, the district's under-5 mortality was much lower than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116). Further, under-5 mortality in Sesheke was among the lowest in Zambia for 2010.

The proportion of children who were underweight slightly increased from 12% in 1990 (95% CI: 4%, 26%) to 15% in the mid-1990s, after which underweight decreased to 4% in 2008 (95% CI: 3%, 7%). This level of childhood underweight was sustained through 2010, falling well below the national average of 14% and among the lowest in Zambia for 2010.

MALARIA INTERVENTIONS



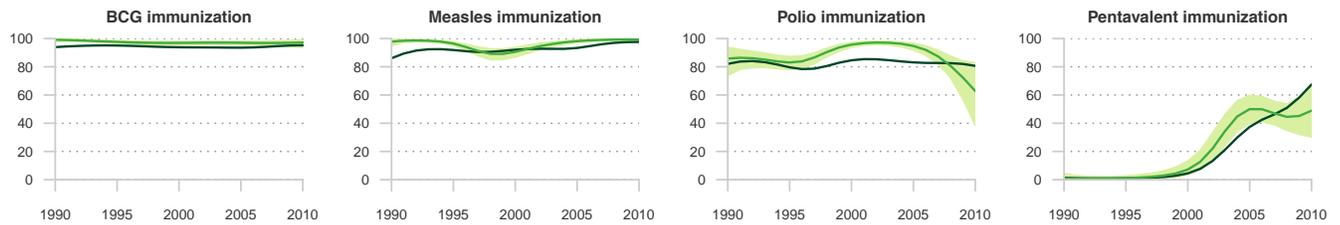
ITN ownership remained below 10% until 2002, after which coverage rapidly increased to 59% in 2008 (95% CI: 55%, 64%). Ownership slipped to 57% in 2010 (95% CI: 50%, 65%), which was lower than the national average of 62%.

ITN use by children under 5 years old quickly increased to 62% in 2010 (95% CI: 55%, 68%), which was much higher than the national average of 51%. In 2010, ITN use exceeded ITN ownership in Sesheke, which suggests that net use by children under 5 may be high among households that have ITNs.

Sesheke formally implemented IRS activities in 2010 and reached 21% of households that year (95% CI: 15%, 29%). This scale-up of IRS was on the lower end in comparison with other districts that also began IRS in 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2002, after which coverage increased to 72% in 2010 (95% CI: 55%, 84%), exceeding the national average of 68%.

IMMUNIZATIONS



BCG immunization decreased from 99% in the early 1990s to 97% in 1996 (95% CI: 96%, 98%). This level of coverage was sustained through 2010, exceeding the national average of 95%.

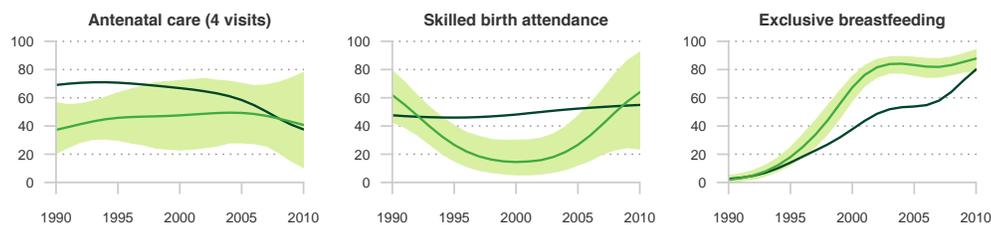
Measles immunization declined from 99% in the early 1990s to 89% in the late 1990s, but coverage recovered to 99% in 2006 (95% CI: 98%, 99%) and stayed at 99% through 2010. This level of measles coverage was slightly higher than the national average of 98% for 2010.

Despite a dip in coverage in the mid-1990s, polio immunization increased from 86% in the early 1990s to 97% in

the early 2000s. Coverage then declined, steadily dropping to 63% in 2010 (95% CI: 39%, 83%) and falling below the national average of 81%. Sesheke is considered a high-risk district for polio importation from neighboring countries, so addressing the district's faltering levels of polio coverage is likely to be important.

After the pentavalent vaccine was formally introduced in Sesheke in 2005, coverage hovered around 50%, and was at 49% in 2010 (95% CI: 30%, 68%). This level of pentavalent coverage was below the national average of 67% for 2010, and was among the lowest in Zambia for that year.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage gradually increased from 37% in 1990 (95% CI: 21%, 56%) to 49% in the early and mid-2000s, but dipped to 41% in 2010 (95% CI: 11%, 78%). Sesheke's ANC4 coverage was slightly higher than the national average of 37% for 2010, but the district's consistently low levels of ANC4 between 1990 and 2010 are cause for concern.

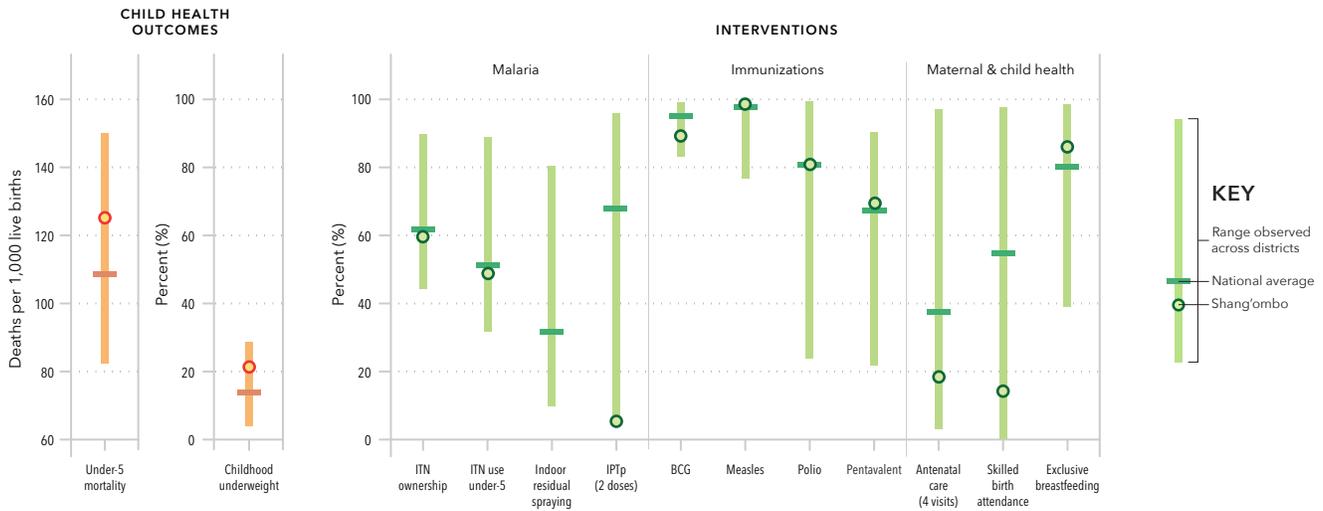
Skilled birth attendance steeply fell from 62% in 1990 (95% CI: 43%, 79%) to 14% in 2000 (95% CI: 6%, 30%), but re-

bounded to 64% in 2010 (95% CI: 24%, 92%). Sesheke's level of SBA was higher than the national average of 55% in 2010.

The proportion of children who were exclusively breastfed remained below 20% until 1996, after which coverage quickly increased to 84% in 2003 (95% CI: 78%, 89%). Gains in coverage stalled during the mid-2000s, but exclusive breastfeeding climbed to 88% in 2010 (95% CI: 79%, 94%) and exceeded the national average of 80% for that year.



Shang'ombo



Note: Levels of child health outcomes and intervention coverage are for 2010. Better performance is reflected by lower levels of child health outcomes (orange) and higher levels of intervention coverage (green). IRS coverage was not included because Shang'ombo started IRS after 2010.

SUMMARY

Shang'ombo substantially reduced its all-cause under-5 mortality between 1990 and 2010, but its mortality levels still remained among the highest in Zambia in 2010. The proportion of children who were underweight increased from 2005 to 2010. Prioritizing ways to accelerate gains for these child health outcomes should be considered.

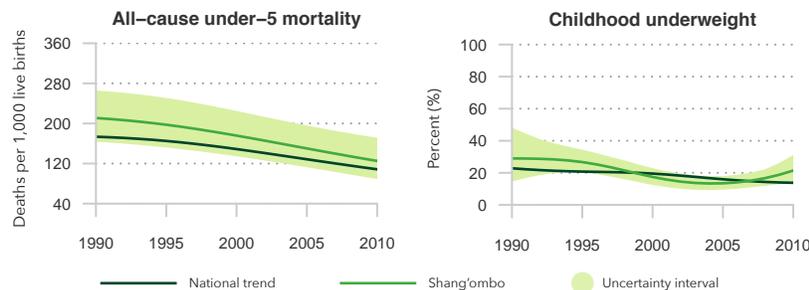
ITN ownership and use was scaled up in Shang'ombo, as was coverage of the pentavalent vaccine. Exclusive breastfeeding exceeded national levels in 2010, after recovering from a period of decline in the mid-2000s. Measles coverage remained high in Shang'ombo, and polio immunization was close to the national average in 2010.

However, amidst these gains, several troubling trends

were identified and warrant further attention. IPTp2 coverage had a minimal scale-up, falling to some of the lowest levels in Zambia for 2010. BCG coverage registered well below the national average in 2010. Skilled birth attendance stayed at very low levels, and alarmingly, ANC4 coverage dropped sharply to among the lowest in the country.

In 2010, Shang'ombo met or exceeded national levels for immunizations (except for BCG coverage), but equaled or fell below the national average for malaria interventions and maternal and child health interventions (aside from exclusive breastfeeding). In comparison with the national average, Shang'ombo showed much higher levels of mortality and underweight.

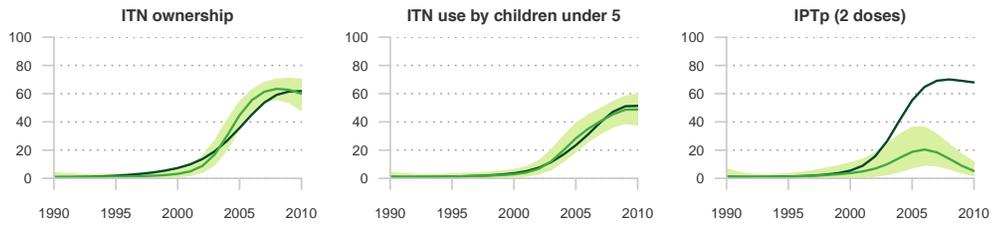
CHILD HEALTH OUTCOMES



From 1990 to 2010, Shang'ombo recorded a significant reduction in all-cause under-5 mortality, dropping 41% from 211 deaths per 1,000 live births in 1990 (95% CI: 166, 264) to 125 in 2010 (95% CI: 91, 169). Nonetheless, the district's under-5 mortality in 2010 was much higher than the national average of 109 deaths per 1,000 live births (95% CI: 104, 116) and was among the highest in Zambia for that year.

The proportion of children who were underweight decreased from 29% in 1990 (95% CI: 15%, 47%) to 13% in the mid-2000s, but increased to 21% in 2010 (95% CI: 14%, 30%), exceeding the national average of 14%. Shang'ombo also had one of the highest levels of underweight in Zambia for 2010. This trend in rising levels of childhood underweight is cause for concern, especially after Shang'ombo made such progress during the 1990s and early 2000s.

MALARIA INTERVENTIONS



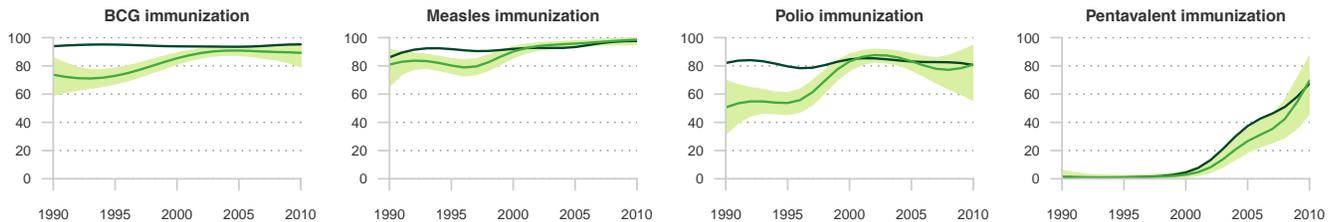
ITN ownership remained below 10% until 2003, after which coverage increased to 63% in 2008 (95% CI: 56%, 70%). Ownership slipped to 60% in 2010 (95% CI: 48%, 70%), which was slightly lower than the national average of 62%.

ITN use by children under 5 years old rose to 49% in 2009 (95% CI: 39%, 58%) and remained at 49% through 2010, falling slightly lower than the national average of 51%. The difference between ITN ownership and use (11 percentage points) in Shang’ombo was comparable to what was observed at the national level.

IRS coverage trends are not included because Shang’ombo did not begin formal IRS activities until after 2010.

The proportion of pregnant women who received IPTp2 remained below 10% until 2003, after which coverage increased to 20% in 2006 (95% CI: 9%, 36%). Nonetheless, this rise was dramatically lower than the rapid scale-up of IPTp2 documented at the national level, with coverage reaching 65% in 2006. In Shang’ombo, IPTp2 coverage fell after 2006, eventually dropping to 5% in 2010 (95% CI: 2%, 11%), which was one of the lowest levels in the country for 2010.

IMMUNIZATIONS



BCG immunization increased from 71% in the early 1990s to 91% during the mid-2000s, but declined to 89% in 2010 (95% CI: 80%, 95%), which was one of the lowest levels in Zambia.

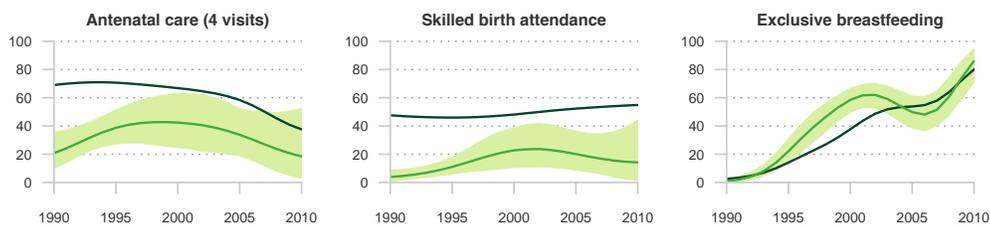
Measles immunization wavered around 80% in the 1990s before rising to 90% in 2000 (95% CI: 86%, 94%). Measles coverage continued to climb, reaching 99% in 2010 (95% CI: 95%, 100%) and slightly exceeding the national average of 98%.

Coverage of polio immunization was very low during the early to mid-1990s, falling below 60%, but steadily increased to 88% in 2002 (95% CI: 83%, 92%). Polio coverage dropped

below 80% again for a period in the late-2000s before rising to 81% in 2010 (95% CI: 56%, 94%) and equaling the national average for that year. Shang’ombo is considered a high-risk district for polio importation from neighboring countries, so prioritizing efforts to increase and maintain high levels of immunization coverage in the district is likely to be important.

After the pentavalent vaccine was formally introduced in Shang’ombo in 2005, coverage increased to 31% in 2006 (95% CI: 23%, 41%) and 70% in 2010 (95% CI: 46%, 87%), slightly exceeding the national average of 67%.

MATERNAL AND CHILD HEALTH INTERVENTIONS



ANC4 coverage increased from 21% in 1990 (95% CI: 10%, 36%) to 43% in the late 1990s, but steadily decreased to 18% in 2010 (95% CI: 3%, 52%), falling below the national average of 37%. The district’s consistently low levels of ANC4 coverage, coupled with its recent declines, are worrisome.

Skilled birth attendance remained below 10% until 1995, after which coverage increased slightly to 24% in the early 2000s. SBA then decreased, dropping to 14% in 2010 (95% CI:

2%, 44%) and falling well below the national average of 55%.

The proportion of children who were exclusively breastfed remained below 20% until 1995, after which coverage rose to 62% in 2001 (95% CI: 53%, 69%). Exclusive breastfeeding coverage then declined for a period, dropping to 48% in 2006 (95% CI: 37%, 60%), but then climbed to 86% in 2010 (95% CI: 71%, 95%), which was higher than the national average of 80%.

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