

# STUNTING REDUCTION IN KYRGYZSTAN

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November 16, 2018



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Exemplars in Global Health maintains a global platform of research and analytics on leading examples of progress against these challenges. This platform ensures that learnings and expertise are shared, and that successful practices may be adopted more widely.

The Exemplars in Global Health program has identified a small group of nations that have made notable progress in curbing stunting rates among children under the age of five. This stunting report seeks to identify the policies and practices that have made these gains possible—and to determine which of them might be applicable elsewhere.

Stunting is a condition characterized by a reduced growth rate during childhood and manifested in below-average height. Beyond shorter stature, stunted children suffer from greater risk of illness and premature death, delayed mental development, and reduced cognitive capacity. As a result, stunted growth is associated with substantial short- and long-term consequences for population-level health, economic, and social outcomes.

The magnitude of global stunting levels is alarming. Stunting affects approximately one-third of children in low- and middle-income countries. The Sustainable Development Goals (SDGs) and the Decade of Nutrition include a target to reduce the total number of stunted children globally to 100 million by 2025, down from 156 million (as of 2017). Based on current trends, the world will only get about halfway to its goal (to 127 million stunted children). One challenge in reaching the target is that more needs to be learned about which determinants cause stunting in the first place and which packages of interventions are most effective for addressing it.

In spite of the complexity and difficulty involved in reducing stunting, success stories do exist. Countries that have significantly reduced their stunting prevalence in the recent past have employed a combination of evidence-based nutrition-specific and nutrition-sensitive interventions.

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## STUNTING

### DESCRIPTION

Stunting is a measure of chronic malnutrition. It denotes a condition in which a child's height-for-age is two standard deviations or more below the WHO Child Growth Standards median. Severe stunting is defined as a height-for-age of more than three standard deviations below the median. This measure is also known as height-for-age z-score or HAZ.

## EXECUTIVE SUMMARY

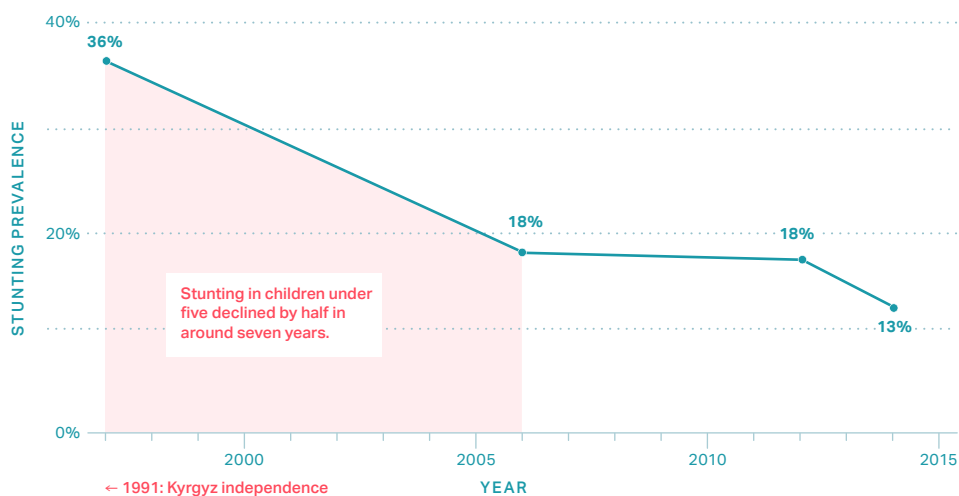
**AFTER THE SOVIET UNION COLLAPSED** and Kyrgyzstan became independent in 1991, the country plunged into a debilitating economic crisis that lasted for the rest of the decade. As a result of the sudden transition to a free market economy, the agricultural, health, and manufacturing sectors all started to fail. The rate of extreme poverty shot up, reaching one-third of all Kyrgyz in 2000. This catastrophe had a devastating impact on health and nutrition indicators across the country, including stunting. In 1997, a survey revealed that 36 percent of children (over 200,000 children) were stunted.

Shortly after the turn of the millennium, however, Kyrgyzstan started to emerge from the crisis. There were three keys to success that stabilized society, reduced poverty, improved broader health and nutrition, and contributed to the reduction in stunting.

1. *Agricultural reform:* When it gained independence, Kyrgyzstan inherited an economy dominated by a small number of very large collectivist farms. In the 1990s, following advice from the World Bank and other donors, the Kyrgyz government implemented land reform, dismantling these farms and distributing small plots to families. Initially, these farms focused on subsistence food production, which improved food security. Gradually, they shifted to cash crop production, which helped drive poverty reduction.
2. *Cash transfers and poverty reduction:* In the immediate post-independence period, cash was scarce in Kyrgyzstan because about half the population was engaged in subsistence agriculture. The government maintained a small but well-targeted cash transfer program that, despite its size, put cash in the hands of families that needed it. Another source of cash was remittances, which were not the result of a specific intervention but rather a response to market forces. By the turn of the millennium, more Kyrgyz were leaving agriculture, migrating to other countries for work (primarily Russia and Kazakhstan), and sending money home.
3. *Health reforms and initiatives:* Kyrgyzstan inherited a state-run health care system that was quite effective, but cost too much to maintain given the dire economic conditions following the Soviet collapse. Under a reform program called *Manas*, the government worked closely with the World Health Organization and other donors to restructure the system to deliver evidence-based preventive care to all people. Separately, Kyrgyzstan also invested in specific health initiatives on breastfeeding and management of childhood illness.

Kyrgyzstan Demographic and Health Surveys (DHS) 1997, 2012; Multiple Indicator Cluster Surveys (MICS) 2005/06, 2014

### Percent of children under five stunted



In 2006, the national survey of stunting revealed that the rate had dropped by half to 18 percent in just nine years. By 2014, the rate had fallen to 13 percent, and approximately 95,000 Kyrgyz children were stunted compared to a high of more than 200,000 20 years prior.

Through quantitative and qualitative research and analysis, Dr. Zulfiqar Bhutta, Dr. Nadia Akseer and members of their team at the Hospital for Sick Children in Toronto, working in collaboration with Dr. Roman Mogilevskii's team at the University of Central Asia in Bishkek, identified the factors that contributed most significantly to stunting reduction in Kyrgyzstan.

These factors, which tie directly to our keys to success above and are highlighted throughout this report, include:

#### **GROWTH OF AGRICULTURE**

When properly supported, the agriculture sector can drive stunting declines by two separate modalities: increasing food security and reducing poverty.

#### **TARGETED SOCIAL PROTECTION**

Even small amounts of money can create a strong safety net if they are targeted effectively at the most vulnerable populations in society.

#### **RIGHT-SIZING OF PRIMARY CARE**

For low-income countries, focusing on accessible systems that provide basic health services helps address stunting.

#### **ADOPTION OF BREASTFEEDING PRACTICES**

Investing resources into breastfeeding advocacy and promotion to achieve high coverage rates can result in a significant difference in the growth trajectory of children between birth and six months of age.

#### **DONOR COORDINATION AND SHARED PRIORITIZATION**

Engaging donors through a comprehensive planning process provides an opportunity to institute lasting reforms while avoiding duplication of work and gaps in design. Health reforms in Kyrgyzstan were based on a such a planning process.

This report explores how Kyrgyzstan reduced stunting and identified policies and programs that other countries may want to adapt and adopt.

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## **ANALYSIS**

**THE EPIDEMIOLOGY OF STUNTING IS HIGHLY COMPLEX.** There is no bacterium, parasite, or virus that causes it directly. Stunting is multicausal, and the field doesn't yet have a thorough understanding of what all those causes are or how they interact. Given this context, we didn't expect to find a silver bullet, a single driver of improvement, and our expectations were borne out.

Our research consisted of a systematic literature review that ultimately included 127 studies (academic and gray literature), a qualitative analysis based on focus group discussions with mothers and in-depth interviews with health workers and national experts, a variety of quantitative analyses and a policy and program review. We synthesized our findings from these different methodologies to arrive at the most likely explanations for Kyrgyzstan's stunting decline.

In Kyrgyzstan, two determinants show up as most significant: food security and maternal nutritional status and health. Our research further suggests that these improvements were enabled by the rapid decline in poverty during the time frame of our analysis. We will now briefly examine two of our quantitative analyses.

## DECOMPOSITION ANALYSIS METHODOLOGY

### DESCRIPTION

Oaxaca-Blinder decomposition analysis was used to identify the relative contribution of each predictive factor to height-for-age z-score (HAZ) change. A linear least square regression model was used to assess associations between HAZ, time, control variables (e.g., child age and sex), and any trend effects.

The analysis is based largely on individual and household-level data, focusing on index mother-child pairs (i.e., the youngest child and youngest mother in any given household). This standard approach simplifies modeling and interpretation with minimal loss in data.

Here, we show analysis of the under-three age group across the 1997–2012 time period.

## Decomposition analyses

The decomposition analysis determines how much of the change in height-for-age z-score (HAZ) for Kyrgyz children can be explained by each of the 37 determinants included in the analysis.

In our decomposition analysis of the entire 0–36 month period (our data did not permit an analysis of the full 60 month period), 61% of the explainable change was attributed to poverty reduction, although it is complex to disaggregate this large effect into its constituent parts due to limitations in the data. The second biggest determinant in the decomposition analysis was maternal nutritional status at 14 percent. No other determinant explained more than six percent of the change in child HAZ.

What can we make of this very large effect attributed to poverty reduction? It is important to note that a decline in poverty is not itself a determinant of stunting reduction—simply not being poor does not make children taller. What matters is that wealth enables people to behave in different ways—to eat more food that is healthier or seek more health care, for example—that do make children taller. The trick, then, is determining which pathways linked poverty alleviation and stunting reduction.

Unfortunately, this is challenging. The 37 determinants we looked at explained 89 percent of the total change in HAZ. Put another way, the analysis leaves 11 percent of the phenomenon we are trying to understand unexplained. Moreover, the variables in the analysis do not always perfectly capture the effect we hope to study.

To take an example, we included daily intake of calories as one measure of food security, but there are obvious limitations to this variable. First, it is averaged at the regional level, which means it does not capture variation by household and could hide subregional pockets of severe hunger. Second, daily intake of calories does not account for the quality of those calories and for the diversity of diets. **Given the limitations of food security indicators in Kyrgyzstan, it is possible that when the decomposition analysis attributes change in HAZ to poverty reduction, the positive impact of increased food security is also being attributed to this poverty reduction determinant.**

Based on the totality of the evidence, there are three likely pathways from poverty alleviation to stunting reduction among 0–36 month olds.<sup>1</sup>

- Food security, as mentioned above, including more calories and more diverse sources of calories, especially protein
- Improved breastfeeding practices (more information to follow)
- Reduced infection, as a result of better access to health care and piped water

The decomposition analyses for specific age groups tell a similar story. The analysis for the 6–23 month period also suffers from data limitations. This analysis leaves 26 percent of the total change in HAZ unexplained. Nevertheless, 81 percent of the change in HAZ that the analysis does capture is explained by three factors: poverty reduction,

<sup>1</sup> As discussed, the lack of high quality data in certain areas likely reduces the significance our quantitative analyses attribute to these determinants and perhaps overstates the impact of poverty reduction.

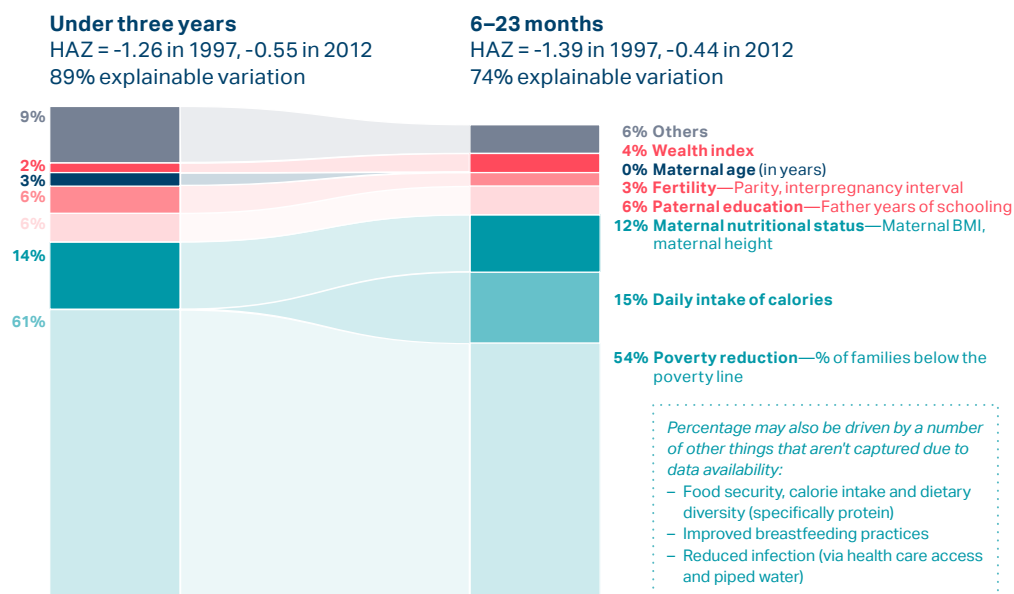
maternal nutritional status, and daily intake of calories. The addition of calorie intake as a category makes sense for this age group, because children start to eat solid foods at about six months.

In addition to the decomposition analyses, which use only two sets of data from The Demographic and Health Survey (1997 and 2012), we conducted mixed-effect regression analyses using more variables and representing more points in time. These analyses, known as Difference-in-Difference analyses, reveal which determinants accelerated the change in HAZ over time. The results were directionally similar to those of the decomposition analysis: poverty reduction again showed up as one of the most significant factors in the stunting decline, along with daily intake of calories and fats, childhood vaccination rates, and birthweight. Maternal age and urbanization were also significant in this regression analysis.

Kyrgyzstan Demographic and Health Surveys (DHS) 1997, 2012

### Our decomposition analysis: contextual factors reducing stunting

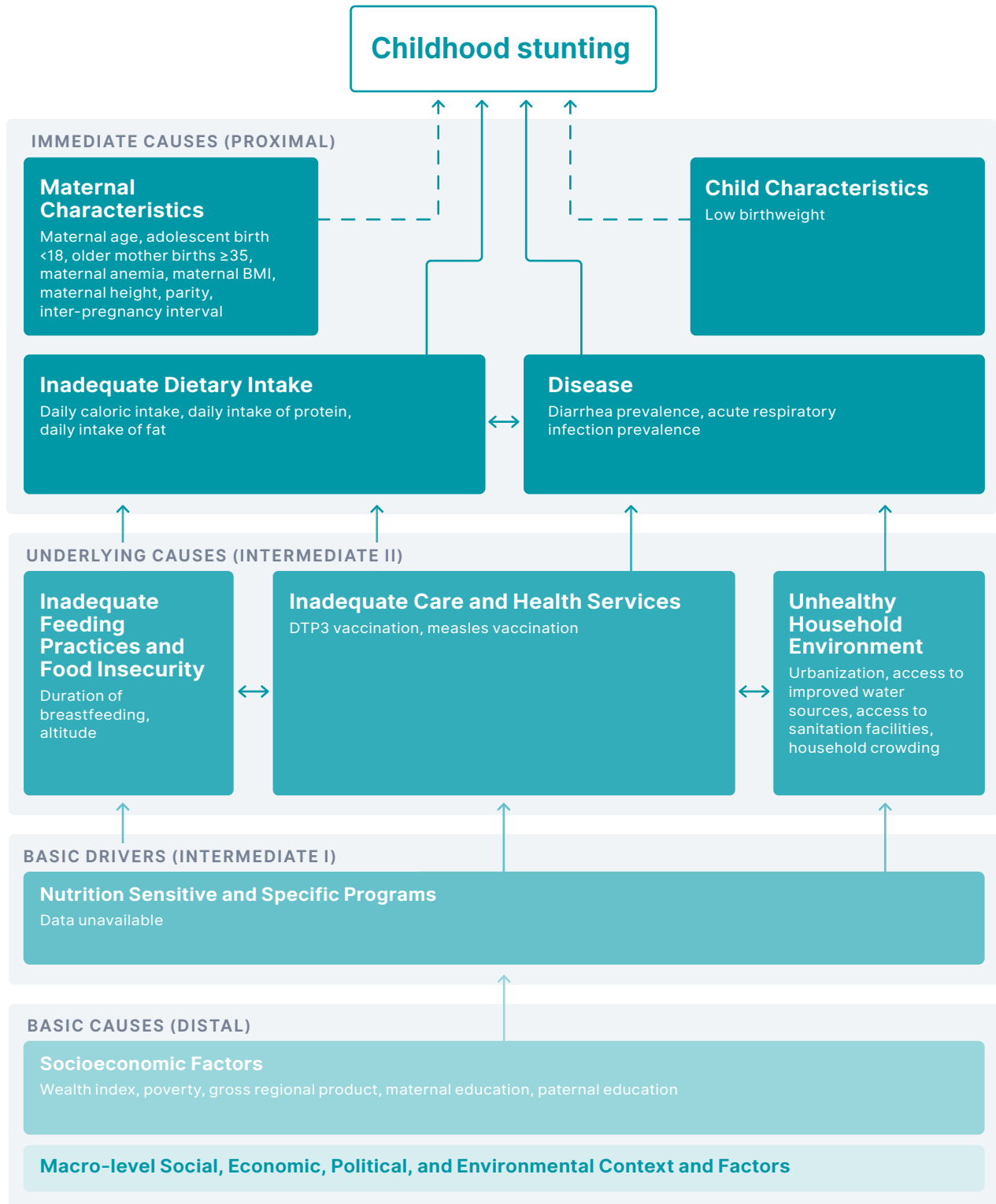
Predicted change in HAZ, 1997–2012



Although in many ways Kyrgyzstan's story appears to be one solely driven by poverty reduction, a closer look reveals that this driver impacted stunting in concert with factors such as increased food security and improved maternal nutritional status and health. To follow shortly is a review of the land and health reforms, among others, that were likely able to drive stunting reduction through these causal pathways.

## Conceptual framework for decomposition analysis

Adapted from UNICEF undernutrition conceptual framework



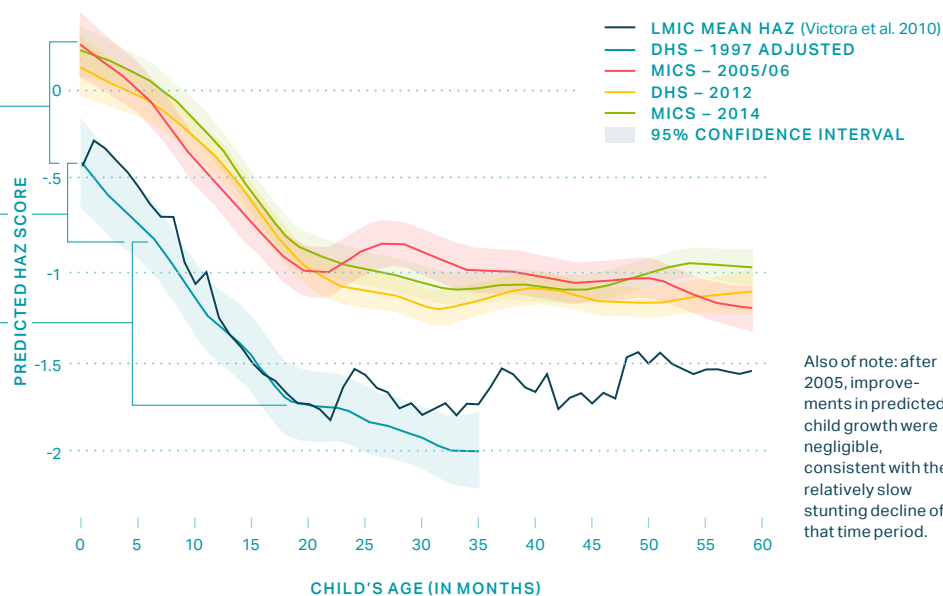


### Predicted HAZ score by child's age ("Victora curves")

An improvement from 1997 to 2005/06 in predicted HAZ at 0 months implies that maternal nutritional status and health had a positive impact on the child HAZ trajectory and therefore stunting prevalence.

Here, a slight improvement in slope from zero to six months signals the positive contributions of breastfeeding to predicted child growth.

From 6–20 months, there is no improvement in slope throughout this time frame, meaning there are still gains to be made through complementary feeding for young children. After 20 months, however, growth faltering is limited by 2005.



Kyrgyzstan Demographic and Health Surveys (DHS) 1997, 2012; Multiple Indicator Cluster Surveys (MICS) 2005/06

### Child growth curves

These curves, also known as Victora curves, track predicted HAZ from birth to five years, which captures two important pieces of information. First, how big infants are at birth, which suggests the role that the mothers' nutritional status and health plays in their growth. Second, when and how severely children's growth falters, which helps researchers know where to look for the key factors underlying stunting.

Kyrgyzstan's curves also show that the decline in HAZ during children's first six months flattened out over time. In 1997, children's HAZ started a steep decline as soon as they were born. In 2014, the decline is gradual for the first six months before getting steeper at the six-month mark (and stabilizing at about the 20-month mark). This suggests that newborn care and feeding improved, even if complementary feeding for young children did not. One hypothesis, to be discussed later, is that breastfeeding practices improved nationwide, delaying the onset of growth faltering.

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## EVIDENCE-BASED NUTRITION INTERVENTIONS

In 2008, the *Lancet* published its first series on maternal and child undernutrition. The series was updated in 2013, when the authors outlined ten evidence-based nutrition interventions that, at 90 percent coverage, could avert 20 percent of stunting.

The fact that a large proportion of stunting can not be averted by these direct nutrition interventions underscores the multicausal nature of the problem—and how difficult it is to isolate discrete pathways to addressing stunting.

What follows is a list of the evidence-based nutrition interventions listed in the *Lancet*, alongside a summary of how Kyrgyzstan prioritized or did not prioritize each one. By and large, Kyrgyzstan's success with stunting cannot be attributed to expanding coverage of these nutrition-specific interventions.

EVIDENCE-BASED NUTRITION INTERVENTIONS	KYRGYZSTAN'S PRIORITIZATION
Folic acid supplementation	<b>Prioritized</b> through flour fortification efforts started in 1997 by UNICEF. Interventions have faced difficulties due to cheaper non-fortified options being self-produced and imported from Russia and Kazakhstan. Folic acid was also included in the Gulazyk multiple micronutrient supplement.
Multiple micronutrient supplementation	<b>Prioritized</b> through the Gulazyk Supplementation program (2009–present) which has reached national coverage, but has been negatively impacted by some opposition from politicians
Calcium supplementation	<b>Not prioritized.</b>
Balanced energy protein supplementation	<b>Not prioritized.</b> However, protein intake for children under-3 has increased from 51g to 61g (1997–2012)
Exclusive breastfeeding (EBF)	<b>Prioritized</b> through Order N. 19, the Baby Friendly Hospital Initiative (BFHI) and additional breastfeeding policies; rates of early and exclusive breastfeeding have increased significantly over our timeframe of analysis
Complementary feeding	<b>Not prioritized.</b> Based on our analysis, complementary feeding remains a challenge in Kyrgyzstan
Vitamin A supplementation	<b>Prioritized</b> through a Vitamin A Supplementation program (2005–2011) through which the prevalence of Vitamin A deficiency was reduced to 5% in 2010. The program was then discontinued.
Preventive zinc supplementation	<b>Prioritized</b> through flour fortification efforts (see folic acid supplementation above)
Management of SAM	<b>Not prioritized.</b> Wasting has been <4% since 1997
Management of MAM	<b>Not prioritized.</b> Wasting has been <4% since 1997

## CONTEXT

### KYRGYZSTAN IN 1997

**KYRGYZSTAN, A LANDLOCKED, MOUNTAINOUS COUNTRY** with a mostly rural population of only six million, gained independence in 1991 with the collapse of the Soviet Union. Before independence, it had been among the poorest Soviet republics.

Like its neighbors, it was not prepared for the transition from a state-run to a free market economy after the Soviet collapse. In the next four years, inflation and indebtedness rose, and GDP per capita dropped by more than 45 percent.

In the late-1990s impoverished families could not afford to buy food or health care. By 2000, in the wake of the Russian financial crisis, the extreme poverty rate in Kyrgyzstan had risen to 33 percent. As one nutrition expert from the Kyrgyz-Russian Slavic University put it, "There were practically cases when there was nothing to eat. Food was scarce, expensive." And although health care was free in theory, by 1994, 70 percent of outpatients and 85 percent of inpatients were making under-the-table payments to health workers to receive treatment—payments that were impossible for impoverished families to make.

One striking indication of the uncertainty of Kyrgyzstan's future was the precipitous decline in the birth rate. In 1990, the total fertility rate was 3.67 children per woman. By 2000, it had dropped to 2.40 children per woman, reflecting a trend among parents to delay childbearing until conditions stabilized. (Today, the total fertility rate is again above three children per woman.)

Just after the turn of the millennium, based on a series of major reforms in every sector, Kyrgyzstan started to recover. By 2006, the extreme poverty rate was down to nine percent, from 33 percent just six years before. GDP per capita had also started to show signs of recovery at that time, but is only just reaching 1990 levels in recent years.

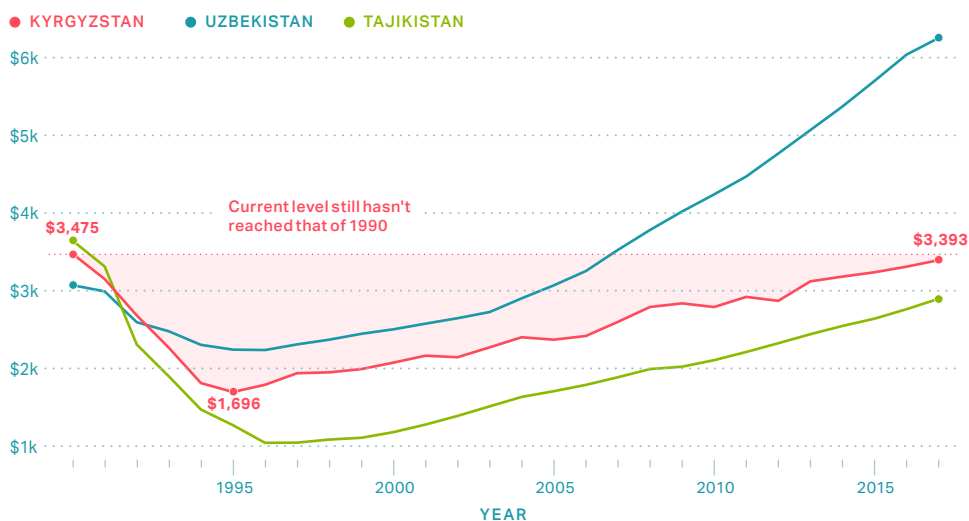
After almost 20 years of steady economic growth, Kyrgyzstan finally became a lower-middle income country in 2014. This suggests how impoverished the country became in the mid-1990s—and how impressive its progress against stunting was thereafter.

World Development Indicators, World Bank

### GDP (PPP) per capita in \$2011 dollars

(1990-present)

GDP (PPP) at constant dollars is used here as a better reflection of real purchasing power throughout the early life of Kyrgyzstan. In addition, Kazakhstan and Turkmenistan, two other former Soviet states, are excluded as their GDP levels have benefited from extraordinary oil reserves and other factors.



Kyrgyzstan's transition has not always been smooth. A single president, Askar Akayev, held office from independence in 1991 to 2005, but uprisings in 2005 and 2010 led to the wholesale replacement of governments. One could argue that corruption is still a challenge. Even so, compared to other post-Soviet states, Kyrgyzstan has pieced together a relatively stable democratic society with functioning institutions that has grown steadily. Moreover, it has worked successfully with a wide range of donors, ensuring consistent financial and technical support for development.

## STUNTING AND EQUITY IN KYRGYZSTAN

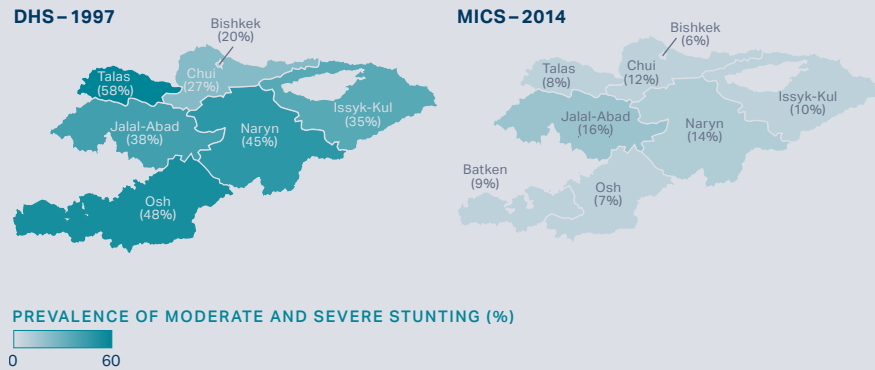
**WE CONDUCTED A SERIES OF ANALYSES** to understand how much of the stunting burden can be explained by structural inequities (wealth, education, geography, etc.). The findings revealed that stunting in Kyrgyzstan was never as rooted in inequity as it is in many other countries. **Moreover, between 1997 and 2014, inequity across all these dimensions almost disappeared.**

We began with a regional breakdown of the stunting burden over time. Kyrgyzstan consists of seven oblasts, or regions. The capital city of Bishkek and another large city, Osh, are considered separate regions. The three regions with the highest stunting rates in 1997 were Talas, Osh, and Batken. None of these were in the top three by 2014 (Jalalabad, Naryn, and Issyk-kul). In other words, stunting is not persistently concentrated in any particular oblast or group of oblasts, although Bishkek, the country's largest urban center, reported the lowest stunting rate in both years.

Kyrgyzstan Demographic and Health Surveys (DHS) 1997; Multiple Indicator Cluster Surveys (MICS) 2014

Over the period of stunting decline, each region has followed a different path. In 1997, 58 percent of children in Talas were stunted, but the oblast developed a thriving export agriculture sector specializing in kidney beans, and the results were rapidly declining poverty and stunting. By 2014, only eight percent of the children in Talas were stunted, an extraordinary 86 percent drop in fewer than 20 years. Meanwhile, Osh and Batken, other oblasts with extremely high levels of stunting in 1997, both have large labor migrant populations. Therefore, their declines in poverty and stunting are likely related to remittances.

### Kyrgyzstan regional map



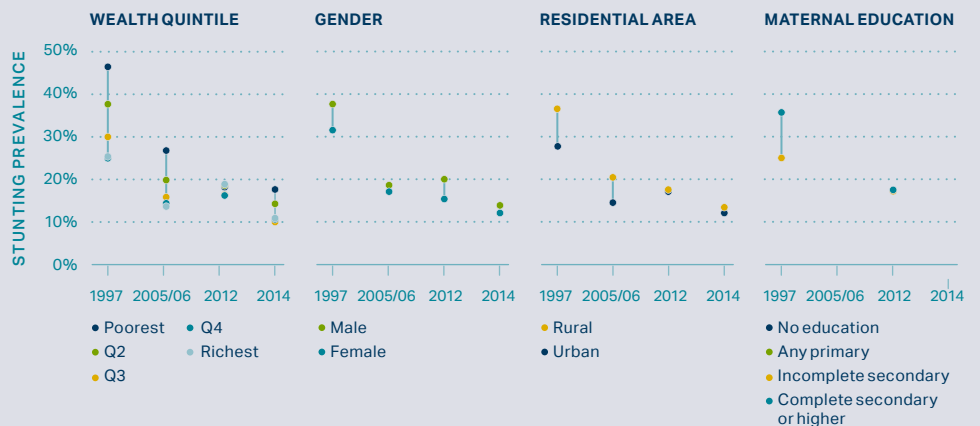
We also conducted equity analyses to quantify the relationship between stunting and wealth, maternal education, sex, and whether the child lives in a rural or urban area.

In 1997, there was a significant gap in stunting by wealth quintile, with the children in the poorest quintile of families suffering a stunting rate of approximately 45 percent, compared to approximately 25 percent for children in the richest quintile of families. By 2006, the gap had shrunk considerably, and in 2012 and 2014, it had closed altogether, with the number of stunted children roughly equal across the wealth distribution.

Kyrgyzstan Demographic and Health Surveys (DHS) 1997, 2012; Multiple Indicator Cluster Surveys (MICS) 2005/06

### Equity analyses by

Less data was available to stratify stunting prevalence by maternal education.



In the other dimensions we studied (maternal education, sex, and rural vs. urban), the disparities were never large enough to help explain the epidemic, and even those insignificant disparities disappeared in recent years.

## KEYS TO SUCCESS I

## AGRICULTURAL REFORM

**DURING THE FINAL YEARS OF THE SOVIET REGIME**, approximately 500 collective and state farms controlled 98 percent of the arable land in Kyrgyzstan. These centrally managed enterprises focused on a few priorities, especially raising sheep for wool and growing fodder crops like alfalfa to support the flocks. Much of the food Kyrgyz ate was grown or raised in other republics.

With independence, these agricultural enterprises, deprived of the subsidies and markets in other Soviet republics they had depended on for survival, started to fail. Nevertheless, the Kyrgyz government tried to prop them up by continuing the subsidies on a smaller scale, and the agricultural sector continued to be dominated by socialist modes of production for a few years. At the end of 1994, only 12 percent of land was cultivated by individual farmers. By then, value added in agricultural production had decreased by one quarter. As a result of this decline in local production and a spike in food prices caused by deregulation, food insecurity had increased by one half.

In 1994, however, the government initiated land reform policies in earnest, with the vast majority of the collective and state farms (190 collective farms and 262 state farms) dismantled and distributed on an egalitarian basis to individuals. The changeover happened region by region and was largely complete by 2002.

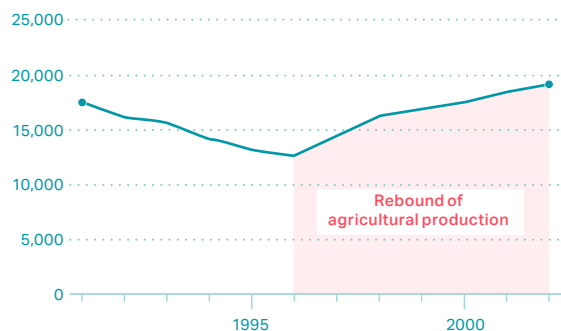
The result was a total transformation in Kyrgyz society. In 1994, there were only 20,000 individual farms, and the average Kyrgyz farm encompassed 15 hectares. By 2001–2002, there were 250,000 individual farms with an average size of just three hectares. At the time, these farms employed more than half of Kyrgyz citizens and accounted for 37 percent of GDP.

With this new agricultural model based on small family farms, the agricultural sector recovered relatively quickly. By 2001, the sector's output equaled output in 1990, the last full year of the Soviet regime.

National Statistical Committee of the  
Kyrgyz Republic

## Value added in agriculture (1990–2002)

KGS (constant 1999 prices)



*Value added refers to an increase in the value of primary agricultural commodities based on the manufacturing or production processes applied to them. In short, it is the value of agricultural output minus the price of the base commodities.*

However, the crop mix had changed significantly. Given the trauma of the transition, family farmers initially focused on subsistence, which in practice meant a pronounced shift from livestock to wheat. After a few years, however, farmers regained confidence in their basic food security and started to transition to more commercial production, including fruit and vegetables, kidney beans, and, eventually, livestock (although less for wool and more for dairy and meat).

## AGRARIAN LAND REFORM POLICIES

### DESCRIPTION

Following the collapse of the Soviet Union, land reform legislation aimed to make 75 percent of arable land private.

### TIMELINE

1991–ongoing

### COVERAGE

By 2008, individual landowners controlled 78 percent of the arable land in Kyrgyzstan.

### FUNDING

Following independence, funding sources were unstable, with more formal donor-supported land reform projects beginning in the late-1990s (e.g. WB, USAID, CACLM).

According to the World Bank, this sequence of events—“sweeping land reform and subsequent accumulation of livestock assets by peasant farms, along with their increasing commercial orientation”—was responsible for rapid overall agricultural growth, rural poverty reduction, and increased food security.

In 1997, the average Kyrgyz consumed just 1,873 calories per day. By 2002, that number was up to 2,111 per day. By 2006, the year when the DHS measured stunting at 18 percent, daily calorie intake was 2,274, a 20 percent improvement in less than a decade. Similarly, rural poverty, which stayed high through the Russian financial crisis in 1998, started a steady decline in 2000, dropping by nearly half by 2008.

Though agriculture played a pivotal role in stabilizing the country during the transition, its relative importance has declined since then.

In 2016, agriculture employed 27 percent of the population and accounted for 13 percent of the country's GDP. Globally, those are still relatively large percentages, but they are one half and one third, respectively, of what they were at the turn of the millennium. Now, rural Kyrgyz increasingly find employment in other sectors or abroad, and food is increasingly imported. The value of imports increased from just under \$150 million in 2004 to more than \$850 million in 2014.

According to a recent article on Kyrgyz agriculture, “The small size of the majority of farms seems to be simultaneously a blessing and a curse for Kyrgyz agriculture.” On the one hand, because farmers work land that they own, they can respond very quickly to market signals and are incentivized to manage their farms carefully. “It would not be an exaggeration to say that self-reliance of farmers is a major source of extreme poverty reduction and basic food security ... despite the harsh conditions of transition,” wrote the authors.

However, they also argue that because the farms are so small, farmers have tended to adopt risk-averse strategies, have not benefited from economies of scale, and lack the capital to make investments in technology. These challenges are compounded by a lack of technical expertise among the farmers, many of whom were trained as laborers on large farms. With donor funding, Kyrgyzstan started to build up an extension service to train farmers in modern techniques, but since the donor funding ran out the government has been unable or unwilling to sustain the program.

Taking a longer term view, Kyrgyz agriculture is no longer the key to economic growth it was in the 1990s, when it drove poverty reduction, increased food security, and spurred stunting reduction in the immediate post-independence period. As currently constituted, Kyrgyzstan's agriculture sector has a relatively low ceiling due to the lack of scalability and associated benefits. **However, in 1995, Kyrgyzstan needed a higher floor of production, which land reform provided.**

## KEYS TO SUCCESS II

# CASH TRANSFERS AND POVERTY REDUCTION

## Social Protection, 1991–Present

In the Soviet era, Kyrgyzstan ran on a complicated matrix of social benefits that amounted to 18% of Kyrgyzstan's GDP. Like the health system, the Soviet-era social protection system was expensive, inefficient, and impossible for Kyrgyzstan's government to maintain.

## UNIVERSAL MONTHLY BENEFIT (UMB)

### DESCRIPTION

A conditional cash transfer program to provide aid targeted at children in impoverished families.

### TIMELINE

1995–ongoing

### FUNDING

From 1998 to 2006, annual resources ranged from \$4 million to \$11 million. Greater funding followed after this time period.

Beginning in 1995, Kyrgyzstan started to reform its social protection system to make it cheaper and more efficient. The government started with the creation of the Universal Monthly Benefit (UMB), a means-tested cash benefit for the poorest families with children between the ages of 18 months and 16 years. This was an unconditional cash transfer program—that is, families that qualified did not need to do anything to “earn” the benefit.

The UMB was and is a small program, initially covering about ten percent of the population (583,000 people in 1998) and providing very limited benefits (about 50 soms, or less than \$1 per month, in 1998). However, because the program was well-targeted, it reached the poorest families and provided a cushion against total destitution—and therefore against the conditions that tended to lead to stunting. Not only that, but since it specifically targeted families with children, it reached children most at risk of stunting.

Moreover, many families in Kyrgyzstan, especially in the early transition period, were subsistence farmers, and since the UMB was paid in cash it provided some flexibility in the event of an emergency, especially as the majority of income was in-kind. Although its formula has been updated since its creation in 1995, the UMB is still the main anti-poverty cash transfer program in Kyrgyzstan.

It is also worth noting that the pension program, by far the largest social insurance program in Kyrgyzstan, may have had an impact on stunting during the 1990s. Although by definition pensions target the elderly, our interviews suggest that some families chose to live in multigenerational households during the worst of the economic crisis, in which case some young children may have benefitted from the cash their grandparents or great grandparents were receiving from the government.

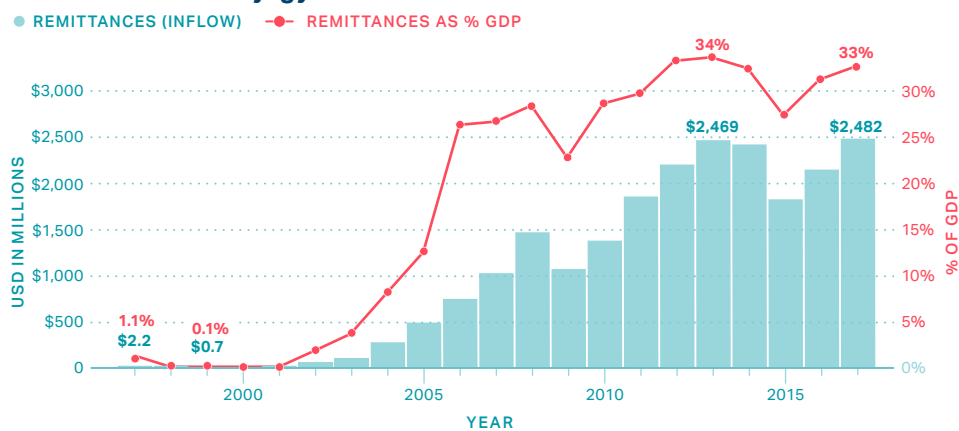
Social benefits and social insurance did not eliminate poverty in Kyrgyzstan, but they provided a safety net for the poorest during very lean years and kept Kyrgyzstan’s crisis from being even more damaging to people’s health and well-being.

## Remittances, ~2000–Present

Although the government provided this basic public safety net, the really large transfers of cash into poor people’s hands were the result not of a specific intervention but a response to market forces. Since about 2000, after the Russian Financial Crisis, labor outmigration has been a major feature of life in Kyrgyzstan—and remittances a major feature of the Kyrgyz economy. Kyrgyz migrants work for a period of several months or several years outside the country, usually in Russia or Kazakhstan, send money home, and eventually return to Kyrgyzstan.

Source: National Bank of the Kyrgyz Republic

## Remittances into Kyrgyzstan



It is difficult to pinpoint the number of labor migrants, as estimates range from 200,000 to one million annually. However, remittances have increased substantially over time from one percent of the country's GDP in 1997 to about 33 percent, or \$2.5 billion, in 2017. Kyrgyzstan has among the highest remittances-to-GDP ratio in the world.

Obviously, in addition to boosting GDP growth, remittances play a significant role in household economies. Studies have repeatedly demonstrated that migrants' families tend to use the proceeds to buy essential goods and services (including education, health care, and food), to buy assets, and to invest in businesses that generate more income.

These global findings align with Kyrgyzstan's experience. Household budget surveys from 2010 and 2013 show that remittances reduced the number of people in poverty by six to seven percentage points annually. As one woman in our focus groups said, simply, "We have money because of migration." And as this research has established, poverty reduction in Kyrgyzstan led to better food security and health, which in turn led to the stunting decline.

It is worth noting that some studies of remittances have described reasons why remittances may not address stunting as effectively as one would expect. For example, in some cases, families with more money to spend on food may buy unhealthy food. It is clear that this happened in Kyrgyzstan with breast milk substitutes. Moreover, the pressures of maintaining a household with one parent away could negatively affect the health and well-being of the parent and children left behind in ways that offset the health and well-being that can be purchased with the remittances. As the head of a kindergarten in Batken Oblast said, "There is a big difference in mental and psychological development of children with parents in migration and those children who have a parent nearby." Despite these caveats, it is clear that remittances are an important part of Kyrgyzstan's story.

Unfortunately, we do not have any stunting data between the years of 1997 and 2006. Therefore, it is impossible to know for certain whether the decline happened largely in the years before or after remittances became a key part of the Kyrgyz economy. However, it is reasonable to conclude that they played a pivotal role. In 2004 and 2005, for example, remittances already accounted for eight and 13 percent of GDP, respectively, so the impact of those inflows would be seen in the 2006 stunting data.

Since 2006, when stunting has declined more gradually from 18 to 13 percent, remittances have been the dominant source of poverty reduction and therefore a key driver of stunting reduction.

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### KEYS TO SUCCESS III

## HEALTH REFORMS AND INITIATIVES

### *Manas, 1996–2006*

Kyrgyzstan is widely recognized for successfully rebuilding its health system, for doing so much earlier than the other Central Asian republics, and for doing so in a way that met the needs of its citizens.

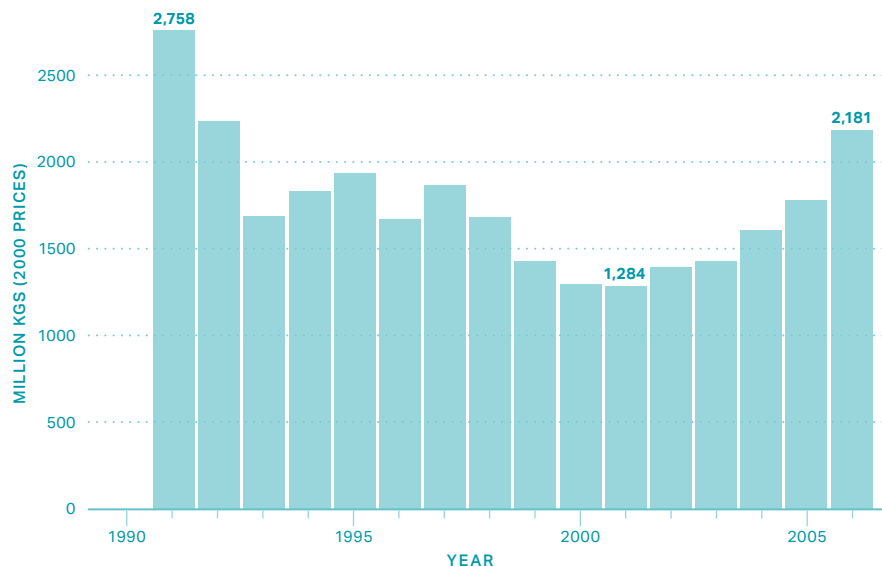
The Soviet era health care system was input-based, based mostly on what planners in Moscow deemed appropriate. As a result, Kyrgyzstan was left with a very expensive health system focused on specialized curative care. For example, the Soviet government determined that the optimal number of doctors per 1,000 population was 3.2, even though the average in OECD countries was 2.1. After 1991, independent Kyrgyzstan did not have



Development Cooperation Report for the Kyrgyz Republic based on donor survey organized by UNDP

## Public health expenditure

● MILLION KGS (2000 PRICES)



### MANAS

#### DESCRIPTION

A reform of the healthcare delivery system to strengthen the primary healthcare system, develop family medicine, restructure the hospital sector and redesign health financing.

#### TIMELINE

1996–2006

#### FUNDING

The *Manas* budget is estimated to range around several million USD annually, related to program implementation that also includes contributions to the Mandatory Health Insurance Fund (MHIF) and State Guaranteed Benefits Package (SGBP).

Kyrgyzstan needed a new health system that could provide for its people's health needs at a reasonable cost. Though many international and bilateral organizations were working to improve the Kyrgyz health sector in the immediate post-independence years, they were not coordinated. Finally, in 1994, the Ministry of Health asked the WHO Regional Office for Europe for help in designing, funding, and implementing a plan for reform. With support from the WHO and other donors, the Ministry of Health launched *Manas* in 1996. *Manas* focused on making preventive care for mothers and children accessible to all. The impact of these reforms can be seen in a steady decline not only in stunting but also in newborn and child mortality.

*Manas*, which ran for eight years, was implemented in phases, with different aspects of the new health system being pilot tested in various regions over time and gradually extended to cover the whole country.

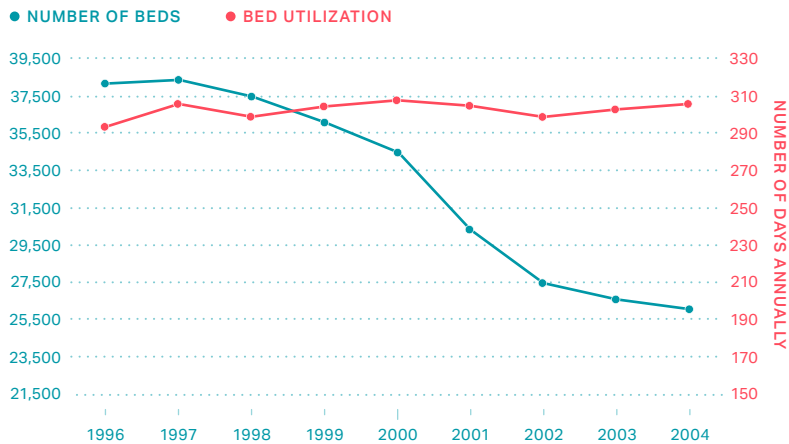
In 1996, following earlier pilot tests funded by USAID in Issyk-Kul Oblast, Kyrgyzstan created equitably distributed Family Medicine Group Practices and Family Medicine Centers to be the new "front door" to the Kyrgyz health system. The Soviet system was geared toward providing inpatient care in hospitals. The new Kyrgyz system was geared toward providing as much outpatient care as possible at family practices and centers, including pre- and post-natal care, routine immunization, and childhood disease management. To staff these practices and centers, Kyrgyzstan retrained thousands of doctors and nurses in family medicine. It also updated clinical guidelines based on evidence-based principles, introducing approximately 200 new protocols.

At the same time that *Manas* built a new infrastructure, it downsized the old one. The Ministry of Health closed 40 percent of hospital buildings, redirecting the savings to pay for primary care. In 1994, when planning for *Manas* began, just seven percent of the total health care budget was allocated to primary health care. By 2003, that share had increased to almost 25 percent.

Once these changes were underway, *Manas* initiated a second phase, focused on how to pay for the new system.

Ministry of Health of the Kyrgyz Republic.  
Kyrgyz Republic National Health Care  
Reform Program – *Manas* Taalimi

### Hospital beds utilization



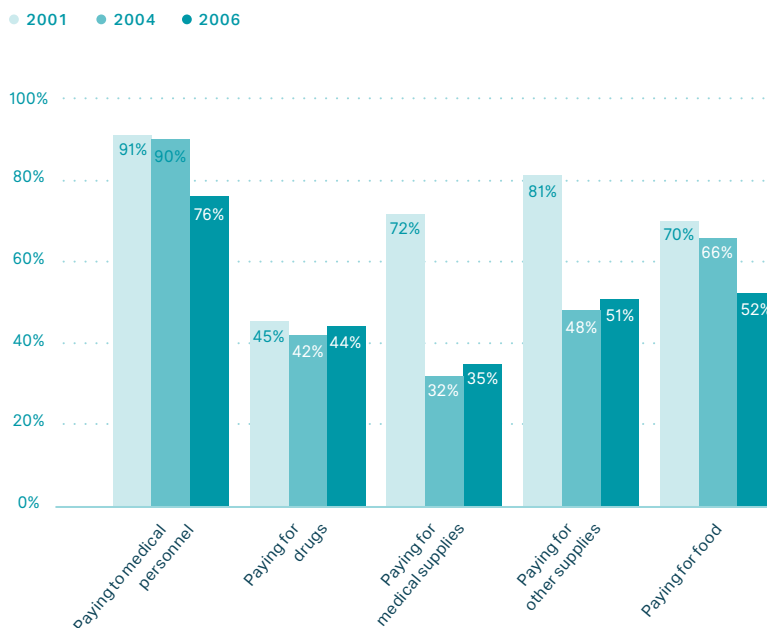
In 1997, the government created the Mandatory Health Insurance Fund (MHIF). The MHIF collected health insurance premiums through a two percent payroll deduction from all formally employed people, although this did not come close to funding the health system. Co-payments, donor funding, and general government revenue filled (and still fill) the gap.

Raising money was only part of the challenge. The other part was controlling costs. Unlike the Soviet system, *Manas* was based on rationing care. In 2001, the State Guaranteed Benefits Package was introduced, delineating the care to which people were entitled: primary care was free and specialist outpatient or inpatient services required co-payment on a sliding scale, depending on a number of factors. The insured population—that is, workers in the formal sector who received wages and paid into the Mandatory Health Insurance Fund—also received the Additional Drug Package to help cover the cost of basic medicines.

To increase efficiency, *Manas* also changed the way providers were paid—based either on the procedures they performed (in hospitals) or the number of patients they were responsible for (in primary care centers). This marked another break from the Soviet system, in which central planners pre-determined salaries.

Jakab & Kutzin 2009

### % of hospitalized patients making informal payments



At first, the responsibility for fulfilling these payments rested with local governments. Eventually, the government started pooling funds at the regional level to increase efficiency and equity. Finally, in 2006, Kyrgyzstan consolidated all the incremental improvements in health financing over the years by making the MHIF the single payer for health care across the country.

The system was not foolproof. Out of pocket payments were reduced but not by enough, in large part because salaries for providers were very low and hospital employees especially demanded extra money under the table. Private spending still accounted for 51 percent of total health spending in 2001. Even so, the percentage of people who needed but did not seek care because it was too expensive or too far away dropped significantly during the life of the program, from 11 percent in 2000 to just above four percent in 2009, per the Kyrgyz Integrated Household Survey.

The *Manas* reform was widely considered a big success. Building an affordable, functioning primary care system in just ten years was a major achievement. **Over the course of the *Manas* program, child mortality declined by 35 percent, infant mortality dropped by almost as much, and stunting was cut in half.**

### MANAS TAALIMI

*Lessons of Manas*

#### DESCRIPTION

An extension of *Manas*, implemented with a sector wide approach (SWAp) to more productively coordinate donors towards a broader list of health reform objectives.

#### TIMELINE

2006–2010

#### FUNDING

Government expenditure on the healthcare system increased from 10 to 13 percent of the total national budget over this time period.

### *Manas Taalimi* and the Sector Wide Approach, 2006–2010

In 2004, the Ministry requested technical support from the WHO to create the next iteration of health reform, which was launched in 2006 as *Manas Taalimi*, or “*Lessons of Manas*.” As the name suggests, the goal was not to change the direction of the health system but to build on the foundation that was now in place.

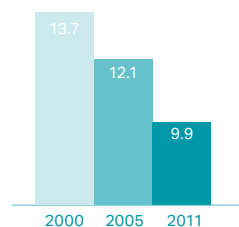
*Manas Taalimi* aimed to adjust the financing details to limit out-of-pocket spending and the inequities in care that came along with it. It also sought to find new ways to reach more people with more services. It did this in two ways. First, it expanded the definition of primary care. While *Manas* focused on creating family group practices, *Manas Taalimi* added birth centers and emergency care facilities to the mix of what was considered primary care. By 2010, 39 percent of the health budget was spent on primary care, up from 25 percent in 2004. *Manas Taalimi* also sought to connect these primary health care facilities to secondary and tertiary care, so that patients could begin to receive the advanced care that had been stripped out of the system by necessity in the mid-1990s.

The second way *Manas Taalimi* tried to extend the reach of the health system was by investing in community-based health care, specifically by investing in village health committees (VHC). The VHCs did not provide clinical care. Instead, they focused on raising awareness and promoting healthy practices. VHCs were piloted in 2001 but scaled up after 2006 under *Manas Taalimi*. By 2011, the country had established VHCs in 60 percent of the country’s villages. According to our qualitative research, the VHCs were important in at least one respect that relates to stunting: working with mothers to improve breastfeeding practices.

The most innovative thing about *Manas Taalimi* was how it was funded—by what was known as a sector-wide approach, or SWAp. Under the SWAp, more than 12 donors engaged in a single planning process with the Kyrgyz government and then funded different aspects of the plan’s execution. Five donors put their money in what was called a basket fund that was administered jointly with the government. The other donors continued to provide bilateral aid, but that aid was tightly aligned with the government’s plan. Ultimately, the SWAp was an important instrument for harmonizing donor assistance,

## Average length of hospital stay

KYRGYZ REPUBLIC



and it helped to increase coherence and reduce transaction costs because the Kyrgyz government did not have to address the concerns of a dozen different donors but were instead getting buy-in from all donors for a single strategy.

Roles and responsibilities were clear. The Kyrgyz government implemented the *Manas Taalimi* program and agreed to abide by two budget rules—to increase the health budget every year and to spend at least 95 percent of the health budget every year. The donors provided technical support and financial oversight to the Kyrgyz government.

Under *Manas Taalimi*, health care in Kyrgyzstan continued to improve. For example, the average length of hospital stays—an indicator of the health system’s efficiency—dropped by almost 30 percent, continuing a trend that had started with *Manas*. While the length of hospital stays has nothing directly to do with stunting, it is a sign of the successful ongoing transition to a primary care system. The effectiveness of that system is captured by the fact that child and infant mortality rates continued to drop during the four years of *Manas Taalimi*.

## THE EVOLUTION OF DONOR ENGAGEMENT

### Post-independence

**DONORS HAVE PLAYED A KEY ROLE IN KYRGYZSTAN SINCE INDEPENDENCE**, but that role has evolved over time. A WHO paper in 2000 described the relationship among donors as progressing through phases of co-existence, communication, and cooperation.

*Co-existence:* In the immediate aftermath of the Soviet Union’s collapse, Kyrgyzstan desperately needed help, but donors were funding an eclectic mix of programs that didn’t add up to a strategic approach. To take a few examples, the Japanese International Cooperation Agency paid for equipment at a hospital, the Swiss Development Agency developed plans to build two new hospitals, the Danish Development Agency purchased insulin and hearing aids, the U.S. Agency for International Development experimented with health financing schemes, and UNICEF focused on diarrhea and pneumonia.

*Communication:* In early 1994, the Kyrgyz Government requested the assistance of WHO to begin to address the crisis of the health sector in an organized way, and the Ministry of Health and the WHO Regional Office for Europe signed a memorandum of understanding. This work, which resulted in the *Manas* program, helped incorporate all donors in a single conversation. In mid-1994, 47 bilateral and international donors met in Bishkek to discuss how they’d work together. Subsequently, most donor-funded programs—in health at least—were aligned with the *Manas* framework. For example, USAID’s work on health financing was now organized in conversation with the *Manas* team. Some experts have called this an informal sector-wide approach, whereby donors chose to think in a coordinated way about their engagement in the country.

*Cooperation:* In the mid-1990s, the World Bank and International Monetary Fund faced persistent criticism that they prioritized macroeconomic growth over poverty reduction and quality of life in their work with developing countries. In response, the Bank proposed what it called a Comprehensive Development Framework (CDF) in 1999 that laid out a more collaborative and transparent process for its country-level work. Kyrgyzstan was one of the World Bank’s early partners on the CDF.

The CDF was based on the idea that the Bank's work in country should be consistent with a long-term vision and strategy and, that the vision and strategy should be owned by the countries. The hope was that all stakeholders could line up behind the vision and strategy, which is more or less what had happened with *Manas* five years before.

Ultimately, almost 50 developing countries went through the World Bank's process. Kyrgyzstan's CDF, finalized in 2001, set an overarching target of reducing poverty in Kyrgyzstan by half over the decade, but it was not an anti-poverty program per se. Instead, it addressed a huge range of priorities for the country—including governance, infrastructure, education, and health. Per the Bank's guidance, the government also produced an interim poverty reduction strategy paper (followed in 2003 by the National Poverty Reduction Strategy, or NPRS), which laid out a series of medium-term action steps to achieve the long-term vision and strategy contained in the CDF.

As the names suggest, the CDF and the NPRS were not actual investments or policies; they were a framework and a strategy, and each specific investment or policy that followed needed to make its way through the ordinary process. With the CDF in place, though, donors had a blueprint for how to engage in Kyrgyzstan.

When the planning process for *Manas* Taalimi began in 2004, many donors formalized their sector-wide approach, or SWAp, as described above. **The idea behind the SWAp is to guarantee that the Kyrgyz Government would own the reform effort, to maximize the value of donor contributions by keeping them tightly coordinated, and to build capacity within the Kyrgyz Government by providing structured technical support.**

## Recent times

For the first two decades after independence, Kyrgyzstan was considered a "donor darling." For a variety of reasons, ranging from the strong leadership of the first president to the lack of other viable options, Kyrgyzstan was more open to working with donors than the other newly independent Central Asian countries. In the past decade, however, changing dynamics have cut into donors' influence on Kyrgyz policies and programs. Donors are still heavily engaged in the country, but they have less of a free hand.

There are three main reasons for this evolution.

First, changing politics within Kyrgyzstan. Kyrgyz society has matured, resulting in the hardening of interest groups and lobbies that are able to articulate specific demands of the government. At the same time, after a generation of independence, Kyrgyz leaders are much more confident in designing and executing policy. (There's a joke among Kyrgyz that, at first, the government didn't know the difference between grants and loans. That is, it assumed everything was still free.) As the vacuum in political priorities has been filled by local advocacy, and as the asymmetry in experience between Kyrgyz bureaucrats and donors has diminished, Kyrgyzstan has become less of a blank slate for the international community.

Second, as the Kyrgyz economy has grown, donor money has played a decreasing role in the functioning of society. In the mid-1990s, when donors helped drive the design of the *Manas* program, Kyrgyzstan was simply unable to fund a health care system without support. In more recent years, Kyrgyzstan's budget has grown significantly, so donor funding is a smaller piece of the pie. One way to see the declining importance of aid is to follow the trajectory of net ODA as a percentage of the national budget. This figure reached its height, 63 percent, in 1999. It had declined steadily to 19 percent by 2016, the most recent year available. As the relative importance of donor money declines, so does the relative salience of donor ideas.

Third, China and Russia joined the more traditional donors and development organizations, and they are less interested in influencing Kyrgyz social policy. Consider this example of how Russia views aid to Kyrgyzstan: in 2009, Russia pledged a \$150 million grants, forgiveness of \$193 million in debt (in exchange for a stake in a military goods manufacturer), a \$300 million concessional loan, and \$1.7 billion in financing for a hydroelectric project. It's difficult to say what percent of Kyrgyz foreign aid China and Russia account for, but according to reports almost 40 percent of Kyrgyzstan's total debt is owed to China.

According to some of our informants, these factors together have closed what had been a 20-year window of opportunity for creative social policy reform that resulted in successes such as *Manas* and *Manas Taalimi*.

### ORDER N. 19: PROTECTION OF BREASTFEEDING

#### DESCRIPTION

A law established from a UNICEF/WHO advocacy campaign to stress the importance of breastfeeding and perinatal care.

#### TIMELINE

1996–ongoing

#### FUNDING

UNICEF provided \$5 million between 1995–1999 for country programs, including technical assistance for Order N. 19.

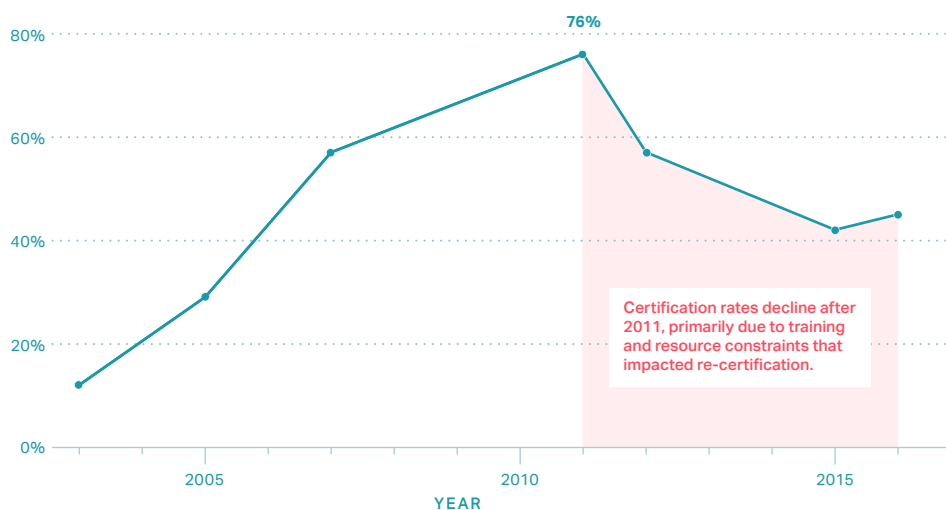
## Specific Health Initiatives

*Manas* and *Manas Taalimi* restructured the health system, but they were not the only changes to the health care Kyrgyz citizens received. In line with evolving global standards, Kyrgyzstan also selected a few clinical priorities, including some that our analysis suggests had an impact on stunting. The initiatives in this section were implemented with varying degrees of success.

### Breastfeeding

In 1989, the WHO and UNICEF published a joint statement on “protecting, promoting, and supporting breastfeeding,” kicking off a global public health advocacy campaign. In 1991, the organizations launched the Baby Friendly Hospital Initiative (BFHI), based on the 10 Steps to Successful Breastfeeding, which is now implemented in more than 150 countries. The Kyrgyz government, looking to improve outcomes while cutting costs, responded by issuing a national law endorsing exclusive breastfeeding, Order N. 19, in 1996 and implementing BFHI in 2000. The BFHI outlines key clinical and management procedures to encourage proper breastfeeding and certifies facilities that comply with them.

### BFHI hospital certification rates



## BABY FRIENDLY HOSPITAL INITIATIVE (BFHI)

### DESCRIPTION

WHO and UNICEF launched hospital certification system to implement the 10 Steps to Successful Breastfeeding in maternal hospitals.

### TIMELINE

2000–ongoing

### COVERAGE

Hospital certification rose to 76 percent in 2011, with fluctuations that led to 45 percent in 2016 due to funding and training constraints.

### FUNDING

Funded by UNICEF through 2012, and the national Den Sooluk health program (an extension of *Manas Taalami*) after. No record for the funding amount found.

The results of the initiative have been noteworthy. Although the rate of children ever breastfed has always been high—it was 96 percent in 1997—the quality of breastfeeding has improved significantly since then. Between 1997 and 2012, the number of infants breastfed within one hour of birth improved from 44 to 84 percent, and the number of infants breastfed within one day of birth improved from 67 percent to 95 percent. Similarly, the median duration of exclusive breastfeeding increased from less than one month to three months, and the median duration of predominant breastfeeding from less than one month to almost six months. This data helps explain the growth curves shown earlier. In 1997, children's growth started to falter almost immediately after birth, whereas in 2014, faltering began in earnest around six months. This pattern is consistent with the data about when most mothers stopped exclusive and predominant breastfeeding in both years.

Nevertheless, there are still challenges when it comes to breastfeeding in Kyrgyzstan. Breastmilk substitutes are very popular in the country. In the mid-2000s, when remittances started coming in and families had access to more disposable income, imports of infant formula spiked from about 100,000 kg in 2002 to more than two million kg in 2012.

In response, the government passed a Law on the Protection of Breastfeeding of Children and the Regulation of the Marketing of Infant Food in 2008. Under the law, formula makers are prohibited from including images as part of their marketing strategy and must state the benefits of breastfeeding, the expiry date, and their name on the label. In 2009, Kyrgyzstan also added an 11th step to the BFHI's 10 Steps to Successful Breastfeeding aimed at preventing the use of breastmilk substitutes.

Breastfeeding has been an advocacy and policy priority in Kyrgyzstan for the entire period of its stunting decline. The data shows that the advocacy and policies vastly improved the quality of breastfeeding throughout the country, despite the popularity of infant formula, and the quantitative analysis suggests that these improvements contributed significantly to the decline in stunting.

Kyrgyzstan Demographic and Health Surveys (DHS) 1997, 2012

## BREASTFEEDING

	1997	2012	IMPROVEMENT
Early initiation (within one hour of birth)	43.5%	83.8%	<b>+40.3%</b>
Early initiation (within 24 hours of birth)	66.5%	94.6%	<b>+21.8%</b>
Median duration of any breastfeeding (months)	16.9	18.3	<b>+1.4 mo.</b>
Median duration of exclusive breastfeeding (months)	0.4	3.1	<b>+2.7 mo.</b>
Median duration of predominant breastfeeding (months)	0.4	5.6	<b>+5.2 mo.</b>

## Fortification and Supplementation

Since independence, with support from donors, especially the Asian Development Bank and UNICEF, Kyrgyzstan has initiated a number of fortification and supplementation efforts to address specific nutritional deficiencies in its population.

The biological evidence linking fortification and supplementation to stunting reduction is not complete, but based on our current understanding, fortificants and supplements used in Kyrgyzstan, such as zinc, vitamin A and folic acid, should have had an impact on stunting (e.g. through reducing the likelihood of preterm birth or preventing maternal and childhood infection). Others, such as vitamin B and iodine, should not have any impact on linear growth, although of course they promote healthy development in other ways.

In practice in Kyrgyzstan, some of these fortification and supplementation programs were effective, and some were not. However, even in some of the successful cases, the Kyrgyz government chose not to continue them after the donor funding ran out.

In 2001, the government passed a law mandating the iodization of domestically manufactured salt and prohibiting the importation of non-iodized salt. Between 1995 and 2005, the percentage of Kyrgyzs consuming iodized salt increased from 27 to 76 percent. Despite this progress, the iodine levels in the salt were not necessarily adequate. Less than 40 percent of the salt tested in 2007 contained at least 15 mg of iodine per kg of salt, against a minimum recommended range of 25g. "The main barrier is salt producers," said one representative of a donor agency. "They cannot stand the norm; they do not buy potassium iodate. If they buy, then they do not have equipment that would evenly iodize salt."

In 2005, with support from UNICEF, the government launched a program to deliver Vitamin A supplements to children under five years and older than six months. Within six years, coverage was 98 percent and the rate of Vitamin A deficiency was only five percent, down from 32 percent. Unfortunately, the government opted to discontinue the program in 2011. "It was possible to continue the program further," said one nutrition expert. "As soon as you stop doing it, the deficiency can immediately return, but there was no money from the Ministry of Health."

In 2009, with support from UNICEF, the government launched a pilot program in Talas to distribute a micronutrient powder called *Gulazyk*, which contains iron, zinc, Vitamin A, and Vitamin C, at family health clinics. Mothers were trained by health workers to add the *Gulazyk* to the food their children ate at home. The pilot achieved moderate success: in 2010, it was reported that two-thirds of children in Talas were consuming *Gulazyk*, and levels of anemia had declined 13 percent. In 2011, the *Gulazyk* program was scaled up nationally with a grant from UNICEF. Data on the success of the scale-up are not available, but the rate of women with any anemia across Kyrgyzstan is still very high at 35 percent, according to DHS.

Also in 2009, the government passed a law mandating that baking flour be fortified with Vitamins B1, B2, B3, folic acid, iron, and zinc. This law has thus far been ineffective, because it applies only to certain high grades of flour. The assumption was that the lower grades, being less processed, retained more of their nutritional value. As a result of the regulations, the higher grades became more expensive, and sales of low-grade, unfortified flour have spiked. Over 240,000 tons of flour were produced in Kyrgyzstan in the first half of 2015, and only 18 percent of it was fortified.

**All together, these laws, policies, and regulations suggest that fortification and supplementation efforts can change the nutritional status of the population quickly if they are well-designed and properly funded, as the Vitamin A program was between 2005 and 2011. What is less clear is what impact they can have on stunting in particular.** And because Kyrgyzstan has largely chosen not to self-finance these programs, we cannot hazard a guess as to how HAZ scores or other nutritional outcomes might have changed if children's diets had been routinely fortified and supplemented.



## INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)

### DESCRIPTION

Training program targeting medical school students and post-graduates to improve the medical supervision of sick children (based on a WHO framework).

### TIMELINE

2005–ongoing

### COVERAGE

87 percent of family doctors and paramedics were trained in Kyrgyzstan as of 2015.

## Integrated Management of Childhood Illness

Fresh off their success launching BFHI, WHO and UNICEF launched the Integrated Management of Childhood Illness (IMCI) in 1995. IMCI is intended to improve treatment of major child disease by training health care providers, strengthening health systems, and educating families and communities. Repeated infection is an established explanation for stunting, so efforts to manage those infections more effectively may have contributed to the continued stunting decline after 2006.<sup>2</sup>

Kyrgyzstan endorsed IMCI in 2000 but scaled up very slowly until 2006, when UNICEF, USAID, and other donors provided an influx of funding. Implementation has been mixed. On the one hand, the community education component has lagged, specialists (as opposed to family doctors) have rejected the initiative, medical schools have been reluctant to incorporate IMCI into their standard curriculum, and funding cuts have shortened the length of the pre-service training and ended the in-service trainings. On the other hand, the basic one- or two-week special training course in IMCI has become a staple of medical education in Kyrgyzstan: almost 90 percent of family doctors and paramedics have been trained.

The limited evidence suggests that the impact has been positive, if incremental. In interviews with the WHO, doctors say they feel more confident treating sick children after the trainings. The data backs up these qualitative findings. In one district, hospital referrals for cases of pneumonia for children under five went down from 100 percent to 24 percent because family doctors knew what to do when a sick child came in. **Most impressively, according to a 2018 review of IMCI, the proportion of under five deaths due to acute respiratory illnesses in Kyrgyzstan has decreased from 54 to nine percent.**

The total number of infections has decreased, too. The percentage of children that suffered from acute respiratory infection over the past two weeks dropped from 16 to six percent between 1997 and 2012. Over the same span, the percentage of children that suffered from diarrhea over the past two weeks dropped from 18 to seven percent. Overall, child mortality has dropped by more than 40 percent since IMCI was implemented, but that trend had begun in the 1990s, so it is difficult to attribute the progress to IMCI alone.

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## CONCLUSIONS

**BY THE MID-2000S, KYRGYZSTAN HAD STABILIZED AN ECONOMY** and a society that had been in distress since 1991, when the country declared independence. Economically, hundreds of thousands of newly created household farms and ample opportunity for work in neighboring countries had cut poverty dramatically and formed the basis of steady if unspectacular growth. Socially, reforms to the social protection and, more importantly, health system guaranteed a reasonable quality of life. Out of a crisis in which impoverished families did not have enough to eat and could not access decent health care, Kyrgyzstan had created a functioning nation. As part of this process, the stunting rate dropped from 36 percent in 1997 to 18 percent in 2006. It continued to drop more gradually, down to 13 percent in 2014. Although it may not be surprising to see the rate of improvement slow as the number of stunted children dropped, it is an outstanding question whether the stunting rate continues to decline or whether Kyrgyzstan needs to implement new nutrition-relevant policies and programs to accelerate progress again.

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<sup>2</sup> Due to DHS data availability, we were not able to perform the decomposition analysis for the time frame most directly associated with IMCI (2006+).

The post-Soviet context is unique. It is not often that countries are forced to rebuild almost from scratch. Nevertheless, some of the steps Kyrgyzstan took out of necessity can be instructive for other countries in different circumstances focused on reducing stunting.

### **AGRICULTURE**

- *Sector growth:* Although the context surrounding Kyrgyz land reform is unique, the country's experience demonstrates that the agriculture sector, when properly supported, can drive stunting declines by two separate modalities, increasing food security and reducing poverty.

### **SOCIAL PROTECTION**

- Targeting: Even small amounts of money were able to create a safety net in Kyrgyzstan by targeting effectively the most vulnerable populations in society.

### **HEALTH REFORMS AND INITIATIVES**

- *Primary care:* The Soviet system was more expensive than independent Kyrgyzstan's system and not sustainable through the economic shock that the new country sustained. Focusing on accessible systems that provided universal basic services helped address stunting.
- *Alignment:* Because Kyrgyzstan was starting from scratch, it piloted and scaled every aspect of the system to work well together. This included structure (family group practices), training (doctors retrained in family medicine and received specialized trainings, including IMCI), and financing (carefully or partially subsidized based on importance to population health; doctors in primary or tertiary care paid differently to incentivize good care in each context).
- *Breastfeeding:* International donors have touted many different initiatives over our time frame of analysis, some of which Kyrgyzstan prioritized and some of which it did not. With support from UNICEF, the government consistently put resources into breastfeeding advocacy and promotion. It looks like it made a significant difference in the growth trajectory of children between birth and six months of age.

### **DONOR ENGAGEMENT**

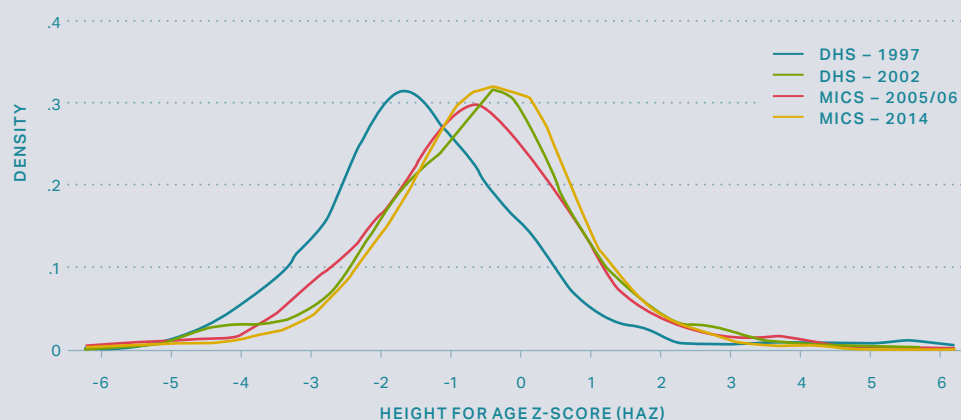
- *Donor coordination:* After an initial period of chaos, health reform in Kyrgyzstan was based on a comprehensive planning process involving all stakeholders. As a result, donors were unusually coordinated, eliminating duplication or big gaps.
- *Shared prioritization:* When donors did one-off investments, including agricultural extension and some fortification and supplementation programs, Kyrgyzstan let them lapse once the money was gone. When donors engaged on issues that Kyrgyzstan prioritized, together they instituted lasting reforms.

## REMAINING CHALLENGES AND INFANT AND YOUNG CHILD FEEDING

THE VICTORA CURVES DISCUSSED PREVIOUSLY show what has changed in Kyrgyzstan's linear growth patterns since 1997. They also show what has not changed: the severe faltering between six and 23 months. This suggests that there is something about the way young children are fed in the period after they are no longer exclusively breastfeeding but before they start sharing family meals that is not meeting their nutritional needs.

Another quantitative analysis, known as a kernel density plot, confirms that this six to 23 month "young child" period remains a challenge for Kyrgyz families. Kernel density plots represent the full distribution of height-for-age Z-scores (HAZ) in a population. For most age groups in Kyrgyzstan, the curve moves to the right and gets taller and narrower between 1997 and 2014. This means that two things happened: the mean HAZ score improved (i.e., children got taller), and more children clustered around the new, healthier mean.

### HAZ Kernel Density Curves (6–23 Months)



However, for children in the six to 23 month age range, the curve moves to the right but does not get taller and narrower. This means that while the mean HAZ scores for that age group improved, the variability did not change, suggesting that inequalities remain unaddressed in this age group.

Challenges with young child feeding are not unique to Kyrgyzstan. According to the WHO, complementary foods must be "timely, adequate, safe, and appropriate"—that is, they must be given in addition to breast milk from six months onward, they must include all the necessary nutrients and be given in the right amounts and with the right frequency, they must be prepared hygienically, and they must be the right texture. In short, feeding young children properly requires not only access to a variety of specific foods but also specialized knowledge on the part of caregivers. Kyrgyzstan has yet to launch a complementary feeding advocacy and education effort to match its successful campaign promoting breastfeeding.

Another area where Kyrgyzstan has significant progress to make, despite two decades of programming, is maternal anemia. The national rate is extremely high and did not change materially from 1997 (37 percent) to 2012 (35 percent). Maternal anemia is associated with prematurity and low birth weight, both clear risk factors for stunting.

The question for the future is whether the stunting rate will stagnate or keep going down. It makes sense that the rate of reduction would slow as stunting became less prevalent, as happened after 2006. Will it continue its gradual decline into the low single digits or stay at 13 percent, which is, of course, still unacceptably high?

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