

SETTING TARGETS IN HEALTH, NUTRITION AND POPULATION PROJECTS

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September 2011



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Health, Nutrition and Population (HNP) Discussion Paper

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Health, Nutrition and Population (HNP) Discussion Paper

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Abstract: This note discusses different ways for setting targets for indicators commonly used in World Bank Health, Nutrition and Population (HNP) projects. It shows how targets can be set, using information about historical progress, for a selection of HNP indicators. Targets are defined as explicit commitments to achieve a result within a defined time period, as measured by a quantitative or qualitative change in an indicator. The selection of indicators, which are clearly defined and useful for measuring progress, is an important part of the process. The note includes a discussion of general considerations for selecting indicators for which targets are to be set.

The note also briefly reviews different methods that have been used to set targets, including benchmarking, time-series analysis, and projections, and multivariate regression analysis. In some cases, a mixed-method approach that combines elements from several different procedures is a practical way to set targets. A checklist for target setting including considerations about the availability of baselines, factors affecting the potential for achieving targets, and the need for data verification is also included.

The note is followed by annexes that show how targets are derived through an analysis of changes in nine key HNP indicators. The result of the analysis shows that, in general, annual improvements have been fairly modest for the HNP indicators included here. This finding underlines the need for realism in setting targets, despite the expectation that a Bank project will produce substantial improvements. A second important point is that prior year coverage rates (or outcomes) are not generally strong predictors of improvements, strengthening the argument for using multiple approaches when selecting targets.

Keywords: monitoring, indicators, targets, HNP projects

Disclaimer: The findings, interpretations, and conclusions expressed in the paper are entirely those of the authors and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

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Acknowledgments

The authors are grateful to the World Bank for publishing this report as an HNP Discussion Paper. Benjamin Loevinsohn (Lead Health Specialist, Africa Region Technical Health Unit—AFTHE) and Gayle Martin (Senior Health Economist, AFTHE) provided helpful comments.

Acronyms

ANC	Antenatal Care
CPR	Contraceptive Prevalence Rate
DPT	Diphtheria, Pertussis, Tetanus
HNP	Health, Nutrition and Population
ITN	Insecticide Treated Net
KPI	Key Performance Indicator
MDGs	Millennium Development Goals
ORS	Oral Rehydration Solution
PAD	Project Appraisal Document
SBA	Skilled Birth Attendance
SMART	Specific, Measurable, Accurate, Realistic, Time-bound
U5MR	Under-five Mortality Rate

1. Introduction

Targets allow performance to be assessed; they vary according to both the indicator for which they are set and the level of certainty and predictability of the phenomenon being measured. Clear and explicit targets play an important role in (a) identifying priority actions and directing the allocation of resources to specific areas geared toward achieving these actions; (b) focusing the efforts of several stakeholders; and (c) strengthening accountability, since they provide benchmarks against which performance can be assessed. Following from this, targets can be either aspirational or performance based. Aspirational targets, such as the Millennium Development Goals (MDGs), motivate and spur action. Their achievement, however, may depend upon a range of externalities that cannot be controlled. Despite their popularity, critics argue that both high costs and changing national realities may significantly deter the achievement of the MDGs. Neither targets nor their associated indicators should, therefore, be fixed; rather, they should be revised from time to time.¹

Unlike aspirational targets, specific performance-based indicators are linked to projects, and as such their associated targets should be more firmly grounded in reality. Nevertheless, setting these targets is often a difficult part of project preparation. Recognizing this, this paper attempts to shed some light on target setting in Health, Nutrition and Population (HNP) operations. While the intended audience for this paper is World Bank staff, it may appeal more broadly to anyone interested in target setting at the project level.

Targets are useful tools for managing projects and evaluating their achievements. *How to* set appropriate targets, however, is not always clear since the relationship between project resources and end results is not straightforward. In addition, the magnitude of achievable progress may vary considerably depending on both the country context and the type of phenomenon being measured. For example, an indicator that measures changes in attitudes and behaviors (such as the uptake of family planning methods) or health outcomes (such as mortality rates) will be more difficult to predict on the basis of project inputs than outcomes more directly dependent on inputs (such as the availability of pharmaceuticals in health centers). Consequently, setting targets for outcome and impact indicators that are farther along the results chain will almost always be more challenging than setting targets for output and intermediate outcome indicators.² In effect, the extent of progress that can be expected from an indicator over a specific period of time is influenced by a number of factors. These include the baseline value of the indicator, the trajectory of the indicator in the country or relevant geographic area, economic conditions, implementation capacity, governance, resources available from the project and other sources, and the relationship between project resources and indicator improvements. Of course, some factors are easier to observe and measure than others.

¹ See, for example, Devarajan et al. 2002; White 2002; and Vandemoortele 2003.

² A results chain links inputs, outputs, intermediate outcomes, key performance indicators, and finally, project development objectives (PDOs). It reflects the contributions the project is expected to make and should show both progress toward PDOs as well implementation progress.

With this in mind, this note seeks to provide guidance to project managers on how to handle the inherent uncertainty in target setting by presenting (sections 2–5) an overview of current practices in World Bank projects, general considerations in selecting indicators, an overview of target-setting methods, and a checklist for project managers. This is followed in section 6 by an analysis of changes observed over the past two decades in some commonly used HNP indicators.

It is important to emphasize that this note does not prescribe a single formulaic approach to setting targets for HNP indicators. Rather, it seeks to ensure that targets are set in a manner that is transparent and, at a minimum, based on a defensible line of reasoning. Project managers, therefore, are encouraged to consider a range of target-setting approaches and select an approach or hybrid of approaches most suited to the indicator being monitored. In this process, data availability and an in-depth understanding of conditions in the country or region in question are key considerations.

2. Current Practice

A rapid review of the results frameworks in eleven recent (FY 2010) project appraisal documents (PADs) of HNP operations found that seven provided no justification for the selection of targets. While this does not mean that targets were selected without some justification or that targets were poorly set; the absence of an explicit rationale conveys an appearance of arbitrariness. While the remaining four PADs noted that the choice of targets was driven by “realism” of what could be achieved, no discussion or evidence on how this was determined was provided.

Conversely, greater justification was provided for the selection of key performance indicators (KPIs) for which targets were set. This varied from a general statement that the indicators selected conformed to good practice to more specific justifications that the selected indicators were clear, relevant, adequate, possible to monitor, and accepted in a particular area (such as maternal and child health or general health system strengthening). Only one PAD noted that the selected KPIs were linked to the national strategy or plan, and another that a number of the KPIs included in the results framework were influenced by the UNGASS (United Nations General Assembly Special Session) indicators.

3. General Considerations for Selecting or Defining Indicators for Targets

A target may be defined as an explicit commitment to achieve specified results within a predefined time period. A target may be quantitative or qualitative (see box 1.1) and may involve a change in outcomes or processes. The first step in setting targets is to ensure that the indicators selected are well defined, useful, and feasible in measuring progress toward their predefined target values. Indicators, therefore, are the form in which information about a target is captured.

Box 1.1 Expressing SMART Targets

A target is a quantitative measure that may be expressed in a variety of ways. (The following list is illustrated by examples.)

- **Absolute:** Reduce the number of road injuries and deaths by 200.
- **Proportional:** Reduce the number of smoking-related deaths by 10 percent.
- **Relative to a benchmark:** Reduce the rate of malnourished children in a district to the national average.
- **Relative to an expected level:** Reduce cardiovascular disease deaths by 10 percent relative to background trends.
- **Relative to cost/value for money:** Save twice the amount invested in disease prevention in treatment costs.
- **Tied to a tolerance threshold:** Reduce a mortality risk to a certain threshold value (such as 5 percent or less).
- **The way a target is expressed** depends on the nature of the data, the specific indicators, and the project's objectives.

Source: Authors' own based on a review of various sources of literature.

Following are key considerations when defining or selecting indicators:

- ✓ Does the indicator reflect the change the project seeks to achieve?
- ✓ Will the indicator change within a time frame commensurate with the duration of the project; and, based on the available evidence, can this change justifiably be linked to the project interventions?
- ✓ Is the indicator defined so that it can be measured unambiguously?
- ✓ Is it logistically feasible to use this indicator to track or evaluate project progress?
 - Are good quality secondary data available for this indicator?
 - Can available data be disaggregated to reflect the project's objectives? For instance, will the data allow disaggregation by wealth status (since the poor are often key target groups) or by geographic region (if the project is implemented in certain regions only)?
 - Will secondary data be available in the future, at time points that are useful for monitoring the project?
 - If not, can good quality data allowing the desired level of disaggregation at time intervals that are meaningful for monitoring and evaluating the project be collected as part of project activities?
 - If the project collects data for this indicator, is the sample size required to detect a change in the indicator—with the desired level of statistical significance—feasible to implement so that estimates are available at the frequency desired?
- ✓ How does the indicator relate to indicators used in national frameworks or to indicators used by other donors? If possible, it is better to use indicators that are already included in national frameworks or are used by other donors since it lowers the burden of reporting and also means that more resources may be available to track these indicators.

Selecting the right indicator is essential to ensure that targets are **SMART**, that is, that they are the following:

- *Specific*: They should clearly relate to the health goal or project objective.
- *Measurable*: They can be monitored (at the required geographical level) either with data that exist or data that can be collected—data should be of reasonable quality with attention given to both the importance of trend data and the availability of denominators (population or list based).
- *Accurate*: They are amenable to accurate measurement to determine whether the target has been achieved.
- *Realistic*: They are challenging but achievable.
- *Time-bound*: The time taken to achieve the target should be specified.

4. Overview of Methods for Setting Targets

There is no consensus approach for setting targets that can be applied in every context. The following four approaches, however, are commonly used for setting targets for HNP outcome and impact indicators. As noted above, the choice of approach or combination of approaches depends on a number of factors including the type of indicator, availability of pre-existing data on critical determinants of the indicators, costs of data collection, and the frequency with which monitoring data are needed.

I. Benchmarking

A benchmark is a reference value against which an indicator will be compared. Benchmarks can be selected in a number of ways.

- *Using currently attained values in reference geographic areas to set targets.* To illustrate, targets for the contraceptive prevalence rate (CPR) in a country in Sub-Saharan Africa could be based on the prevailing CPR in that region. In Europe, cancer mortality performance might be benchmarked against Finland and Sweden—the best-performing EU countries.
- *Using historical trends in reference areas to set targets.* In this case, increases in contraceptive prevalence may be set on the basis of what other countries at the same stage of the fertility transition have achieved over the same number of years.

Although benchmarks are based in reality—in that they have been achieved—it is important to consider whether a selected benchmark is appropriate or achievable for the context in question. Key considerations when selecting benchmarks include (a) country-specific factors that influence the achievement of targets and (b) the time taken to achieve given levels within benchmarked countries.

Benchmarking can serve as a powerful management and advocacy tool to rally attention toward progress (or the lack thereof). Using “league tables” or balanced score cards that compare the value of project-area indicators to regional comparators or benchmarks can

also be a good way of attracting attention of the media, the political establishment, policy makers, and citizens.

II. Forecasting

In forecasting, current and past levels and trends are used to project a range of likely future values, using approaches such as time series analysis or cohort component demographic projections. Forecasting is sometimes used to set targets for disease incidence and prevalence as well as for mortality indicators (disaggregated by cause, age, sex, and other variables, as needed). Projected disease incidence can be combined with demographic forecasts of the composition of a population to generate numbers of new cases of disease or of deaths from particular causes. Other types of forecasts include projecting the denominators of interest for calculating intervention coverage rates, such as antenatal and delivery care (the number of pregnancies and births), or immunization coverage (the number of surviving births who need vaccine coverage). Simpler types of forecasting include demand forecasting for commodities, such as vaccines, based on the projected number of children at risk within the time frame of a project.

III. Regression Analysis

Regression analysis can be used to analyze and extrapolate historical patterns to set targets that consider changes in other factors. For example, the finding that mortality improvement tends to lag in countries with greater income inequality, irrespective of the level of per capita income, may be used to extrapolate a target of how much improvement can be expected in countries with varying levels of income inequality. Regression analysis for setting targets can be especially useful when the indicator of interest (for example, the contraceptive prevalence rate) is only partially affected by HNP interventions (provision of methods of family planning) and partially by socioeconomic conditions (status of women, women's educational level, or urbanization).

Forecasting and regression analysis depend heavily on good quality data that captures the key determinants of trends. Good quality time series data are not always available—particularly where health systems variables are concerned. Furthermore, when using regression analysis as a method to set targets, it is important to consider whether key policy and other variables have been taken into account to ensure that the projected target value is a worthwhile and achievable improvement.

IV. Mixed-method Approaches

Mixed-method approaches combine several procedures to arrive at a consensus for setting targets. This may include several of the following:

- The advice of experts, based on their knowledge of the range of available interventions and their likely impact over the intervention period;
- Analyses of international data—showing what has been achieved in other countries and how quickly;
- Extrapolating from recent trends in the country; and

- The effects of past and future interventions. These interventions may have indirect effects on the indicator of interest, and hence can be used as a guide in the identification of intermediate measures of progress (UK Department of Health 2001).

5. A Checklist for Target Setting

As noted above, there is no one standard approach that be prescribed for target setting. Instead, managers should set targets based on a number of considerations. Regardless of the method adopted or the level of spatial disaggregation (global, national, sub-national), the following checklist, outlined in table 1.1, provides useful factors to consider when setting targets.

Table 1.1 Target-setting Checklist

(i) What is the starting position?	This is a reference value or baseline against which future progress will be judged. It corresponds to the value of a specific indicator (selected on the basis of SMART criteria) at a defined period of time for a particular geographic area. If a recent baseline value is not available, the potential for setting appropriate targets is very limited.
(ii) What is the trend?	Using both current and historical data trends, changes in the indicator should be ascertained. This will help in determining the potential for both defining the indicator and refining that definition.
(iii) How do trends compare with other areas?	<p>Determine how trends compare with what has occurred elsewhere. Is there a reference value (or benchmark) against which an indicator can be compared? In comparing trends, the following should be considered:</p> <ul style="list-style-type: none"> • Are the conditions the same? In looking across spatial areas (for example, a country or district or region), be mindful to compare like with like. • Are we planning to tackle the same problem in the same way? Comparison of targets should consider the interventions being used and differences or similarities therein. What levels of commodities, health personnel, facilities, or equipment are needed to achieve a desired change in the indicator? • Are we putting in the same resources? Comparison of targets should consider the variations or similarities in levels of inputs/ resources. • What else is going on that may affect performance? Consider external factors that are unrelated to the project interventions that may affect performance and target achievement.

<p>(iv) How might target(s) be affected by other local or national initiatives?</p>	<p>Influences at the national and local levels should be determined, along with their potential contribution to achieving the target, particularly:</p> <ul style="list-style-type: none"> • Consider the contribution of the local target to the national target (if there is one). • Determine the result that the Government hopes to achieve through the national target. This should help in ascertaining its feasibility and applicability. • Determine the extent to which national-level targets are influenced and underpinned by local initiatives and interventions.
<p>(v) Have staff providing services been consulted on the target, and are they committed to its achievement?</p>	<p>Ensure that the staff responsible for the delivery of services and accounting for performance is involved in target setting. In particular:</p> <ul style="list-style-type: none"> • Are targets influenced by staff input? • Is staff committed to the achievement of targets? Will incentives be needed to secure commitment?
<p>(vi) Is the target worthwhile?</p>	<p>The validity of a target should be influenced by the following:</p> <ul style="list-style-type: none"> • Technical considerations: For example, if we are aiming for a 5 percent increase, what does this actually mean? Is there a risk that a small change can have a large percentage impact? • Will achievement of the target be perceived in a positive way (by, inter alia, the public)?
<p>(vii) Is there a plan to collect, analyze, and verify the data?</p>	<p>Planning for data collection should consider the following:</p> <ul style="list-style-type: none"> • Responsibility for data collection: Responsibility and the means necessary to do so should be determined at the outset. • Frequency of data collection: To increase the usefulness of data for management purposes, data should be collected at several points during the duration of a project, in addition to an end-of-project effort. • Data verification: The existence of targets (especially when linked with performance-based disbursement) can lead to data manipulation. Independent data collection and audits may be necessary.
<p>(viii) Compared to achievements elsewhere, does reaching the target represent value for money?</p>	<p>Using cost-effectiveness analysis, determine whether achievement of the target can be considered good value in comparison with other approaches or interventions.</p>

Source: This checklist has been modified from the version cited by the Association of Public Health (2008). It was originally developed by the UK Government's Crime Concern and National Association for the Care and Resettlement of Offenders (NACRO).

6. Changes Observed in Key HNP Indicators

In an effort to better understand target setting, data pertaining to the following nine health indicators in low- and lower-middle-income countries were analyzed. As previously noted, these are nine of the most commonly used HNP indicators.

- (i) DPT3 coverage
- (ii) Skilled birth attendance
- (iii) Contraceptive prevalence rate
- (iv) Antenatal care coverage
- (v) Under-five mortality rate
- (vi) Vitamin A coverage
- (vii) Appropriate diarrhea care for under-fives
- (viii) Stunting among under-fives
- (ix) Insecticide Treated Net coverage among under-fives

Detailed analysis on each of these indicators is provided in annexes 1 to 9, respectively. Table 2, however, summarizes the detailed analyses outlined in the annexes. Specifically, observed changes are presented here as annualized absolute percentage point changes (with the exception of the under-five mortality rate where it is measured as annualized percentage changes), and in each case, a positive number indicates improvement.

The results show that, in general, annual improvements have been fairly modest for the HNP indicators included here. This signals the need for realism when setting targets, despite the expectation that a Bank project will produce substantial improvements. A second important point is that prior year coverage (or outcomes) are not generally strong predictors of improvements, strengthening the argument for multiple approaches in selecting targets.

In conclusion, the analysis gives managers a sense of the extent to which these nine indicators have changed, on average, in low- and lower-middle-income countries over a relatively long period of time. As previously discussed, trends are influenced by a number of country-specific and policy factors. The analysis does not take all of these factors into account. Therefore, the results are not necessarily accurate predictions of improvements in a specific country as a result of project interventions. Rather, the analysis seeks to provide managers with observed trends to identify where a given country stands relative to other countries in terms of baseline indicator achievement and relative to previously observed changes for the given indicator. Further, targets can be set using an appropriate mix of target-setting methods, and based on a careful consideration of country-specific circumstances.

Table 1.2. Bird’s Eye View of Changes in Key Indicators

Indicator	Median change	Lowest 25th percentile	Top 25th percentile	Proportion of observed variance in change explained by prior year coverage (R^2: 0 to 1)
DPT3 coverage rate: Percentage of children under age one who have received three doses of DPT3. ³	1.0	-1.0	5.0	0.10
Skilled birth attendance: Proportion of deliveries with a skilled attendant (doctor, nurse, or midwife). ⁴	0.8	-0.3	2.2	0.02
Contraceptive prevalence rate: Proportion of women (sexually active or currently married) who or whose partners practice any form of contraception. ⁵	0.8	-0.1	1.8	0
Antenatal care coverage: Proportion of women of reproductive age who received any antenatal care during pregnancy. ⁶	0.8	-0.2	2.2	0.10
Under-five mortality rate: Number of children who die by age 5 per 1,000 live births. ⁷	2.7	1.2	4.1	0.20
Vitamin A coverage: Proportion of children aged 6–59 months who have received at least one dose of Vitamin A. ⁸	0	-6.0	6.0	0.30
Diarrhea care: Percentage of under -fives with diarrhea who received appropriate care (ORS and continued feeding). ⁹	0	-1.6	2.2	0.10
Stunting: Percentage of under-fives whose height is more than two standard	0.5	-0.4	1.6	0.10

³ WHO/ UNICEF Joint Reporting Database ($n=3,052$). Change is measured by the following equation: $(\text{Year}_t \text{DPT3 coverage} - \text{Year}_{t-1} \text{DPT3 coverage})$.

⁴ DHS ($n=322$). Measure of change is calculated by the following: $[\text{Year}_t \text{SBA coverage} - \text{Year}_{t-n} \text{SBA coverage}] / n$, where n is the number of years between the surveys.

⁵ World Development Indicators (multiple household surveys) ($n=383$). Change is measured by the following: $[\text{Year}_t \text{CPR coverage} - \text{Year}_{t-n} \text{CPR coverage}] / n$, where n is the number of years between the surveys.

⁶ World Development Indicators (multiple household surveys) ($n=322$). Change is measured by the following: $[\text{Year}_t \text{ANC coverage} - \text{Year}_{t-n} \text{ANC coverage}] / n$, where n is the number of years between the surveys.

⁷ Quinquennial estimates from CME Info—Child Mortality Database ($n=405$). Change is measured by the following: $\{[(\text{Year}_{t+5} \text{U5MR} - \text{Year}_t \text{U5MR}) / \text{Year}_{t+5} \text{U5MR}] * 100\} / 5$. This measures annual reductions in U5MR. Positive numbers imply reductions in U5MR.

⁸ UNICEF ($n=470$). Change is calculated by the following: $[\text{Year}_t \text{Vit A coverage} - \text{Year}_{t-n} \text{Vit A coverage}] / n$, where n is the number of years between surveys.

⁹ World Development Indicators ($n=121$). Change is calculated by the following: $[\text{Year}_t \text{Appropriate care} - \text{Year}_{t-n} \text{Appropriate care}] / n$, where n is the number of years between the surveys.

Indicator	Median change	Lowest 25th percentile	Top 25th percentile	Proportion of observed variance in change explained by prior year coverage (R^2: 0 to 1)
deviations below the median for the international reference population. ¹⁰				
ITN Coverage: Percentage of under-fives who slept under an ITN the night preceding the survey. ¹¹	2.4	0.7	5.3	0.40

Source: WHO/UNICEF Immunization Coverage Estimates for 1980-2009. Geneva, World Health Organization, 2010.

¹⁰ WHO ($n=210$). Change is calculated by the following: $[\text{Year}_{t-n} \text{ Percentage stunted} - \text{Year}_t \text{ Percentage stunted}] / n$, where n is the number of years between the surveys. This measures annual reductions in stunting. Positive numbers imply reductions in stunting.

¹¹ World Development Indicators ($n=99$). Change is calculated by the following: $[\text{Year}_t \text{ ITN coverage} - \text{Year}_{t-n} \text{ ITN coverage}] / n$, where n is the number of years between the surveys.

Annexes

Annex 1. Targets for Increasing Immunization Coverage—DPT3 Coverage Rate

This section analyzes data from the WHO/UNICEF Joint Reporting database¹² on immunization coverage. This database uses estimates from routine reporting by countries as well as from household surveys. The data extracted from this database include 3,052 observations of national immunization coverage during 1980–2008 from 109 low- and middle-income countries¹³ on the percentage of children age one who have received three doses of DPT3 vaccine (“coverage rate”).

Changes in DPT3 coverage are analyzed here as absolute annual changes, that is, as (Year 2 DPT3 coverage)—(Year 1 DPT3 coverage)

I. Key Messages

- For the sample as a whole, the mean annual change in DPT3 coverage is 2.0 percentage points. Excluding outliers (the slowest and fastest 10 percent of country changes) lowers the average change to 1.5 percentage points.
- Overall, changes in DPT3 coverage are negatively correlated with baseline DPT3 coverage: countries below 50 percent coverage saw mean annual changes of 5 percentage points per year, decreasing as coverage reached higher levels. At high levels of coverage, there is little or no change (possibly a reflection of limited room for improvement since DPT3 coverage has a ceiling of 100 percent).
- There are considerable differences among countries in changes achieved in DPT3 coverage. The countries in the lowest fifth of the distribution showed mean annual changes of -6.7 percentage points in DPT3 coverage while the highest fifth of performers showed mean annual changes of +13.7 percentage points in DPT3 coverage(see table 1.1 below).
- Viewed in isolation, baseline DPT3 coverage is not a very good predictor of improvements in DPT3 coverage. Observed changes in coverage vary substantially, with some countries performing much better than others. Other determinants of country performance should be taken into account when setting targets.

II. Observed Changes in DPT3 Coverage, 1980–2008

- Table 1.1 summarizes the observed changes in DPT3 coverage by initial level (coverage in the previous year).

¹² Accessed July 2010.

¹³ As classified in 2010.

Table 1.1. Annual Change in DPT3 Coverage by Previous Year Coverage

Baseline DPT3 coverage	Mean annual change (%)	Median annual change (%)	Annual change—25 th percentile (%)	Annual change—75 th percentile (%)	Standard deviation
DPT3 coverage <=50%	5.0	3.0	0	8	9.6
DPT3 coverage 50 to 75%	2.5	2.0	-1	6	7.9
DPT3 coverage 75 to 90%	-0.1	0	-2	3	6.8
DPT3 coverage >90%	-0.9	0	-2	1	4.4

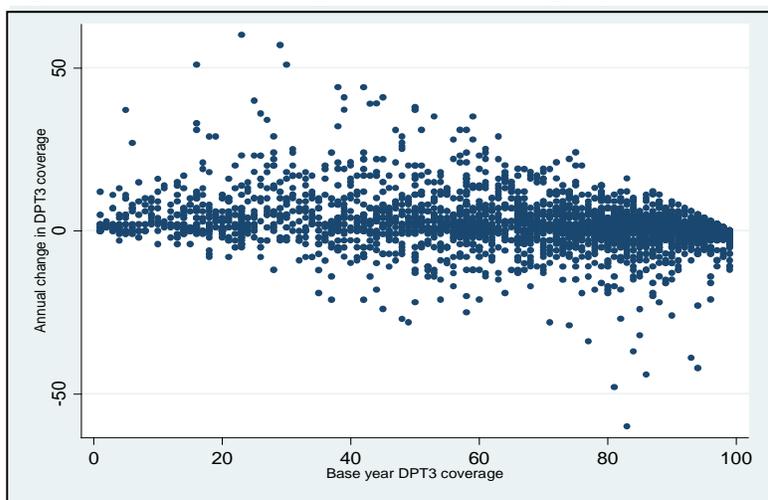
- Table 1.2 summarizes the observed changes in DPT3 coverage when the sample is divided into five quintiles of countries with high performance (large increases in coverage) and less rapid performance. As improvement in immunization coverage is only weakly related to the level of baseline coverage, consideration of a country's performance, in itself, is also important.

Table 1.2. Changes in DPT3 Coverage by Quintiles

Quintile	Mean annual change in DPT3 (%)	Median annual change in DPT3 coverage (%)
Q1—slowest improvers DPT3 coverage change of -2% or lower	-6.7	-5
Q2 DPT3 coverage change of -2 to 0%	-0.3	0
Q3 DPT3 coverage change of 0 to 2%	1.4	1
Q4 DPT3 coverage change of 2 to 6%	4.3	4
Q5—fastest improvers DPT3 coverage change of more than 6%	13.7	11

- Figure 1.1 summarizes the overall relationship between base-year DPT3 coverage and subsequent change. While half the countries have annual changes between -1 and +5 percentage points per year, 80 percent of country changes are between -5 and +10 percent in coverage.

Figure 1.1. Annual Change in DPT3 Coverage by Previous Year DPT3 Coverage



- Annual changes in immunization coverage fluctuate; sustained changes during longer periods may be of greater interest when setting targets for Bank projects. Tables 1.3, 1.4, and 1.5 show median and mean annual changes for high, average, and slow performers averaged over two ten-year periods (1987–97 and 1998–2008).
- During the more recent period (1998–2008), the fastest 25 percent of countries experienced an average 6 percentage point increase in DPT3 coverage, whereas coverage declined by an average of 7.5 percentage points among the lowest performers.

Table 1.3. High Performers (Fast Improvement), 1987–2008

Change in DPT3 coverage	Median change (%)	Mean change (%)
1998–2008		
<i>Top 25% of improvers:</i> Countries with improvements of more than 3%	6	7.5
<i>Top 10% of improvers:</i> Countries with improvements of more than 7%	10	11.9
<i>Top 5% of improvers:</i> Countries with improvements of more than 11%	14	15.8
1987–1997		
<i>Top 25% of improvers:</i> Countries with improvements of more than 5%	9	11.7
<i>Top 10% of improvers:</i> Countries with improvements of more than 10%	16	18.1
<i>Top 5% of improvers:</i> Countries with improvements of more than 17%	22	25.3

Table 1.4. Middle 50 Percent of improvers, 1987–2008

Change in DPT3 coverage	Median change (%)	Mean change (%)
1998–2008		
Annual change in DPT3 coverage: -1 to +3%	0	0.6
1987–97		
Annual change in DPT3 coverage: -2 to +5%	1	1.3

Table 1.5. Slow Performers: Change in DPT3 Coverage among Countries with Less than 50 Percent Baseline Coverage, 1987–2008

Change in DPT3 coverage	Median change (%)	Mean change (%)
1998–2008		
Lowest 5% of improvers: Countries with improvements of -5% or less	-7.5	-9.6
Lowest 10% of improvers: Countries with improvements of -3% or less	-4.0	-5.8
Lowest 25% of improvers: Countries with improvements of 0% or less	0	-2.2
1987–1997		
Lowest 5% of improvers: Countries with improvements of -8% or less	-9.0	-11.6
Lowest 10% of improvers: Countries with improvements of -5% or less	-8.0	-9.1
Lowest 25% of improvers: Countries with improvements of 0% or less	-2.0	-4.0

Annex 2. Targets for Increasing Skilled Birth Attendance

For this analysis, data was examined from the Demographic and Health Surveys (DHS) using the data extraction program “Statcompiler,”¹⁴ as well as data from UNICEF (Multiple Indicator Cluster Survey—MICS) and World Bank World Development Indicators 2010. A total of 322 observations were included in the analysis for estimates of skilled birth attendance (SBA) from 75 countries between 1985 and 2008. The estimates are based on household surveys in which women of reproductive age were asked about births in the five years before the survey. Only countries with two or more observations are retained in the analysis to estimate changes in the proportion with SBA over time. Definitions of skilled birth attendance are mostly standardized in DHS and MICS, although the contents and the quality of the care vary greatly by country.

The measure used to analyze the data is the average annual percentage point change between two survey observations in the proportion of deliveries at which skilled attendance (defined as a medical doctor, nurse, or trained midwife) is present. This is calculated as the absolute difference between two time points divided by the number of years between the surveys.

I. Key Messages

- For the sample as a whole, the mean annual change between 1985 and 2008 is just over 1 percentage point per year (+1.2 percent); the median average change is +0.8 percentage points. Excluding outliers (the slowest and fastest 10 percent of country changes) lowers the median change to just below 1 percentage point per year (+0.9 percent).
- Annual changes in the proportion of deliveries with a skilled attendant present are only weakly related to the level in the previous survey. On average, the change in SBA is positively related to SBA in a prior survey when SBA is 65 percent or less, and negatively associated with prior survey SBA level when skilled birth attendance is over 65 percent. Viewed in isolation, prior levels of SBA can provide only weak guidance on setting future targets.
- Considerable differences exist among countries in performance on increasing SBA that are unrelated to prior level. The mean annual change in the proportion of deliveries with skilled birth attendance was 5.3 percentage points among the top 25 percent of countries, and -2.2 percentage points among the bottom 25 percent.

II. Observed Changes in Skilled Birth Attendance

- Table 2.1 summarizes the observed average annual changes in SBA coverage by previous survey SBA coverage.

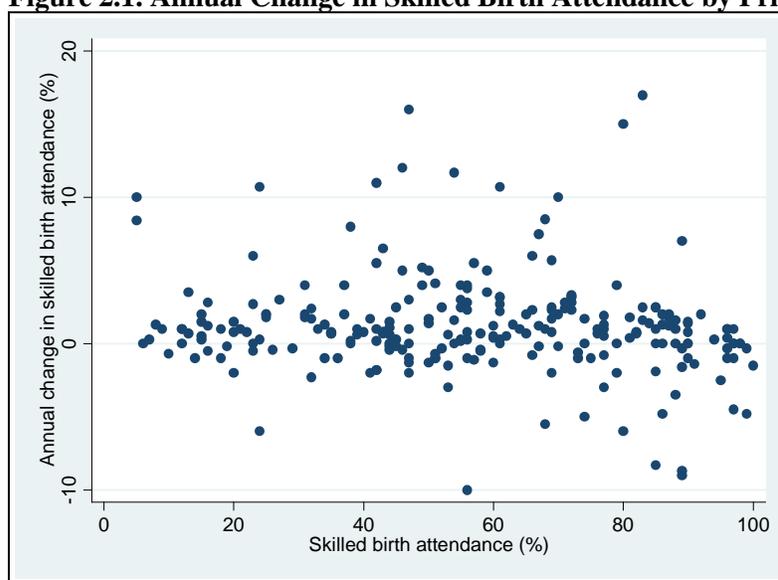
¹⁴ Accessed July 2010.

Table 2.1. Annual Change in SBA by Previous Survey SBA Coverage

Previous survey SBA coverage	Mean annual change (%)	Median annual change (%)	Annual change—25 th percentile (%)	Annual change—75 th percentile (%)	Standard deviation
SBA <=50%	1.6	1.0	0	2.0	3.2
SBA 50 to 75%	1.5	1.2	-0.2	2.8	3.2
SBA 75 to 90%	0.6	0.8	-0.3	1.6	4.4
SBA >90%	-0.6	0	-1.4	0.4	1.7

- Figure 2.1 summarizes the relationship between previous survey SBA coverage and subsequent annual change in SBA. Of the observations, 84 percent are within 1 standard deviation of the mean annual change in coverage with SBA, and 92 percent are within 2 standard deviations of the mean.

Figure 2.1. Annual Change in Skilled Birth Attendance by Prior Survey SBA



- The pace of change varied widely among countries, with the fastest quintile (20 percent of countries with the fastest declines) averaging an increase of over 6 percent per year in between surveys, and the slowest quintile showing a decline of 2.6 percent per year.

Table 2.2. Annual Change in SBA by Improvements, 1985–2008

Quintile	Mean annual change in SBA (%)	Median annual change in SBA (%)
Q1—lowest improvers SBA coverage change of -0.64% or lower	-2.60	-1.6

Q2 SBA coverage change of -0.64 to 0.40%	-0.07	0
Q3 SBA coverage change of 0.4 to 1.2%	0.80	0.8
Q4 SBA coverage change of 1.2 to 2.5%	1.80	1.8
Q5—fastest improvers SBA coverage change of more than 2.5%	5.70	4.0

Table 2.3. Annual Change in Top 25 Percent of improvers, 1987–2008

Change in SBA	Median change (%)	Mean change (%)
1998–2008		
<i>Top 25% of improvers:</i> Countries with improvements of more than 2.5%	4.0	5.6
1987–1997		
<i>Top 25% of improvers:</i> Countries with improvements of more than 1.8%	3.2	5.0

➤ *Middle 50 percent of improvers*

Table 2.4. Annual Change in SBA among Middle 50 Percent of improvers (1987-2008)

Change in SBA	Median annual change (%)	Mean annual change (%)	25 th percentile—annual change (%)	75 th percentile—annual change (%)
1998–2008				
Countries with improvements of -0.3 to 0.8% (25 th to 50 th percentile)	0.3	0.3	0	0.6
Countries with improvements of 0.8 to 2.5% (50 th to 75 th percentile)	1.5	1.6	1	2.0
1987–1997				
Countries with improvements of -0.2 to 0.8% (25 th to 50 th percentile)	0.3	0.3	0	0.5
Countries with improvements of 0.8 to 1.8% (50 th to 75 th percentile)	1.2	1.2	1	1.6

➤ *Slow improvers*

Table 2.5. Annual Change in SBA among the Slowest 25 Percent of improvers (1987-2008)

Change in SBA	Median annual change (%)	Mean annual change (%)	25th percentile—annual change (%)	75th percentile—annual change (%)
1998–2008				
Lowest 25% of improvers: Countries with improvements of less than -0.3%	-1.4	-2.5	-2.9	-1.0
1987–1997				
Lowest 25% of improvers: Countries with improvements of less than -0.2%	-1.0	-1.4	-1.8	-0.4

Annex 3. Targets for Increasing Contraceptive Prevalence Rate (CPR)

For the analysis household survey data was examined, including data from Demographic and Health Surveys and Multiple Indicator Cluster Surveys, extracted from the World Bank's World Development Indicators database. Included were 383 estimates of the contraceptive prevalence rate (CPR) spanning the 1987–2008 period from 94 low- and lower-middle-income countries. The CPR is estimated through household survey questions in which women in the reproductive age group—usually married women aged 15 to 49 years—are asked whether they or their sexual partners are practicing any form of contraception.

The measure used to analyze the data is the average annual percentage point change between two survey observations in the CPR. This is calculated as the absolute difference between two time points (Survey year 2 – Survey year 1) divided by the number of years between the two surveys.

I. Key Messages

- CPR has changed at a slower pace compared to many of the other indicators examined in this analysis. The mean annual change in CPR for this sample as a whole is 0.9 percentage points. Excluding the slowest and fastest 10 percent of annual changes lowers the mean annual change in CPR to 0.8 percentage points.
- On average, changes in CPR are mildly negatively correlated with baseline (that is, previous survey) CPR. Countries with previous survey CPR of less than 32.7 percent saw mean annual changes in CPR of 1.3 percentage points. This declined to a mean annual change of 0.7 percentage points for countries with base-year CPR between 32.7 and 51.7 percent and still further to 0.4 percentage points for countries with previous survey CPR of 51.7 percent and more.
- There are clear differences among the countries in this sample in the changes observed in CPR. Countries in the lowest fifth of the CPR change distribution showed annual *declines* in CPR of 1.7 percentage points. The fastest improvers, on the other hand, achieved annual CPR increases of 3.9 percentage points.
- Prior CPR alone is not a good predictor of future changes in CPR as the observed changes vary substantially. Country-specific factors that contribute to changes in CPR should be taken into account when setting targets for CPR improvement.

II. Observed Changes in Contraceptive Prevalence Rates, 1987–2008

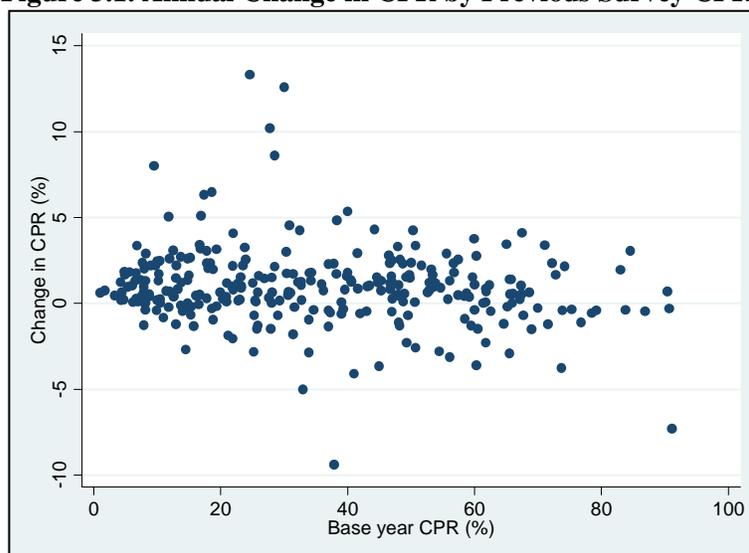
- Table 3.1 describes annual change in CPR by previous survey CPR levels.

Table 3.1. Annual Change in CPR by Previous Survey Year CPR

CPR	Mean annual change (%)	Median annual change (%)	Annual change—25 th percentile (%)	Annual change—75 th percentile (%)	Standard deviation
CPR < 16.1%	1.0	0.7	0.1	1.8	1.5
CPR between 16.1 and 32.7%	1.7	0.9	0.2	2.3	2.9
CPR between 32.7 and 51.7%	0.7	1.1	-0.4	1.7	2.2
CPR of 51.7% and greater	0.4	0.6	-0.4	1.4	1.9

- Figure 3.1 presents annual change in CPR by base-year (that is, previous survey year) CPR. There are clear differences in the CPR changes achieved by countries at every level of prior CPR. Although annual CPR change ranges from -9.4 percentage points to +13.3 percentage points, 80 percent of countries achieved annual changes in CPR between -1.2 percentage points and 3.1 percentage points. The bottom quarter of improvers in the sample showed declines in CPR of 1.7 percentage points each year.

Figure 3.1. Annual Change in CPR by Previous Survey CPR



- Table 3.2 summarizes the observed changes in CPR when the sample is divided into quintiles by rate of CPR change.

Table 3.2. Changes in CPR by Quintile (1987-2008)

Quintile	Mean annual change in CPR (%)	Median annual change in CPR (%)
Q1—slowest improvers CPR change of less than -0.40%	-1.7	-1.20
Q2 CPR change of -0.40 to 0.46%	0.1	0.10
Q3 CPR change of 0.46 to 1.20%	0.8	0.76
Q4 CPR change of 1.20 to 2.22%	1.6	1.60
Q5—fastest improvers CPR change of more than 2.22%	3.9	3.10

- Examining changes in CPR over longer time horizons is important since year-on-year changes can fluctuate. Tables 3.3, 3.4, and 3.5 present median and mean annual changes in CPR averaged over two decades: 1998–2008 and 1987–97.
- The top 25 percent of improvers showed mean annual CPR increases of 3.6 percentage points, while the slowest changers over the 1998–2008 period showed mean annual *declines* in CPR of 1.4 percentage points.

Table 3.3. High Performers (Fast Improvement in CPR), 1987–2008

Change in CPR	Median change (%)	Mean change (%)
1998–2008		
<i>Top 25% of improvers:</i> Improvements of more than 1.7%	2.6	3.6
1987–97		
<i>Top 25% of improvers:</i> Improvements of more than 2.0%	2.9	3.4

Table 3.4. Middle 50 Percent of improvers, 1987–2008

Change in CPR	Median change (%)	Mean change (%)
1998–2008		
Annual change in CPR: Improvements of -0.3 to 1.7%	0.5	0.6
1987–97		
Annual change in CPR: Improvements of 0.3 to 2.0%	1.0	1.0

Table 3.5. Slowest 25 Percent of improvers, 1987–2008

Change in CPR	Median change (%)	Mean change (%)
1998–2008		
Lowest 25% of improvers: Countries with improvements of -0.3% or less	-1.2	-1.6
1987–97		
Lowest 25% of improvers: Countries with improvements of 0.3% or less	-0.5	-1.1

Annex 4. Targets for Increasing Antenatal Care (ANC) Coverage

This analysis examined data on antenatal care coverage from the World Bank's World Development Indicators dataset. The total number of antenatal care observations included is 322, for estimates of coverage from 91 low- and lower middle income countries between 1987 and 2008, with women of reproductive age reporting on care received during pregnancies in the five years before the survey. As with previous analyses, only countries with two or more observations are included to estimate changes over time. The indicator used for these analyses considers women who were attended by skilled health personnel at least once during a pregnancy for reasons related to the pregnancy. The contents and the quality of the care vary greatly by country.

The measure used to analyze changes in ANC coverage is the average annual percentage point change in prenatal care coverage between survey year 2 and survey year 1, divided by the number of years between the surveys.

I. Key Messages

- For the sample as a whole, the mean annual change in the proportion of women who received at least one ANC contact from a skilled attendant is +1.2 percentage points per year (+1.2 percent); the median change is +0.8 percent. Excluding outliers (the slowest and fastest 10 percent of country changes) leaves the median change the same (+0.8 percent) and lowers the mean annual change slightly to +1 percent.
- The countries in this sample show smaller increases in ANC coverage as the prior survey ANC coverage increases. The mean annual change in ANC coverage declines sharply (to -0.4 percentage points per year) in countries where prior survey ANC coverage levels are 90 percent or more. This is not surprising given the relatively limited potential for improving ANC coverage in such countries.
- The pace of change varied widely among countries. The fastest improving fifth of countries showed mean annual changes in ANC coverage of 6.0 percentage points, while the slowest improving fifth of countries showed mean annual declines in ANC coverage of 2.7 percentage points.
- Prior ANC coverage levels only account for 9 percent of the total variation in annual ANC coverage changes. This underscores the importance of considering other factors that influence changes in ANC coverage when setting targets.

II. Observed Changes in ANC Coverage, 1987–2008

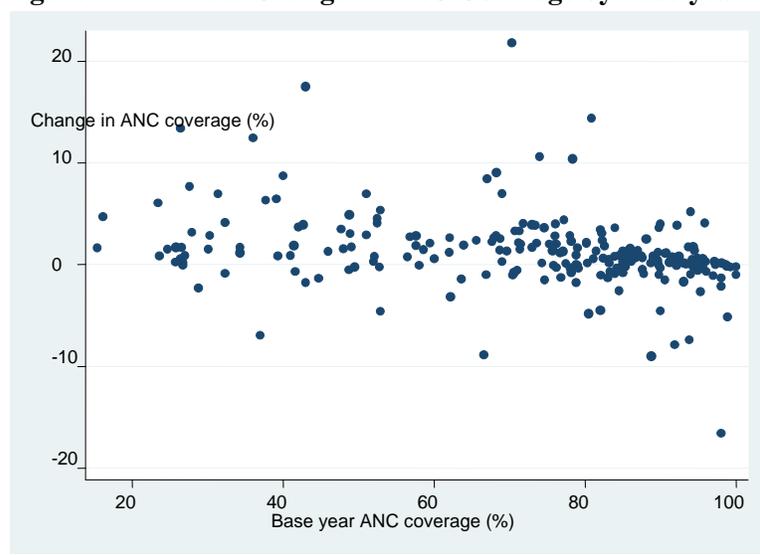
- Table 4.1 summarizes observed annual changes in ANC coverage by previous survey ANC coverage.

Table 4.1. Annual Change in ANC by Previous Survey ANC

ANC	Mean annual change (%)	Median annual change (%)	Annual change—25 th percentile (%)	Annual change—75 th percentile (%)	Standard deviation
ANC ≤50%	2.8	1.7	0.6	4.1	4.3
ANC 50 to 75%	2.3	2.1	0.3	3.3	4.2
ANC 75 to 90%	0.8	0.6	-0.3	1.7	2.7
ANC >90%	-0.4	0.1	-0.6	0.5	3.1

- Figure 4.1 presents annual change in ANC coverage by previous survey (base-year) ANC. Annual changes in ANC range between -16.6 and 21.8 percentage points. However, 80 percent of annual country changes range between -1.3 and 4.1 percentage points, while half of all countries have annual changes between -0.2 and 2.2 percentage points.

Figure 4.1. Annual Change in ANC Coverage by Base-year Coverage



- Table 4.2 summarizes observed changes in ANC coverage when the sample is divided into five quintiles of countries of high performance (large increases in coverage) and less rapid performance.
- This table shows that the pace of change varied widely among countries, with the fastest quintile (20 percent of countries with the fastest improvers averaging an increase of 6 percent per year between surveys, and the slowest quintile showing a decline of 2.7 percent per year.

Table 4.2. Annual Change in ANC by Improvements in ANC, 1987–2008

Quintile	Mean annual change in ANC coverage (%)	Median annual change in ANC coverage (%)
Q1—slowest improvers	-2.70	-1.30

Quintile	Mean annual change in ANC coverage (%)	Median annual change in ANC coverage (%)
ANC change of -0.5% or lower		
Q2 ANC coverage change of -0.5 to 0.3%	-0.06	-0.05
Q3 ANC coverage change of 0.3 to 1.3%	0.70	0.70
Q4 ANC coverage change of 1.3 to 2.8%	1.90	1.70
Q5—best performers ANC coverage change of more than 2.8%	5.90	4.10

- Tables 4.3, 4.4, and 4.5 show median and mean annual changes over ten-year time horizons. Tables 4.3, 4.4, and 4.5 show median and mean changes for high, average, and low performers over the ten-year periods from 1987 to 1997 and 1998 to 2008.

Table 4.3. Annual Change in ANC: Top 25 Percent of Improvers, 1987–2008

Change in ANC coverage	Median change (%)	Mean change (%)
1998–2008		
<i>Top 25% of improvers</i> Countries with improvements of more than 2.7%	4.0	6.1
<i>Top 10% of improvers</i> Countries with improvements of more than 5.08%	8.6	10.1
<i>Top 5% of improvers</i> Countries with improvements of more than 8.65%	12.4	13.4
1987–97		
<i>Top 25% of improvers</i> Countries with improvements of more than 2%	3.4	4.3
<i>Top 10% of improvers</i> Countries with improvements of more than 4.1%	6.1	6.7
<i>Top 5% of improvers</i> Countries with improvements of more than 6.2%	8.8	9.4

Table 4.4. Annual Change in ANC: Middle 50 Percent of improvers, 1987–2008

Change in ANC coverage	Median change (%)	Mean change (%)
1998–2008		
Annual change in ANC coverage: -0.2 to +2.7%	0.9	1.0
1987–97		

Change in ANC coverage	Median change (%)	Mean change (%)
Annual change in ANC coverage: -0.25 to +2.0%	0.6	0.7

Table 4.5. Slowest Improvers—Change in ANC Coverage When Prior Survey Coverage is 50 Percent or Less, 1987–2008

Change in ANC coverage	Median change (%)	Mean change (%)
1998–2008		
<i>Lowest 25% of improvers</i> Countries with improvements of less than -0.5%	-1.3	-2.2
1987–97		
<i>Lowest 25% of improvers</i> Countries with improvements of less than +0.8%	-0.1	-0.2

Annex 5. Targets for Reducing Under-Five Mortality Rates (U5MR)

This section analyzes data sourced from UNICEF, WHO, and World Bank, Interagency Group on Mortality Estimation, 2010, online database CMEInfo at Childmortality.org, accessed in August 2010. The data cover the period from 1980 to 2005 and include 405 observations from 137 countries.

The analyses presented here focus on annualized rates of decline in the Under-Five Mortality Rate (U5MR) from quinquennial estimates of under-five mortality calculated as the following equation:

$[(Y1 - Y2)/Y1] * 100 / 5$. A positive number therefore implies that U5MR *declined* in the time period under consideration, whereas a negative number implies that U5MR *increased*.

I. Key Messages

- For the sample as a whole, the mean annual change in U5MR is 2.7 percentage points. Excluding outliers (the slowest and the fastest 10 percent of country changes) leaves the average annual decline unchanged.
- Overall, declines in U5MR are negatively related to base-year level of U5MR.
- There is a wide range in the rate at which U5MR has declined among countries in this sample. Countries in the lowest fifth of the distribution saw mean annual increases in U5MR of 0.2 percent while the top 20 percent of improvers saw mean declines of 5.7 percent per year.
- Base-year U5MR is a relatively good predictor of U5MR declines, and explains about 30 percent of the variability in U5MR change. However, other factors are clearly important determinants and should be taken into account when setting targets for U5MR.

II. Observed Changes in U5MR Declines, 1980–2005

- Table 5.1 presents the annual decline in U5MR for groups defined by base-year U5MR. Countries with the highest base-year U5MR (142+) show the lowest mean annual decline in U5MR.

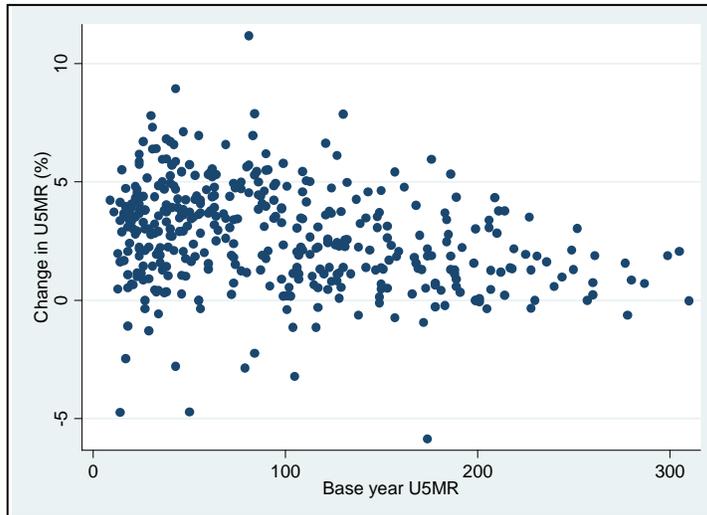
Table 5.1. Annual Decline in U5MR by Baseline U5MR

Baseline U5MR	Mean annual decline (%)	Median annual decline (%)
U5MR ≤38	2.9	3.1
U5MR: 38 to 81	3.4	3.6
U5MR: 81 to 142	2.8	2.6
U5MR: Greater than 142	1.6	1.4

- Figure 5.1 presents the annual decline in U5MR by previous year U5MR. In country U5MR declines, 80 percent are between 0.2 and 5.4 percentage points per year, while

the middle 50 percent of country U5MR declines are between 1.2 and 4.1 percentage points per year.

Figure 5.1. Annual Decline in U5MR by Base-year U5MR



➤ Table 5.2 presents a summary of the annual decline in U5MR by quintile of decline over 1980–2005.

Table 5.2. Annual Decline in U5MR by Quintile of Decline

Quintile	Mean annual decline in U5MR (%)	Median annual decline in U5MR (%)	Annual decline—25 th percentile (%)	Annual decline—75 th percentile (%)	Standard deviation
Q1—lowest improvers U5MR decline of less than 0.9%	-0.2	0.2	-0.4	0.5	1.3
Q2 U5MR decline of 0.9 to 2.0%	1.5	1.4	1.2	1.8	0.3
Q3 U5MR decline of 2.0 to 3.4%	2.6	2.6	2.2	3.0	0.4
Q4 U5MR decline of 3.4 to 4.5%	3.9	3.7	3.6	4.1	0.3
Q5 U5MR decline of 4.5% or more	5.7	5.4	4.8	6.0	1.1

- Table 5.3 presents annual declines in U5MR for high performers. High performers are defined as countries where declines in U5MR are in the top 25 percent of the distribution.
- There is a considerable range in the improvements observed. When cumulated over a five-year period, the improvements range from 20 to 55 percent for the top 25 percent of improvers.

Table 5.3. Annual Decline in U5MR, High Performers (Fast Improvement), 1980–2005

Decline in U5MR	Mean annual decline (%)	Median annual decline (%)
Top 25% of improvers: Countries with declines of more than 4.1%	5.4	5.0
Top 10% of improvers: Countries with declines of more than 5.4%	6.4	6.0
Top 5% of improvers: Countries with declines of more than 6.1%	7.1	6.7

Table 5. 4. Annual Decline in U5MR, Middle 50 Percent of Improvers, 1980–2005

Decline in U5MR	Median annual decline (%)	Mean annual decline (%)
Decline in U5MR: 1.2 to 4.1%	2.7	2.7

- Table 5.5 presents the annual decline in U5MR for slow improvers (U5MR decline in the lowest 25 percent of the distribution and U5MR at baseline of 142 or more) in the 1980 to 2005 period.

Table 5.5. Annual Decline in U5MR, Slow Improvers, 1980–2005

Decline in U5MR	Median decline (%)	Mean decline (%)
Lowest 5% of improvers: Countries with declines of -0.6% or less	-0.9	-2.5
Lowest 10% of improvers: Countries with declines of -0.2% or less	-0.6	-1.2
Lowest 25% of improvers: Countries with declines of 0.2% or less	-0.1	-0.5

Annex 6. Targets for Increasing Vitamin A Coverage

This section analyzes data on the proportion of children aged 6 to 59 months who have received at least one dose of vitamin A. The data are sourced from UNICEF's State of the World's Children reports and include 470 observations of vitamin A coverage from 72 low- and lower-middle-income countries spanning the 1999 to 2008 period.

Changes in vitamin A coverage are presented here as absolute changes over time: that is, [(Vitamin A coverage in survey year 2) – (Vitamin A coverage in survey year 1)]/Number of years between the two surveys.

I. Key Messages

- The mean annual change in vitamin A coverage in this sample is -1.2 percentage points. In other words, vitamin A coverage actually declined on average by 1.2 percentage points each year over the 1999 to 2008 period. Excluding the fastest and slowest improvers (the top and bottom 10 percent of country changes) reduces the mean annual decline in vitamin A coverage to 0.6 percentage points for the sample as a whole.
- This overall trend for the sample, however, masks different rates of annual change by prior survey year vitamin A coverage levels. Countries with baseline coverage of less than 50 percent showed mean annual increases in vitamin A coverage of 21 percentage points, while vitamin A coverage declined on average in countries with baseline coverage of over 50 percent and declined more steeply in countries with vitamin A coverage of 90 percent or over (a likely reflection of ceiling effects).
- There are very large differences among countries in the magnitude of change in vitamin A coverage. Countries in the lowest fifth of the change distribution showed mean annual decreases in vitamin A coverage of 30 percentage points while countries in the top fifth showed mean annual increases of 24 percentage points.
- Prior survey year vitamin A coverage is a relatively good predictor of future vitamin A coverage: approximately 20 percent of the variance in annual changes in coverage are accounted for by prior survey vitamin A coverage. However, since 80 percent of the variance is not explained by prior vitamin A coverage, it is still important to take other factors into account when setting targets for improving vitamin A coverage.

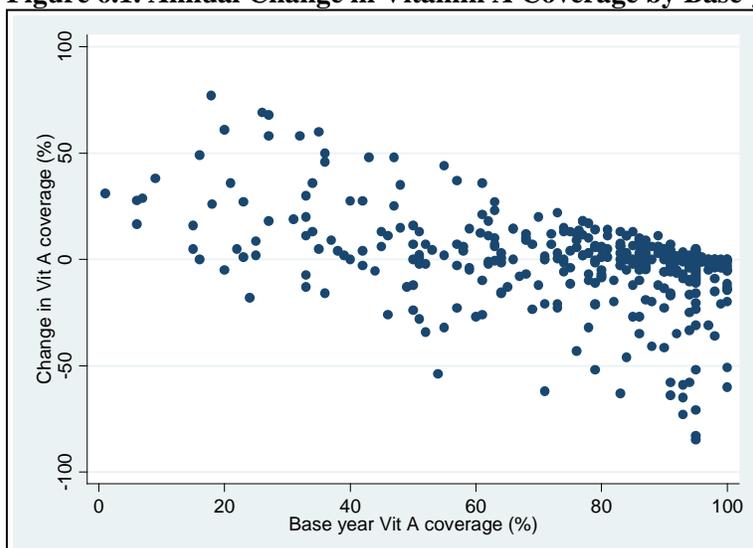
II. Observed Changes in Vitamin A Coverage, 1999–2008

- Table 6.1 and figure 6.1 summarize the observed changes in vitamin A coverage by prior survey coverage levels. There is a strong negative relationship between prior levels of coverage and annual change.
- The mean annual increase is largest in countries with vitamin A coverage of less than 50 percent, while the mean change is 0 or negative with increasing levels of prior survey vitamin A coverage. For countries with pre-existing vitamin A coverage levels of 90 percent or more, ceiling effects are a likely explanation for the limited progress or negative change in vitamin A coverage.

Table 6.1. Annual Change in Vitamin A Coverage by Baseline Coverage

Baseline Vitamin A coverage	Mean annual change (%)	Median annual change (%)	Annual change—25 th percentile (%)	Annual change—75 th percentile (%)	Standard deviation
Vit A coverage < 50%	20.8	16.5	4	36	24.3
Vit A coverage 50 to 75%	-0.2	0.7	-8	11	18.1
Vit A coverage 75 to 90%	-2.2	2.0	-5	6	15.1
Vit A coverage ≥90%	-8.9	-1.0	-9	0	18.3

Figure 6.1. Annual Change in Vitamin A Coverage by Base-year Coverage



- Table 6.2 summarizes the observed changes in vitamin A coverage when the sample is divided into five quintiles by high performance (increase in vitamin A coverage) and less rapid improvements.
- Table 6.2 shows the considerable differences among countries in changes in vitamin A coverage. It is important to note that the slowest improvers (Q1 below) tend to have already high levels of vitamin A coverage: mean prior vitamin A coverage is 82 percent in this group, and only 10 percent have vitamin A coverage of 52 percent or less.

Table 6.2. Annual Change in Vitamin A Coverage by Quintile of Improvement

Quintile	Mean annual change in vitamin A coverage (%)	Median annual change in vitamin A coverage (%)
Q1—slowest improvers Improvement of less than -10%	-30.4	-23.2
Q2 Improvement of -10 to -1%	-5.0	-5.0
Q3 Improvement of -1 to +1%	-0.2	0
Q4 Improvement of +1 to +9%	3.9	3.5
Q5—fastest improvers Improvement of +9% or more	24.2	16.8

- Tables 6.3, 6.4, and 6.5 present median and mean annual changes in vitamin A coverage for rapid, medium, and slow improvers over the 1999–2008 period.
- The fastest 25 percent improvers in the sample showed mean annual changes of 20 percentage points, while the slowest improvers among countries with base-year vitamin A coverage under 50 percent saw average annual declines of 8 percentage points.

Table 6.3. Vitamin A Annual Change in Coverage: High Performers (Fast Improvement), 1999–2008

Improvement in vitamin A coverage	Median annual change (%)	Mean annual change (%)
Top 25% of improvers: Countries with improvements of more than 6%	13	20.2
Top 10% of improvers: Countries with improvements of more than 17.1%	31	36.6
Top 5% of improvers: Countries with improvements of more than 31.2%	48	50.2

Table 6.4. Vitamin A Annual Change in Coverage: Middle 50 Percent of Improvers, 1999–2008

Change in vitamin A coverage	Median annual change (%)	Mean annual change (%)
Change in vitamin A coverage: -6 to +6%	0	-0.2

Table 6.5. Slow Improvers—Vitamin A Coverage Change among Countries with Base-year Coverage of 50 Percent or Less, 1999–2008

Change in vitamin A coverage	Median annual change (%)	Mean annual change (%)
Lowest 25% of improvers: Countries with improvements of less than 2%	-5.5	-8.1

Annex 7: Targets for Improving Diarrhea Care (ORS Used and Continued Feeding)

This section presents analyses of household survey data on the percentage of children under five with diarrhea who received appropriate diarrhea care. For the purposes of this analysis, appropriate diarrhea care is defined as oral rehydration and continued feeding. The data analyzed include 121 observations across the 1991–2008 period for 56 low- and lower-middle-income countries. The data were sourced from the World Development Indicators database; primary sources include UNICEF’s State of the World’s Children, Child Info, and Demographic and Health Surveys.

The measure used here to analyze changes is the absolute annual percentage point change between two surveys: $[(\text{Survey year 2}) - (\text{Survey year 1})] / \text{Number of years between the two surveys}$.

I. Key Messages

- The mean annual change in appropriate diarrhea care in the sample as a whole is 0.5 percentage points. Excluding the slowest and fastest 10 percent of changers lowers the average annual change to 0.2 percentage points.
- Overall, changes in correct diarrhea care are negatively correlated with prior survey levels of appropriate diarrhea care. Countries with prior survey levels of 38 percent or less showed mean annual increases in appropriate diarrhea care of 1.3 percentage points, while those with prior survey levels of more than 38 percent saw mean annual *decreases* of 0.9 percentage points. This trend is unlikely to reflect ceiling effects given the considerable room for improvement still remaining in this indicator.
- There are clear differences in mean changes achieved in appropriate diarrhea care. The slowest fifth of improvers in the dataset showed an annual mean decrease of 1.9 percent, while the fastest fifth of improvers achieved an annual mean increase of 6.2 percent.
- Prior survey levels of correct diarrhea care alone are not a very good predictor of improvements in correct diarrhea care. Other determinants of appropriate diarrhea care should be taken into account when setting targets.

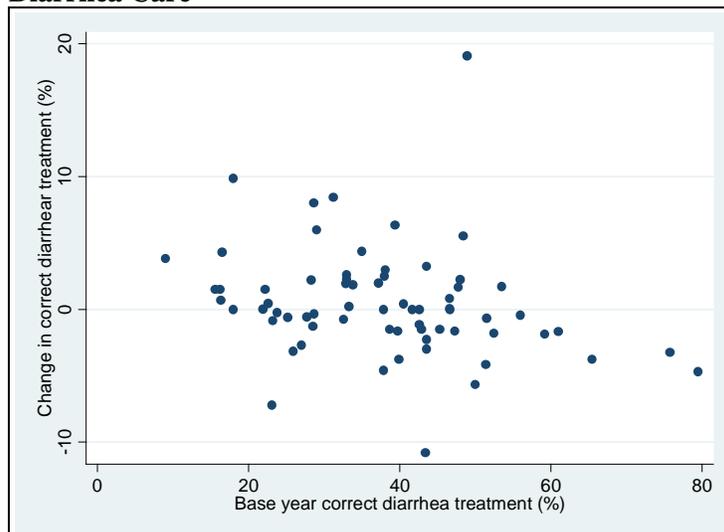
II. Observed Changes in Appropriate Diarrhea Care, 1991–2008

- Table 7.1 and figure 7.1 summarize observed changes in correct diarrhea care by baseline (prior survey) appropriate diarrhea care levels.
- The observed mean annual change in correct diarrhea care when base-year appropriate diarrhea care levels are 46.7 percent or more is affected by a serious outlier (see figure 7.1). When this outlier is excluded, the mean annual change in this group drops to -1.2 percentage points.

Table 7.1. Annual Change in Appropriate Diarrhea Care by Baseline Level of Appropriate Diarrhea Care

Baseline correct diarrhea care	Mean annual change (%)	Median annual change (%)	Annual change—25 th percentile (%)	Annual change—75 th percentile (%)	Standard deviation
Correct care <=28%	0.50	0.03	-0.6	1.5	3.6
Correct care 28 to 38.0%	2.00	2.00	-0.2	3.5	3.4
Correct care 38.0 to 46.7%	-0.60	-0.60	-1.6	0.8	3.5
Correct care >=46.7%	0.04	-1.60	-3.2	1.7	5.7

Figure 7.1. Annual Mean Change in Correct Diarrhea Care by Baseline Level of Correct Diarrhea Care



➤ Table 7.2 presents observed changes in appropriate diarrhea care by quintiles of improvement.

Table 7.2. Annual Change in Correct Diarrhea Care by Quintile of Improvement

Quintile	Mean annual change in correct diarrhea care (%)	Median annual change in correct diarrhea care (%)
Q1—slowest improvers Improvement less than -1.9%	-4.50	-3.8
Q2 Improvement of -1.9 to -0.6%	-1.30	-1.5
Q3 Improvement of -0.6 to +0.5%	-0.03	0
Q4 Improvement of +0.5 to +2.5%	1.70	1.7

Q5—fastest improvers Improvement of +2.5% or more	6.20	4.9
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- Table 7.3 presents mean and median annual changes in appropriate diarrhea care for under-fives for high, medium, and slow improvers.

Table 7.3. Annual Changes in Correct Diarrhea Care for Under-fives: High, Medium, and Low Improvers, 1991–2008

Improvement in correct diarrhea care	Mean annual change (%)	Median annual change (%)
Top 25% of improvers: Annual improvement of more than 2.1%	5.5	4.3
Middle 50% of improvers: Annual improvement: -1.6 to +2.1%	0	0.1
Lowest 25% of improvers: Countries with improvements of less than -1.6%	-3.2	-3.8

Annex 8. Targets for Reducing Stunting

This section analyzes data from the World Health Organization's Global Database on Child Growth and Malnutrition on the percentage of children under five who are stunted, that is, whose height is more than 2 standard deviations below the median for the international reference population. The database includes 210 observations from 67 low-income and lower-middle-income countries over the 1987–2008 period.

The analysis focuses on annual reductions in the proportion of stunted under-fives in the sample. Reductions in stunting are measured as absolute annual percentage point changes, that is, using the following equation: [(Survey 1 stunting) – (Survey 2 stunting)]/Number of years between the two surveys. Positive numbers show that the proportion of under-fives who are stunted has decreased. Negative numbers show that this proportion has increased.

I. Key Messages

- In this sample, the proportion of stunted children under five has decreased by approximately 0.5 percentage points each year over the period 1987 to 2008. This remains unchanged when the fastest and slowest 10 percent of improvers are excluded.
- There is a positive correlation between reductions in the proportion of stunted children aged under-five and base-year proportion of stunted children. The mean annual reduction in the proportion of stunted children in this sample of countries increases as base-year proportion of stunting increases.
- There are considerable differences across countries in annual reductions in the proportion of stunted children: the slowest fifth of improvers experienced annual increases in stunting of 1.8 percentage points while the fastest fifth of improvers showed reductions in stunting of 2.6 percentage points per year.
- Base-year stunting (prior survey stunting) predicts approximately 11 percent of the changes in stunting observed in this sample. Other factors that were not included in this analysis should be considered when setting targets for reducing stunting over the lifetime of a project.

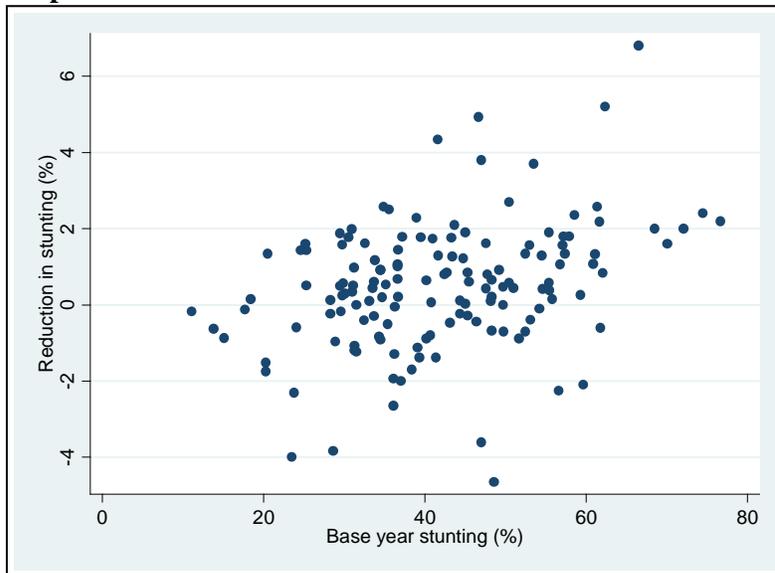
II. Observed Reductions in the Proportion of Stunted Under-fives

- Table 8.1 and figure 8.1 summarize observed reductions in the proportion of stunted under-fives by baseline (that is, prior survey) level of stunting.

Table 8.1. Annual Reductions in Stunting of Under-fives by Base-year Level

Base-year stunting	Mean annual reduction (%)	Median annual reduction (%)	Annual reduction—25 th percentile (%)	Annual reduction—75 th percentile (%)	Standard deviation
Stunting <32.5%	-0.1	0.1	-1.0	1.0	1.4
Stunting 32.5 to 41%	0.2	0.2	-0.9	1.0	1.3
Stunting 41 to 51%	0.7	0.6	-0.1	1.5	1.8
Stunting greater than 51%	1.3	1.3	0.3	2.0	1.7

Figure 8.1. Annual Reductions in Proportion of Stunted Under-fives by Base-year Proportion



➤ Table 8.2 summarizes observed reductions in stunting when the sample is divided into five groups based on performance, with the first group (quintile 1) including the slowest reducers and the fifth group (quintile 5) including the fastest reducers.

Table 8.2. Annual Reduction in Stunting by Quintile of Improvement

Quintile	Mean annual reduction in stunting (%)	Median annual reduction in stunting (%)
Q1—slowest improvers Reduction of less than -0.7%	-1.8	-1.4
Q2 Reduction of -0.7 to 0.2%	-0.2	-0.2
Q3 Reduction of 0.2 to 0.8%	0.5	0.5

Quintile	Mean annual reduction in stunting (%)	Median annual reduction in stunting (%)
Q4 Reduction of 0.8 to 1.7%	1.2	1.3
Q5—fastest improvers Reduction of 1.7% or more	2.6	2.2

- Tables 8.3, 8.4, and 8.5 show mean and median annual reductions in the proportion of stunted children by the pace of reduction over a two-decade time horizon. There are considerable differences in reductions in stunting among the countries in this sample. The top 25 percent of improvers in 1998–2008 showed mean annual reductions in the proportion of stunted under-fives of 2.6 percentage points. By contrast, the slowest 25 percent of improvers showed mean increases of 1.6 percentage points each year over the same period.

Table 8.3. Annual Reductions in Stunting: High Performers (Fast Improvement), 1987–2008

Reduction in stunting	Mean annual reduction (%)	Median annual reduction (%)
1998–2008		
Top 25% of improvers: Annual reduction in stunting of more than 1.6%	2.6	1.9
1987–97		
Top 25% of improvers: Annual reduction in stunting of more than 1.4%	2.3	2.0

Table 8.4. Annual Reductions in Stunting: Middle 50 Percent of improvers, 1987–2008

Reduction in stunting	Mean annual reduction (%)	Median annual reduction (%)
1998–2008		
Annual reduction in stunting: -0.6 to 1.6%	0.6	0.6
1987–97		
Annual reduction in stunting: -0.2 to 1.4%	0.5	0.5

Table 8.5. Annual Reduction in Stunting: Lowest 25 Percent of Improvers, 1987–2008

Reduction in stunting	Mean annual reduction (%)	Median annual reduction (%)
1998–2008		

Reduction in stunting	Mean annual reduction (%)	Median annual reduction (%)
Annual reduction in stunting of less than -0.6	-1.6	-1.2
1987-97		
Annual reduction in stunting of less than -0.2	-1.3	-0.9

Annex 9. Targets for Increasing Insecticide Treated Net (ITN) Coverage among Under-fives

This section analyzes data from the World Bank’s World Development Indicators database on ITN use. For the purposes of this analysis ITN use is defined as the percentage of children under five who slept under an insecticide treated bednet the night before the survey. The primary source includes Demographic and Health Surveys and Multiple Indicator Cluster Surveys. The database includes 99 observations of ITN use between 1999 and 2008 and 50 observations of change in ITN use between surveys.

The analysis focuses on annual changes in the proportion of children under five in the sample who slept under an ITN the preceding night. Changes in coverage are measured as absolute annual percentage point changes, that is, as in the following equation: [(Survey 2 coverage) – (Survey 1 coverage)]/Number of years between the two surveys.

I. Key Messages

- In this sample, the proportion of under-fives who slept under an ITN the preceding night has increased by 2.9 percentage points each year between 1999 and 2008.
- There is a positive correlation between increases in ITN use among under-fives and base-year coverage of ITNs. The mean annual increase in coverage is higher as prior survey coverage increases.
- There are clear differences across countries in annual increases in ITN use among under-fives: the slowest third of improvers experienced annual decreases in coverage of 0.6 percentage points while the fastest third achieved annual increases in ITN coverage of 6.8 percentage points. Cumulated over a five-year period, this translates into a very large difference.
- Base-year ITN coverage explains approximately 35 percent of the observed variance in coverage changes. Therefore, it is important to take into account other factors when setting targets on improving ITN coverage.

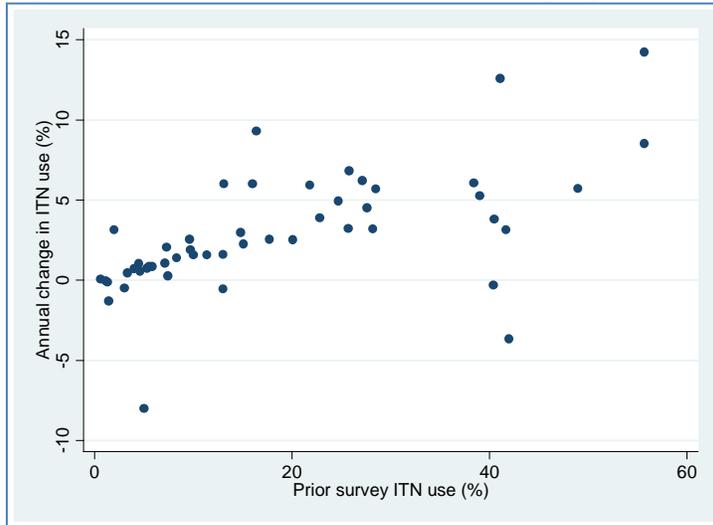
II. Observed Increases in ITN Coverage

- Table 9.1 and figure 9.1 summarize observed changes in ITN coverage among under-fives by baseline (that is, prior survey) level of ITN coverage among under-fives.

Table 9.1. Annual Increases in ITN Coverage among Under-fives

Prior survey ITN coverage	Mean annual increase in coverage (%)	Median annual increase in coverage (%)
Coverage less than 10%	0.4	0.8
Coverage between 10 to 25%	3.8	3.0
Coverage greater than 25%	5.3	5.5

Figure 9.1. Annual Increase in ITN Coverage by Previous Survey Coverage



- Table 9.2 summarizes observed changes in ITN coverage when the sample is divided into three groups based on performance, with the first group including the slowest improvers and the third group including the fastest reducers.

Table 9.2. Annual Increase in ITN Coverage by Pace of Improvement

Pace of improvement in coverage	Mean annual increase in coverage (%)	Median annual increase in coverage (%)
Slowest third of improvers Increase of less than 1%	-0.6	0.01
Middle third of improvers Increase of 1 to 3.6%	2.2	2.30
Fastest third of improvers Increase of more than 3.6%	6.8	6.00

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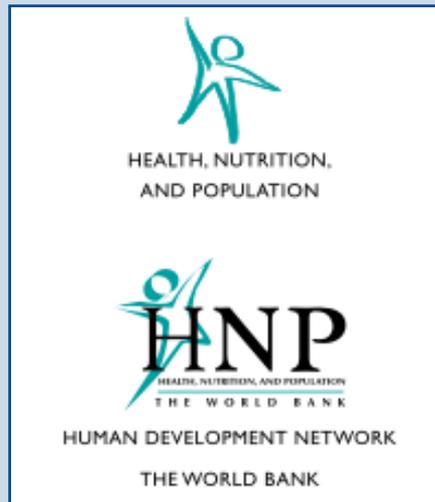
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