Chapter 7

MDG 4: Child Health

The survival of new-born babies and children under five years old is one of the principal measures of the state of public health and has been generally well reported and documented in most countries over the years. Notably, performance has been closely related to other health, social and economic indicators, especially poverty, maternal and child health services,[1] education, nutrition, shelter, safe water and sanitation.

Goal 4. Reduce child mortality

Target 4A: *Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate*

Indicators:

4.1 Under-five mortality rate
4.2 Infant mortality rate

4.3 Proportion of one-year-old children immunised against measles

MDG 4 has one target and three performance indicators. For child mortality and for infant mortality the indicators are relative to the baseline value for each country, while for measles immunisation it is universal 100 per cent coverage. MDG 4 has the lowest total percentage of missing data in the study. It contains within it indicators that are commonly recognised as key to the assessment of social development.

7.1 Overall performance

Of the 138 cases to be assessed, the 46 small states had achieved 4 (3%) targets by 2007 against their 1990 baseline values. These were Maldives (indicator 4.1) and Cyprus and Singapore (indicator 4.2). In a further 115 cases (83%) the 46 small states were on-track; in 18 cases (13%) they were off-track; missing data inhibited assessment of performance in only one case, Timor-Leste.[2]

Including the missing data, the 46 small states made 86 per cent progress towards the target, with 13 per cent off-track. Excluding missing data, the small states made 87 per cent progress.[3]

This is the one MDG on which the progress of the 46 small states exceeded that of the benchmark states (see Figure 7.1). The 46 small states made progress in 119 cases (86%); the 10 benchmark states made progress in 23 cases (77%). Among the 10 benchmark states, only Iceland reported achieving one of the MDG 4 child mortality indicators.[4]

The two island benchmark states recorded 67 per cent progress; the large benchmark states reported 89 per cent progress; and the BRIC states recorded 92 per cent progress.

A detailed review of the performance of states for each of the three indicators selected in MDG 4 is set out below.

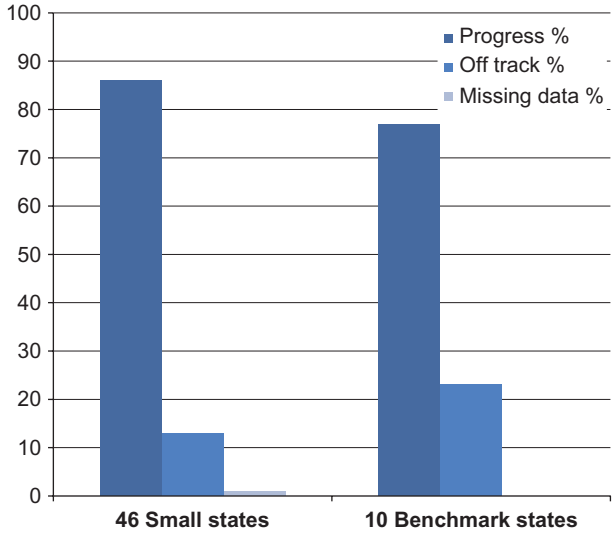
7.2 Target 4A: Reducing child mortality by 2015

7.2.1 Indicator 4.1: Under 5-year-old child mortality

One of the 46 small states (2%), Maldives, achieved the reduction in child mortality on the 1990 baseline, while an additional 43 small states (94%) were on-track and just two (4%) off-track. There were no missing data on this indicator for the 46 small states.

Two of the 46 small states (4%) were marginally off-track on this indicator. Nauru, for instance, did not reduce its level of child mortality of 30 per 1,000 towards its 10 per 1,000 target between 1990 and 2007. In Trinidad and Tobago the child mortality rate increased over the period from 34 to 35 per 1,000.

Figure 7.1 Performance on MDG 4: Child health



Source: UN MDG database 2010

Proximity to target

As the target values for reducing child mortality differ for each state, so proximity to target is calculated separately for each country and is the difference between the latest value for that country and its target value.

7.2.2 The Big Divide in child mortality

The Big Divide is seen in the range of values on child mortality indicator 4.1 in the 46 small states (see Figure 7.2 for 2007). The full range is from a rate of three deaths per 1,000 live births for children under five years old in Singapore to a rate of 195 in Guinea-Bissau. Three states had child mortality rates of five and below (Cyprus and Malta with five and Singapore with three). The same number had rates of over 100 per 1,000 live births (Comoros, 105; The Gambia, 109; and Guinea-Bissau, 195). This represents a 65-fold difference in the relative risk of death for children under five across the 46 small states.

7.2.3 Indicator 4.2: Infant mortality

Among the 46 small states, Cyprus, Maldives and Singapore achieved the two-thirds target reduction in the 1990 infant mortality rate (IMR). Singapore's performance in reducing the IMR to two per 1,000 in 2010 was the best in the world. Forty-four countries (96%) made progress on this target, with only two (4%) off-track; none had missing data.

The two states that were off-track were Nauru and Trinidad and Tobago, neither of which improved on their 1990 infant mortality rate.

Proximity to target

Three (7%) of the 46 small states achieved their target reductions in IMR, but 17 (37%) were within 1 to 9 percentage points from their target. Seventeen (37%) were within 10 to 24 percentage points of target and nine (20%) were 25 or more percentage points away from meeting their target.

The Big Divide on infant mortality in the 46 small states in 2007 ranged from the highest levels of 117 per 1,000 in Guinea-Bissau and 82 per 1,000 in The Gambia. The lowest IMRs were 3 per 1,000 in Cyprus and 2 per 1,000 in Singapore. Figure 7.3 shows this Big Divide in variations in infant mortality in the 46 small states, where there is a 59-fold difference in relative risk.

7.2.4 Indicator 4.3: Children immunised against measles

While none of the 46 small states had achieved the target of immunisation against measles for all children below one year of age by 2008, 31 states (74%) were on-track and 14 (24%) were off-track, with just one having missing data.

Eleven of the 46 small states were off-track, with reductions in the level of immunisation against measles between 1990 and the latest year. Many of these reductions, however, were marginal. The largest reduction was in Barbados where the rate fell from 87 to 75 per cent.

Proximity to target

Overall, 20 of the 46 small states (43%) reached levels of immunisation in 2008 of 95 per cent or higher. A further 20 countries (43%) reached 75 to 94 per cent, while only six (13%) recorded a rate below 75 per cent; these were Timor-Leste (73%), Namibia (69%), Vanuatu (65%), Samoa (63%), Haiti (58%) and Papua New Guinea (58%).

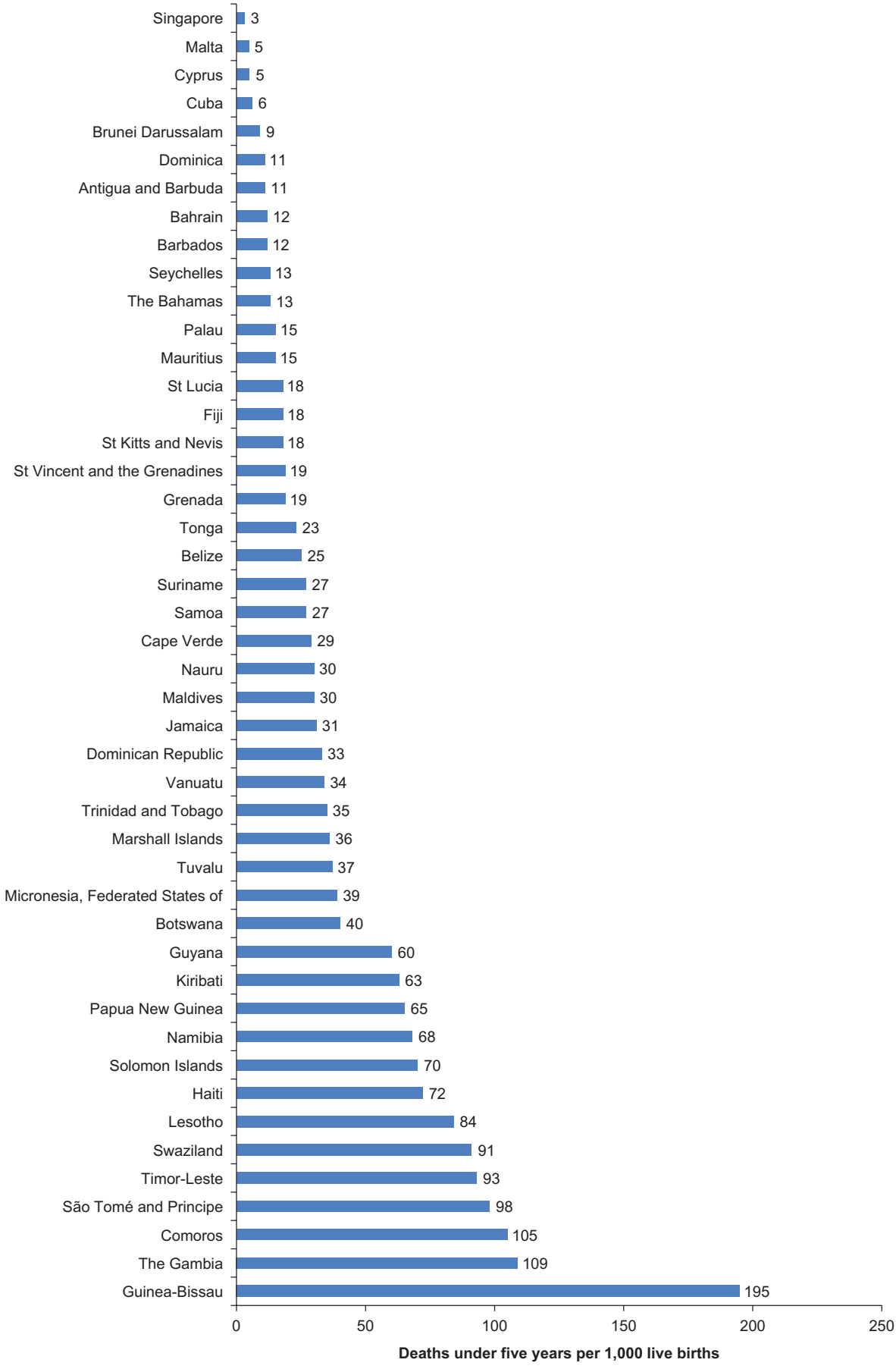
The measure of proximity to target on this indicator provides a guide to those in greatest need of support. Figure 7.4 shows the Big Divide in the 46 small states in 2008 with a range of rates of immunisation from 99 in Bahrain to 58 per cent in Haiti and Papua New Guinea.

7.3 IMR and GDP

Figure 7.5 shows that the number of infant deaths in the first year of life per 1,000 live births is closely inversely related to PPP GDP per capita. Poorer countries have much higher values of IMR until the GDP per capita reaches about US$5,000, with IMR above 20. Beyond that point IMR declines less steeply with increases in income. Most countries are close to this trend line, although Trinidad and Tobago has a more elevated level of IMR than would be expected from its per capita income.

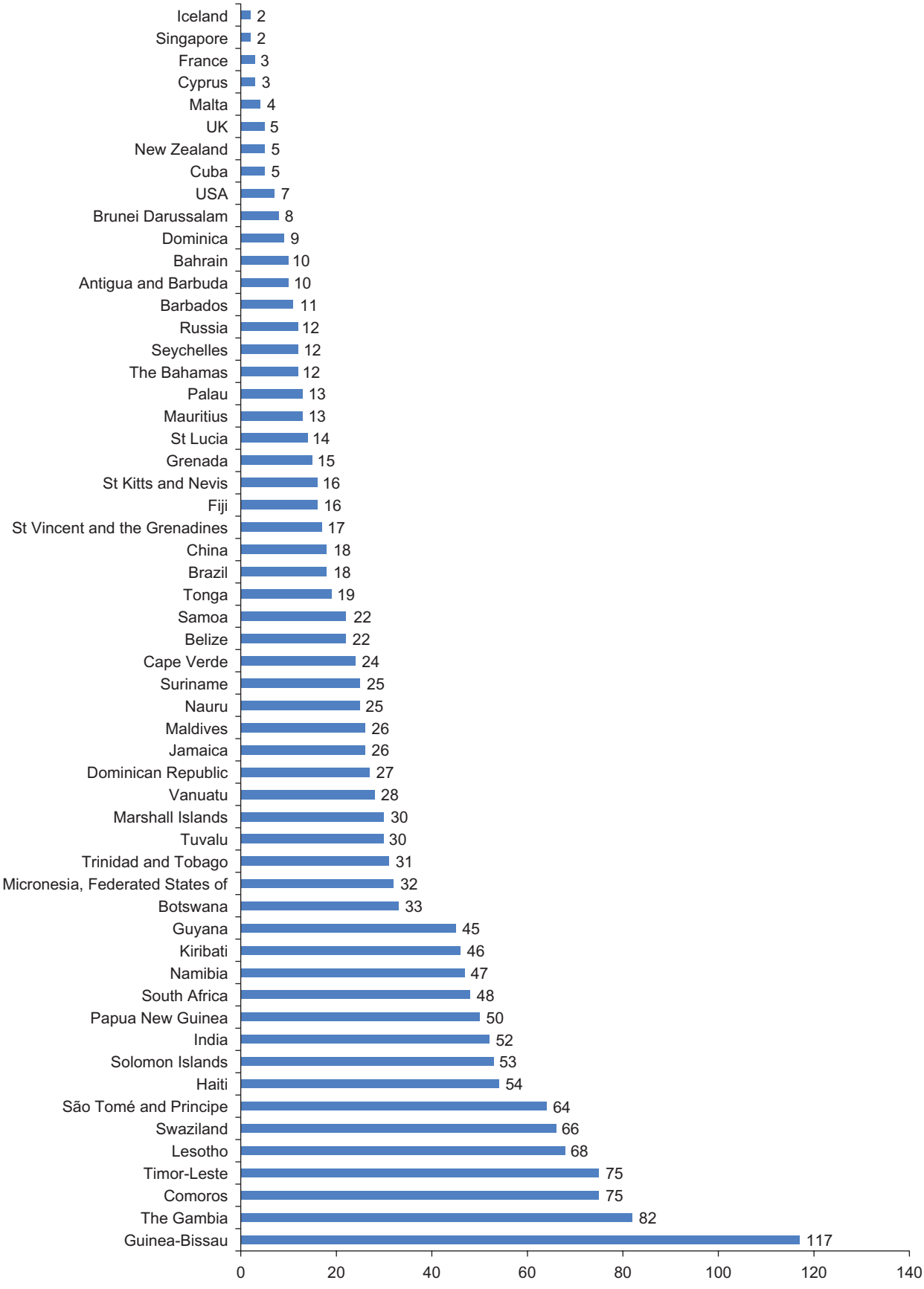
This analysis in Figure 7.5, however, belies the number of infants saved, which can only be demonstrated by using data on live births per country. These are not examined in the UN MDG system within the IMR denominator. However, by using the numbers of annual live births from the UNICEF database, it is possible to calculate approximately the numbers of infants saved per year in each country as IMR is reduced.

Figure 7.2 Under-fives mortality rate per 1,000 live births



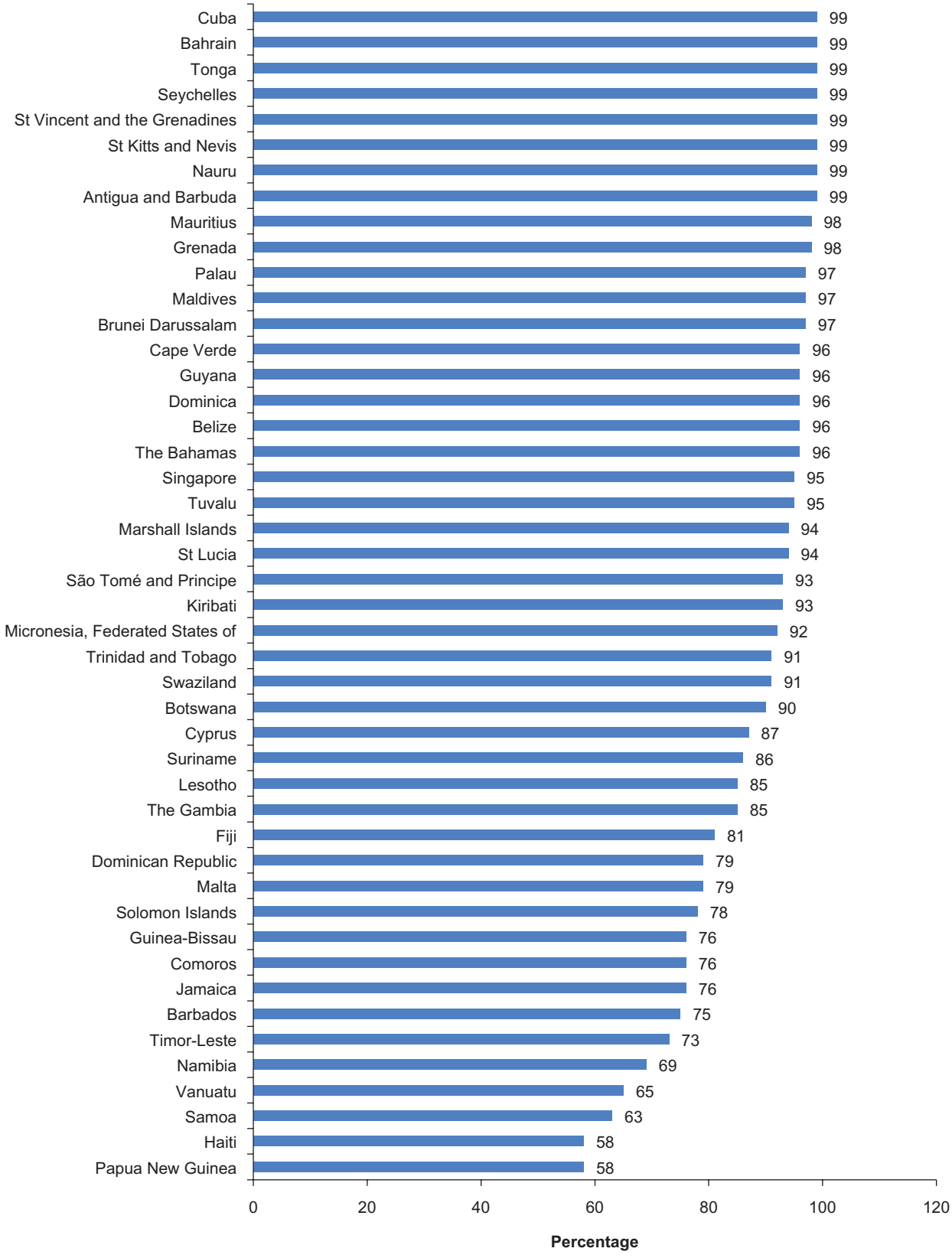
Source: UN MDG Database 2010

Figure 7.3 Infant mortality rate per 1,000 live births



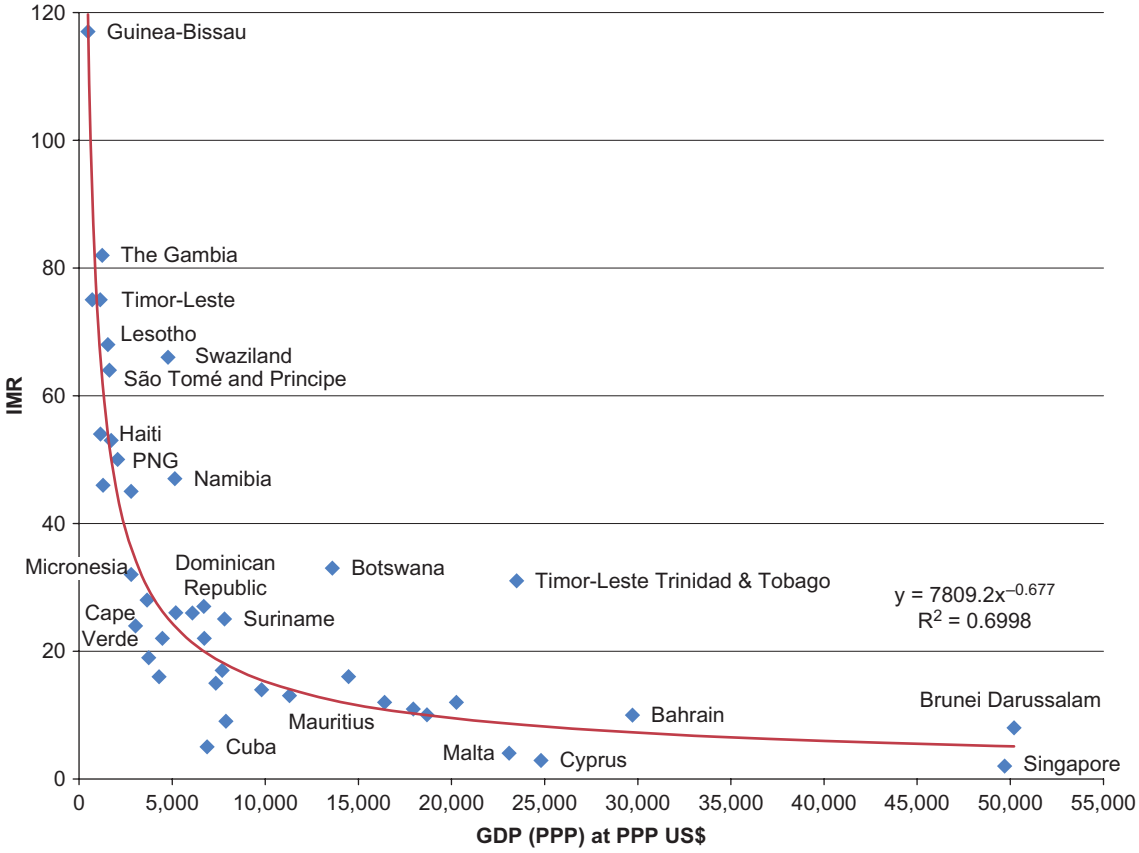
Note: Data from 2007.
Source: UN MDG Database 2010

Figure 7.4 Percentage of one-year-olds immunised against measles



Note: Latest data were for 2008; where these were not available, data for 2007 were used.
Source: UN MDG database 2010

Figure 7.5 IMR and GDP per capita at PPP US$



Sources: UN Statistics Division and UNDP 2010

Further analysis shows that IMR is closely linked to maternal mortality and to population undernourishment (see Figures 7.6 and 7.7). When mothers die in childbirth, the chances of the infant surviving are substantially reduced, especially in countries where there is a high level of undernourishment.[5]

7.4 Some of the poorest countries achieving the greatest reduction in infant deaths

Figure 7.8 plots the number of infants saved per year against the baseline of infant deaths in 1990. This shows that since 1990, paradoxically, some of the poorest countries have saved more infant lives than developed states. For example, six of the states in Table 7.1, all with a GDP of less than US$2,500 per capita per year at PPP have saved 22,346 infant lives a year by the reductions they have made in IMR.

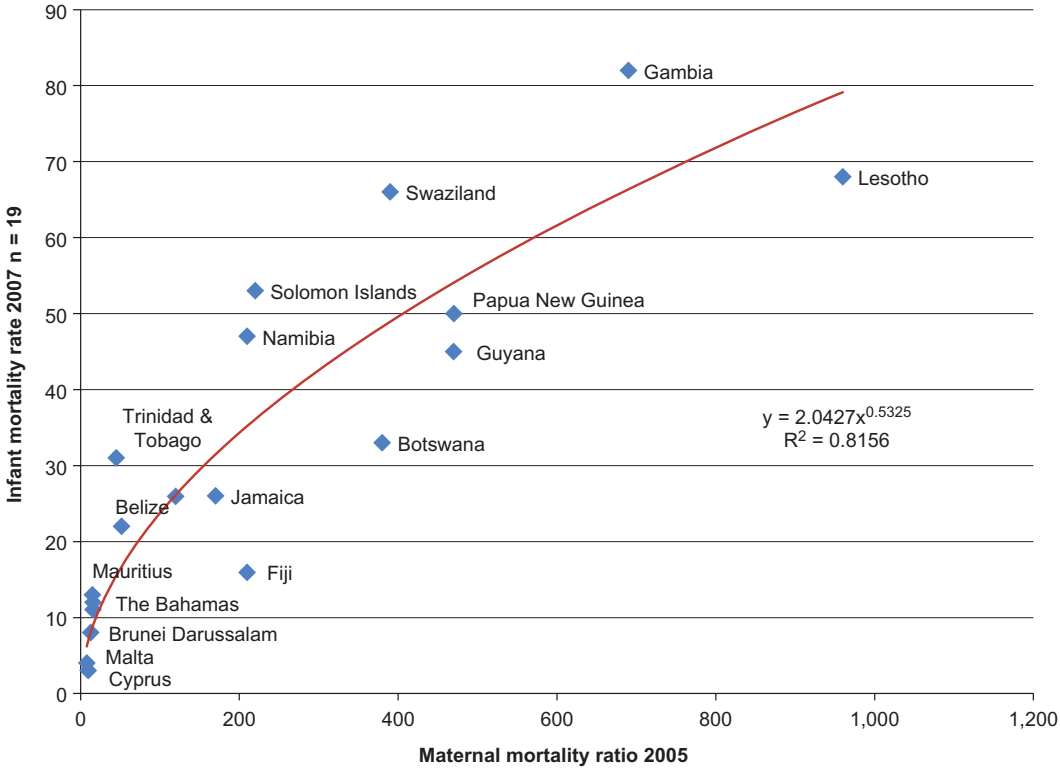
Singapore has achieved the world's lowest infant mortality rate, but has only saved 153 infant lives per year against its 1990 baseline IMR. Only Singapore among the 46 small states has so far achieved the MDG target of reducing IMR by two-thirds. However, the figures from Haiti (from reports before the 2010 earthquake) show that it was saving over 13,000 more infant lives per year than Singapore against 1990 baselines.

This paradox can be explained by the relative cost-effectiveness of the differing technologies for intervention at high and low levels of IMR. At high levels, interventions for saving lives are related to improved water and sanitation services, provision of basic primary care, education of mothers, breastfeeding and sound nutrition for mothers and babies. These interventions are relatively cheap, cost-effective and technically easy to implement.

At low levels, interventions include surgery for high-risk mothers and intensive care for high-risk babies. These are expensive, save fewer babies and require high technology and highly skilled human resources.

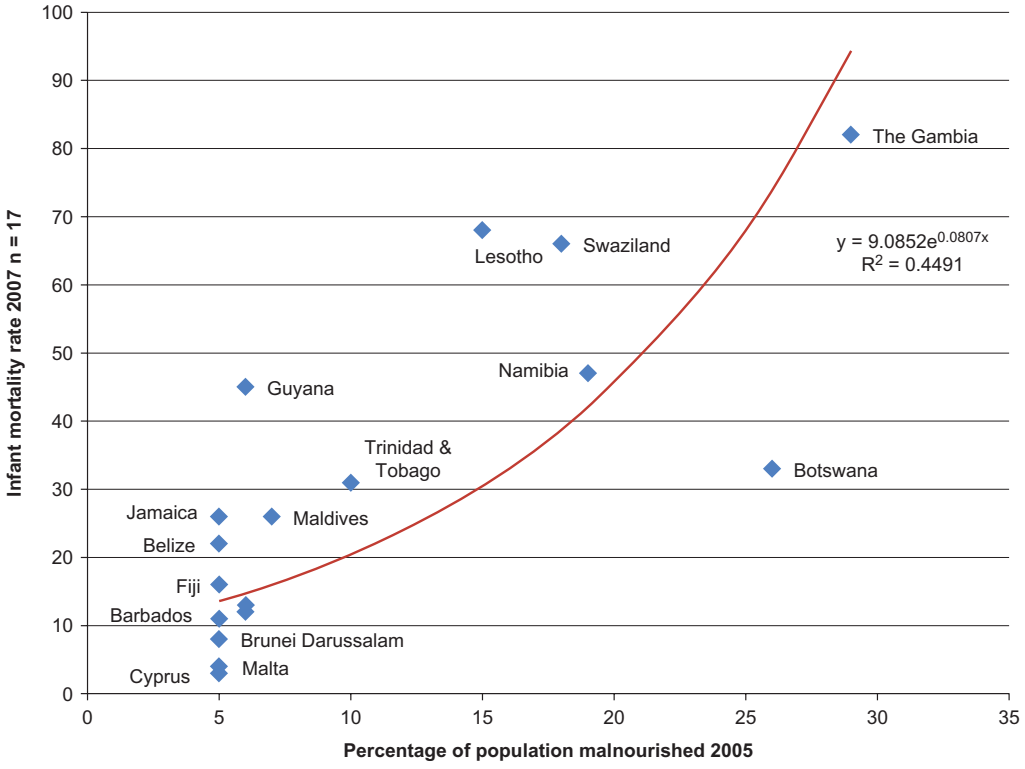
Table 7.1 looks at IMR and infant deaths between 1990 and 2007, lives saved per year and GDP per capita for the 6 small states with GDP less than US$2,500 at purchasing power parity favourably compared with Singapore in terms of infant lives saved.

Figure 7.6 Maternal mortality and infant mortality



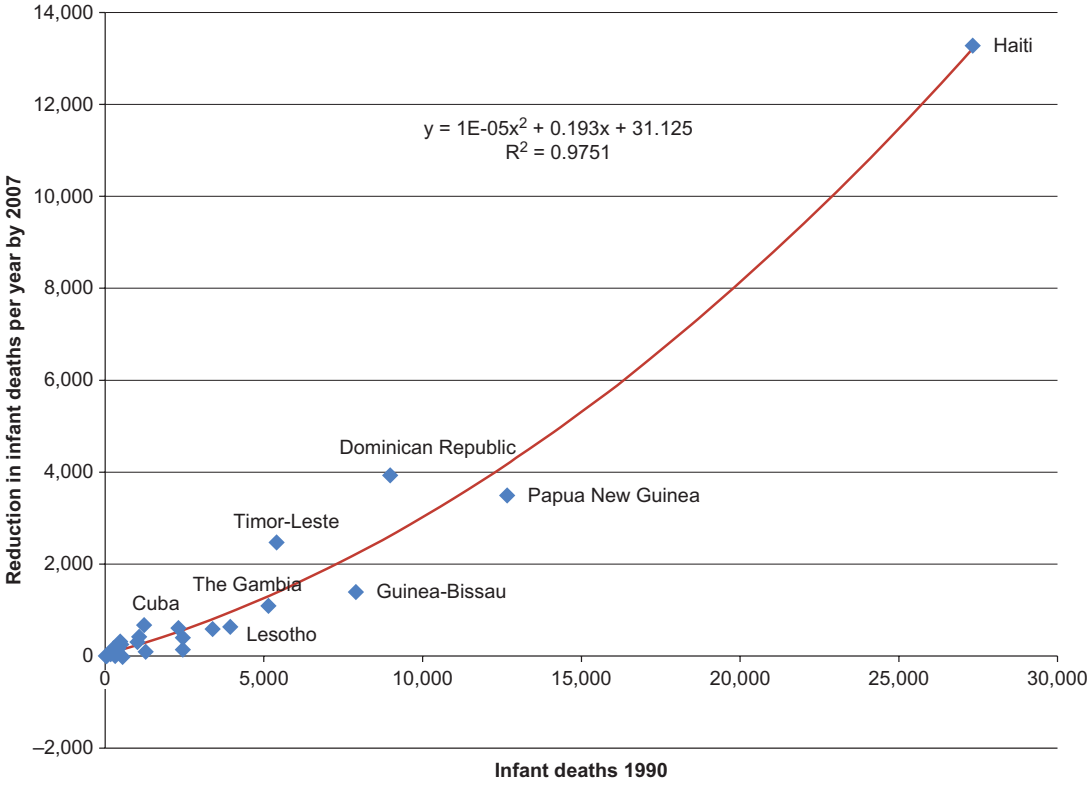
Note: n = number of countries.
Source: UN MDG database 2010

Figure 7.7 Undernourishment and infant mortality



Note: n = number of countries.
Source: UN MDG database 2010

Figure 7.8 Infant deaths and reduction in infant deaths per year



Sources: UN MDG data base and UNICEF.

Table 7.1 Infant lives saved per year since 1990 and GDP per capita in six small states

State	IMR 1990	IMR 2007	Infant deaths 1990	Infant deaths 2007	Infant lives saved per year	GDP/capita at PPP[6] US$
Haiti	105	54	27,331	14,056	13,275	1,155
Papua New Guinea	69	50	12,668	9,180	3,488	2,084
Timor-Leste	138	75	5,405	2,937	2,468	717
Guinea-Bissau	142	117	7,902	6,511	1,391	477
Gambia, The	104	82	5,152	4,061	1,090	1,225
Lesotho	81	68	3,948	3,314	634	1,541
Singapore	6	2	230	77	153	49,704

In 1990 there were over 90,000 infant deaths across the 46 small states. By 2001 this had fallen to just over 60,000, but to reach the MDG target for 2015 of a two-thirds reduction on 1990, a further 30,000 infant lives need to be saved.

Much has been achieved in reducing total infant deaths, but much more needs to be done. At present over 80 per cent of the infant deaths occur in 20 per cent of the 46 small states.[7] It is likely that further substantial reductions would be best achieved by focusing support on those states with the highest mortality rates.

7.5 Changing the global strategy on saving infant lives

If the overall aim of health policy is to save the largest number of infant lives, then these results suggest that a change is required in the strategy of each country individually seeking a two-thirds reduction on the 1990 baseline. The current policy perpetuates interstate inequality and sets all states the target of cutting infant deaths by two-thirds against their own 1990 baselines, whether this involves saving a large or small number of lives in each country and

irrespective of the relative cost per life saved, which varies greatly between countries.

In small states with a very low GDP, policies for reducing the infant mortality rate should focus on the cheap options of breastfeeding, safe water and sanitation. Safe water is a vital commodity for mothers and small babies, yet we find that in 30 of the 46 small states for which data exist, there are 12 million people without safe water. In countries with a small number of infant lives to be saved, the interventions for a further two-thirds reduction involve high-cost intensive neonatal care and surgical interventions.

Fifty-four per cent of infant lives to be saved in the 46 small states by 2015 are in just four states: Papua New Guinea, Haiti, Guinea-Bissau and The Gambia. These are the countries where the best return to intervention can be expected to save most lives at least cost.

7.6 Action on Goal 4: Child health

Many states have responded to the call for action to reduce child mortality. For example, in 2010 Botswana provided antiretroviral therapy to 94 per cent of pregnant women with HIV, reducing mother-to-child transmission rates to less than 4 per cent. It achieved this by integrating HIV/AIDS treatment and counselling with antenatal clinics. AIDS deaths in Botswana fell by 50 per cent between 2003 and 2007.

Papua New Guinea has one of the highest child mortality rates in the Pacific region. In 2007 the child mortality rate was 65 per 1,000 live births, while the infant mortality rate was 50 per 1,000 live births. The government has since set out in its National Health Plan 2011–2020 the goal to 'keep a baby healthy until its fifth birthday'. It has allocated about K120 (US$54) per child annually, totalling K26 million (US$12 million), out of the Health Minister's budget of K14.17 billion (US$6.4 billion).

Notes

1 See: www.who.int/maternal_child_adolescent/documents/pdfs/lancet_child_survival_prevent_deaths.pdf
2 For MDG 4 there are 3 indicators; thus for the 46 small states there were 138 cases to be assessed (46 x 3 = 138). The 46 small states achieved the targets in 4 cases (3%), 4 x 100/138 = 3; they were on-track in 115 cases (83%), 115 x 100/138 = 83; and off-track in 18 cases (13%), 18 x 100/138 = 13. The 46 small states thus made progress (achieved + on-track) in 119 cases (86%), 119 x 100/138 = 86, where missing data (one case) is included in the denominator.
3 The calculation of percentage progress excluding missing data is 119 cases (achieved + on-track) × 100/138–1 = 89%.
4 Iceland reduced its 1990 infant mortality rate from six infant deaths per 1,000 live births to two infant deaths per 1,000 live births in 2008.
5 Missing data reduced this analysis of undernourishment to only 17 of the 46 small states.
6 Latest value reported, UNDP (2010).
7 Haiti, 14,100; Papua New Guinea, 9,100; Guinea-Bissau, 6,500; Dominican Republic, 5,100; The Gambia, 4,100; Lesotho, 3,300; Timor-Leste, 2,900; Comoros, 2,000; and Botswana. 1,700.