

# **Economic Costs of Absenteeism, Presenteeism and Early Retirement Due to Ill Health: A Focus on Indonesia**

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**Report to the US Chamber of Commerce**

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September 2016

2016

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## Executive Summary

This report provides estimates of the economic cost due to productivity losses arising from absenteeism, presenteeism and early retirement due to ill health. For Indonesia, these losses equate to a total of 6.5% of GDP in 2015 as shown in Table ES 1, increasing to 7.2% of GDP by 2030.

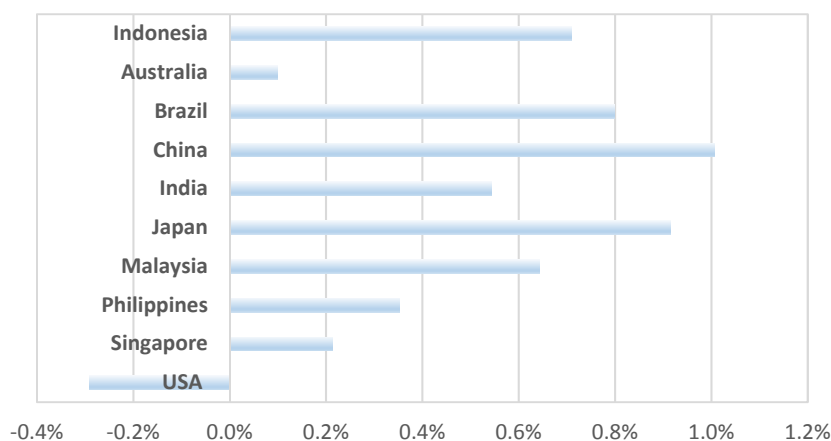
**Table ES1 Total economic impact of absenteeism, presenteeism and early retirement**

	2015			2030		
	Presenteeism & absenteeism	Early retirement	Total	Presenteeism & absenteeism	Early retirement	Total
Indonesia	1.9%	4.6%	6.5%	2.4%	4.8%	7.2%
Australia	3.0%	4.4%	7.4%	2.9%	4.5%	7.5%
Brazil	2.1%	5.1%	7.2%	2.6%	5.4%	8.0%
China	2.1%	3.4%	5.5%	2.8%	3.7%	6.5%
India	2.2%	4.6%	6.8%	2.6%	4.8%	7.4%
Japan	2.9%	3.8%	6.7%	3.5%	4.1%	7.6%
Malaysia	1.7%	4.5%	6.2%	2.0%	4.9%	6.9%
Philippines	2.1%	5.1%	7.1%	2.2%	5.2%	7.5%
Singapore	1.9%	3.3%	5.2%	2.0%	3.4%	5.4%
USA	3.5%	5.0%	8.5%	3.1%	5.1%	8.2%

Source: VISES estimates.

While this puts Indonesia below average for this group of 10 countries, that includes some of its South East Asian peers, as well as some upper income developed countries from other parts of the world, Figure ES1 shows that this estimated increase between 2015 and 2030 is considerably higher than its close neighbours, the Philippines and Malaysia.

**Figure ES1 Change in % GDP total absenteeism + presenteeism + early retirement, 2015-30**



These estimates are driven by the intersection of an ageing workforce with the high burden of chronic disease, now prevalent in developing countries. The proportion of Indonesia's work force aged 50-64 of 19% is less than average for this group of countries, but it's ageing more rapidly than average, and in particular, is ageing much more rapidly than its neighbours, the Philippines and Malaysia. The

proportion of its workforce aged 50-64 years is projected by the ILO to increase to 24.3% by 2030, an increase of 4.6 percentage points compared with increases of 1.8 percentage points and 2.7 percentage points for the Philippines and Malaysia respectively. As its population ages it moves into age groups with higher levels of chronic disease (see Fig 4).

## Context of the Study

In spite of very different circumstances, most countries face three challenges in common:

- their populations are ageing, in different ways and to different degrees;
- there is an existing high prevalence of non-communicable diseases (NCDs), such as heart and respiratory disease, stroke, cancer and mental illness, particularly for older age groups; and
- many risk factors for the future incidence of NCDs are high, and in some cases continuing to rise.

Taken together, these factors already impose heavy costs on business, governments and individuals, and threaten much greater costs in the future. The economic costs arise largely because due to ill health, people aren't able to work as much as they would like. They may either be sick and absent from work (absenteeism), present at work but not working at full capacity due to illness (presenteeism), or retired prematurely, say from aged 50-64 years due to ill health (early retirement due to ill health). The economic costs on productivity imposed by each of these groups has been modelled and included in this report. There are also others who may not work at any time due to an incapacity and/or health condition which has been present for most of their lives. This group is not explicitly covered in this report.

Following an initial report for the APEC Business Advisory Council (ABAC) and the Life Sciences Innovation Forum (LSIF) in 2014, VISES has prepared four reports, Sheehan et al. (2014), Sweeny et al. (2014) and Rasmussen et al. (2015a, 2015b), now covering eighteen countries on three aspects of these economic costs mentioned above:

- absenteeism;
- presenteeism; and
- early retirement due to ill health.

This summary report draws on these earlier reports with a focus on Indonesia together with nine other comparator countries chosen as most relevant from the eighteen included in a Global study prepared for the US Chamber of Commerce (Rasmussen et al. 2016).

## Population and Labour Force Ageing

### Population ageing

While no single indicator can capture the diversity of ageing patterns, the proportion of the population that is aged 45 years and over provides one summary indicator. The latest UN population projections (United Nations 2015) shows that for Indonesia, this proportion is expected to increase by almost 8

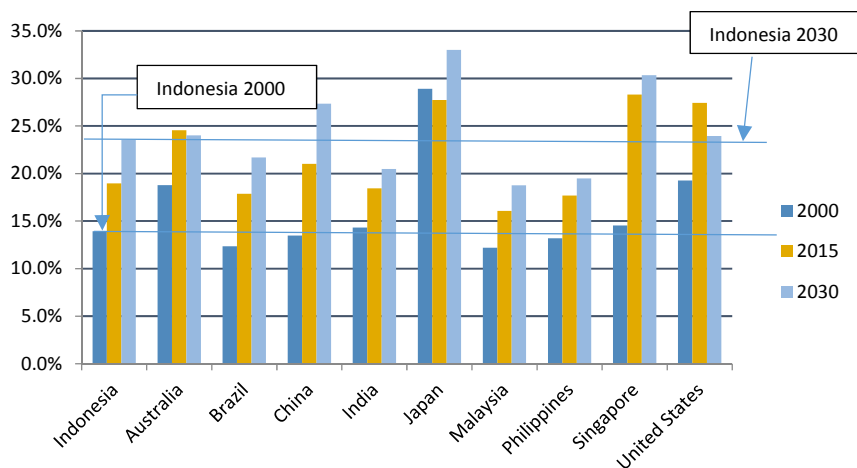
percentage points from 24.3% to 32% between 2015 and 2030. While this is modest when compared with Japan and Singapore, which is expected to have 58% and 53% respectively of their populations aged over 45 by 2030, the size of the increase is large compared with other countries in the region.

### Implications for labour supply

The population shifts discussed above have significant implications for the incidence of NCDs since they have higher rates of prevalence in older age groups. These higher rates of NCDs contribute to the higher levels of absenteeism, presenteeism and early retirement.

Figure 1 focuses on the pre-retirement workforce aged 50-64. It shows the changes in this age group as a proportion of the total labour force over the period 2000 to 2030 (projected). It shows that for Indonesia, the proportion of those aged 50-64 years in 2000 was comparable to many other countries in this group, including countries as diverse as China and Singapore, although significantly below the advanced economies of US and Australia. However by 2030, the proportion of the work force in Indonesia aged 50-64 years is comparable to that of US and Australia and significantly above other developing countries, such as Malaysia and the Philippines.

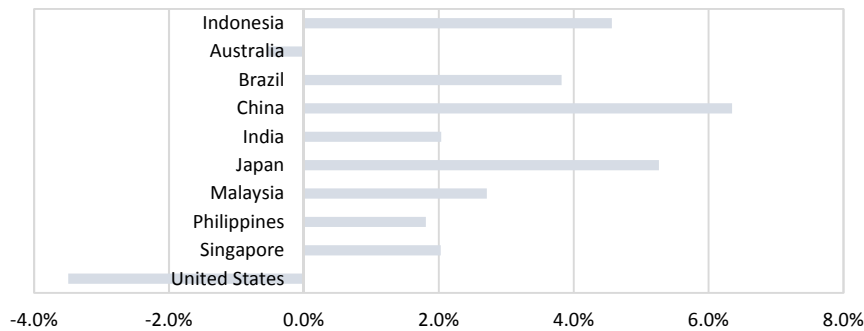
**Figure 1 Proportion of the labour force aged 50-64 years, ten countries, 2000, 2015 and 2030 (projected)**



Source: ILO (2016).

As shown in Figure 2, the increase in the proportion of the labour force aged 50-64 years for Indonesia between 2015 and 2030 is 4.6%, amongst the highest of the comparator countries, although China is even higher at 6.3%. The increase for the Philippines is only 1.8%. It is noteworthy that both the US and Australia will have a declining proportion in this age group over the period 2015 and 2030 as this cohort reaches into even higher age groups.

**Figure 2 Increase in the projected proportion of the labour force aged 50-64, ten countries, 2015-2030**



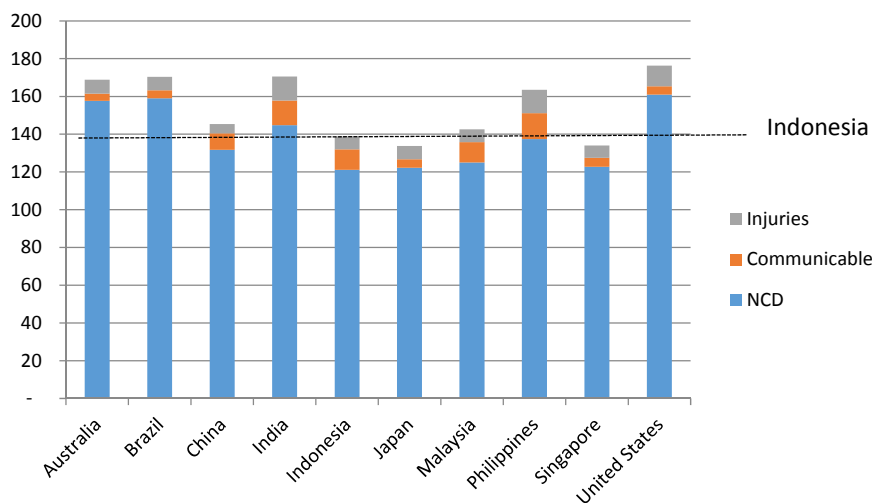
Source: ILO (2016).

### Burden of disease

The WHO Global Burden of Disease study (Murray et al. 2015) estimates both prevalence and severity of disease. It uses the number of years lived with disability (YLD) as an indicator of the impact of morbidity arising from disease. The results are grouped in three broad sequelae: communicable maternal, perinatal and nutritional conditions; non-communicable diseases (NCDs); and injuries.

Figure 3 shows the burden of disease for 2013 for Indonesia and the other selected countries for those in their pre-retirement years, aged 50-65. The figure shows that the burden of disease, as measured by YLDs, is highest for Australia, Brazil, India, the Philippines and the United States. In this data, Indonesia is at the lower end of the range for 2013. Its total disease burden is 139 per 1000 population, about the same as Malaysia at 143, but much lower than the Philippines at 164. The burden of disease data for 2013 indicates different country rankings as compared with the 2010 data previously used in this study. YLD rates for Indonesia have been falling, particularly for diabetes, for which the incidence has been trending down particularly for males since 1980 (Danaei et al. 2011).

**Figure 3 Burden of disease by cause (YLDs per 1000) of those aged 50-64, Indonesia and selected countries, 2013**

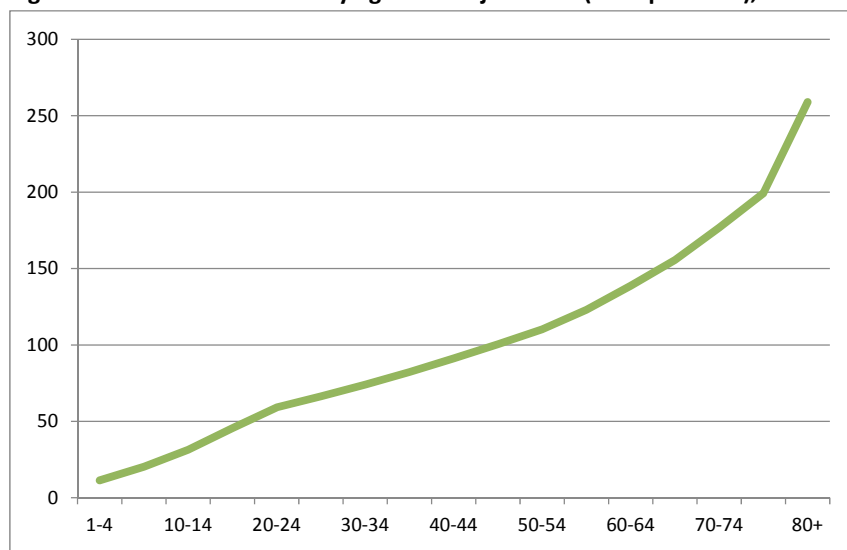


Source: IHME (2016).

Although Indonesia has much higher smoking rates than Malaysia and the Philippines, it suffers from a lower burden of disease across a range of conditions, most notably diabetes. Other diseases which carry a lower burden than these nearby neighbours include AIDs (particularly high in the Philippines), chronic obstructive pulmonary disease (COPD) and stroke.

Figure 4 illustrates the twin problems of ageing and rising disease burden for Indonesia. The disease burden rises sharply with age. For Indonesia, the age adjusted burden at age 65 is about 50% higher than at age 45.

**Figure 4 NCD disease burden by age and major cause (YLDs per 1000), Indonesia, 2013**



Source: IHME (2016).

## Estimating the Worker Attendance Costs of NCDs

### Modelling methodology

The modelling methodology is based on estimating the reduction in productive capacity due to the impact of ill health on the workforce as a result of absenteeism, presenteeism and early retirement.

The modelling of the impact of NCDs is undertaken for 13 NCDs listed in Table 1 that were identified as most relevant to reductions in labour force participation and productivity using the disease descriptions from the 2010 Global Burden of Disease study (Murray et al. 2012). The disability weight indicates the severity of each disease.

**Table 1 Disability weights and absenteeism and presenteeism assumptions, twelve countries**

Disease	Disability weight	Per cent productivity loss due to absenteeism per employee per year	Per cent productivity loss due to presenteeism per employee per year
Ischemic heart disease	0.13013	2.8	6.8
Ischemic stroke	0.30300	2.8	6.8
Hemorrhagic and other non-ischemic stroke	0.30300	2.8	6.8
Diabetes mellitus	0.09463	0.8	11.4
Chronic obstructive pulmonary disease	0.19667	6.1	17.2
Asthma	0.05600	5.0	11.0
Migraine	0.43300	4.5	20.5
Tension-type headache	0.04000	4.5	20.5
Major depressive disorder	0.23000	10.7	15.3
Dysthymia	0.11000	10.7	15.3
Osteoarthritis	0.09100	2.5	11.2
Rheumatoid arthritis	0.33733	2.5	11.2
Neoplasm	0.32150	7.0	8.5

Sources: Murray et al. (2012), Salomon et al. (2012) and Goetzel et al. (2004).

To calculate the economic loss due to morbidity suffered by people in the labour force, one of the key aspects of the model is to quantify the impact of disease on labour force participation and on productivity at work. For this, we use estimates by Goetzel et al. (2004) on productivity loss due to absenteeism and presenteeism by disease fitted to the disease categories used in the modelling (Table 1). An extensive review of the literature in the various countries on these issues has been conducted for this project, but no better source of such estimates has yet been identified.

Multiplying the GDP per person in the labour force estimates by the loss in productivity from a disease, gives the estimated reduction in GDP per person attributable to a particular disease. Multiplying this by the prevalence in the labour force of that disease, gives an estimate of the annual loss in GDP from that disease.

### Interpreting the estimates

The overall estimates of the GDP losses arising from deaths (from 2015 onwards) and from absenteeism and presenteeism from the prevalence of NCDs in the actual and potential workforce are summarised in Table 2.

In interpreting these estimates, it is important to note that they primarily reflect the pattern of ageing of the population of labour force age in the various countries, and the level of age standardised NCD mortality and non-fatal prevalence rates. In countries such as the United States, where ageing is well advanced, the cost by 2015 is already relatively high (5% of GDP) and the future growth in cost more limited. This in part reflects the fact that many of the costs of the interaction of ageing and NCDs are felt beyond the years of labour force age.



The economic cost to Indonesia of these factors is also high, rising from 4.6% to 4.8% over the period 2015-2030. Its workforce is ageing at one of the highest rates (Figure 2), but this is offset to some extent by its more modest disease burden from NCDs (Figure 3).

**Table 2 Estimates of lost GDP from absenteeism and presenteeism, Indonesia and selected countries, 2015 to 2030**

Country	Year	Absenteeism	Presenteeism	Total	Country	Year	Absenteeism	Presenteeism	Total
Australia	2015	1.28	3.13	4.41	Japan	2015	1.02	2.80	3.82
	2020	1.30	3.17	4.47		2020	1.04	2.88	3.92
	2025	1.31	3.20	4.51		2025	1.06	2.96	4.02
	2030	1.31	3.23	4.54		2030	1.07	3.03	4.1
Brazil	2015	1.54	3.54	5.08	Malaysia	2015	1.39	3.14	4.53
	2020	1.56	3.62	5.18		2020	1.41	3.21	4.62
	2025	1.58	3.69	5.27		2025	1.44	3.30	4.74
	2030	1.60	3.78	5.38		2030	1.47	3.41	4.88
China	2015	0.92	2.35	3.27	Philippines	2015	1.50	3.55	5.05
	2020	0.95	2.45	3.40		2020	1.51	3.59	5.1
	2025	0.97	2.55	3.53		2025	1.52	3.63	5.15
	2030	1.00	2.66	3.66		2030	1.54	3.68	5.22
India	2015	1.33	3.29	4.62	Singapore	2015	0.95	2.25	3.20
	2020	1.34	3.33	4.67		2020	0.96	2.33	3.29
	2025	1.35	3.39	4.74		2025	0.97	2.37	3.34
	2030	1.37	3.44	4.81		2030	0.97	2.42	3.39
<b>Indonesia</b>	<b>2015</b>	<b>1.37</b>	<b>3.18</b>	<b>4.55</b>	USA	2015	1.46	3.52	4.98
	<b>2020</b>	<b>1.38</b>	<b>3.25</b>	<b>4.63</b>		2020	1.46	3.55	5.01
	<b>2025</b>	<b>1.40</b>	<b>3.31</b>	<b>4.71</b>		2025	1.47	3.58	5.05
	<b>2030</b>	<b>1.41</b>	<b>3.37</b>	<b>4.78</b>		2030	1.48	3.60	5.08

Source: VISES estimates.

## Impact of Ill Health on the Ability to Work

Ill health prevents some people from working, and others are restricted in the amount of work they can undertake. In developed countries, such as the US and Australia, there are well developed systems for both recognising the impact of ill health on the ability to work and providing income support commensurate with the level of disability. Most developing countries also have systems and processes for identifying and supporting those in need arising from ill health, but they are more restrictive than those available in the developing countries.

Rasmussen et al. (2015a, 2015b) provide a discussion of the different definitions of disability adopted by different countries and their impact on the estimated size of the disabled populations. Overall, the implications of these different definitions have been to underreport the size of disabled populations in many developing countries. The methodology adjusts for these differences using the results of the Global Burden of Disease study referred to earlier in this report.

## The Economic Loss Due to Early Retirement

The best data we have about the behaviour of early retirees is from two surveys conducted in Australia, the Survey of Disability, Ageing and Carers (SDAC) and the Retirement and Retirement Intentions survey.

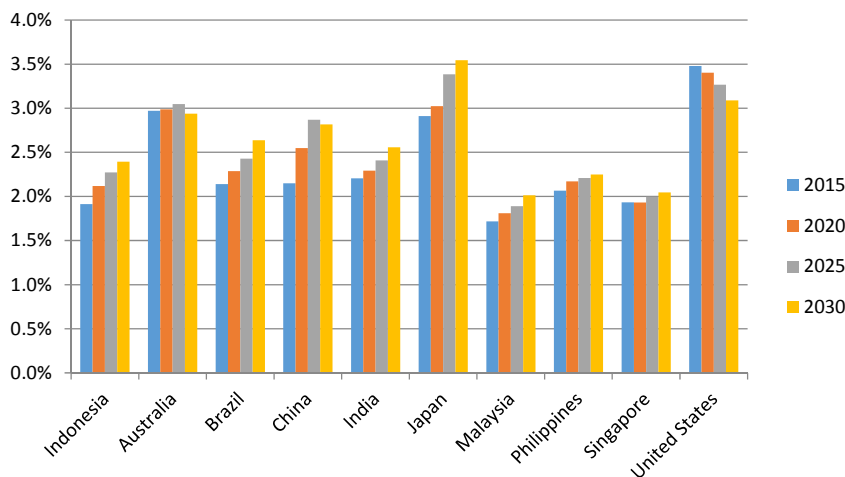
The SDAC provides details about those with disability by age, their sources of income and extent of disability. From this, we gain a lot of information about the prevalence of disability by degree of impairment by age. The Retirement and Retirement Intentions survey provides data by age about the reasons for retirement, including due to ill health. To the extent that we have been able to cross reference this against US data, the key parameters seem to be similar. In addition, we have obtained unpublished data about Australian disability pension recipients.

Our modelling assumes that the decision to retire due to ill health is based on the impact of the relative morbidity of the 50-64 age group, measured in DALYs, in each of the selected countries.

There is very little data from the relevant countries with the necessary detail to model economic loss, so we used parameters drawn from the Australian data, which we adjusted where we could to the circumstances of the particular selected country. For instance, in arriving at the proportion of the population aged 50-64 who were disabled according to the international WHO/World Bank definition, we used the Australian proportion (the US proportion was very similar) adjusted for country-specific disease burden sourced from the Global Burden of Disease study. A proportion based on Australian experience of these was estimated to have retired.

In essence, the economic loss is equal to those in early retirement multiplied by the average GDP per worker for each of the selected countries. This is projected to 2030 using the UN population projections for each country for those aged 50-64. The results are shown for 2015 through to 2030 in Figure 5. Given the complexity of the trends in risk factors, the age adjusted disease burden rate is assumed to be constant over the projection period.

**Figure 5 Economic cost of early retirement, Indonesia and selected countries, 2015 to 2030**

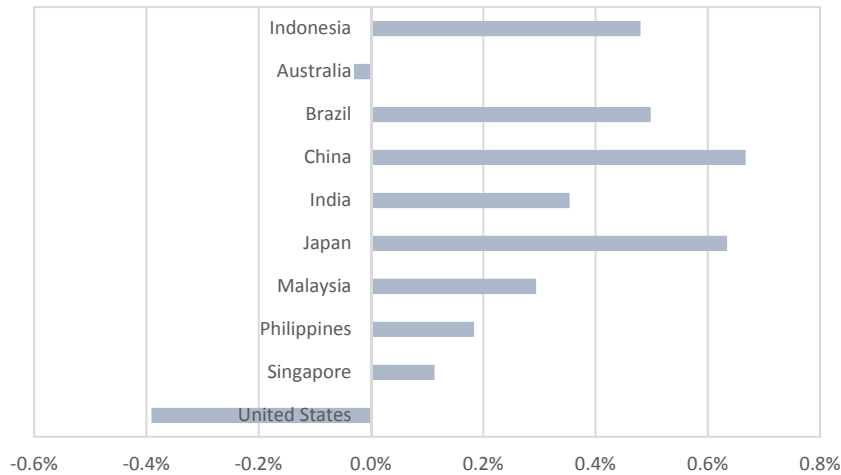


Source: VISES estimates.

The projections are largely driven by the ageing process, in particular the proportion for each country in the 50-64 age group and by the size of the burden of NCDs. This places Indonesia in the mid-range of the comparator countries, and with a loss increasing more rapidly compared with Malaysia and the Philippines. Clearly, the mature economies of Australia, Japan and the United States have significantly

higher losses due to early retirement due to ill health; it is the relatively high rate of increase for Indonesia of 0.5% shown in Figure 5 that is a cause for concern.

**Figure 6 Change in economic cost of early retirement, selected countries, 2015 and 2030**



Source: VISES estimates.

## Conclusions from the Analysis

The high level of burden of disease arising from NCDs indicates that for most of the developing countries, such as Indonesia, included in this study, the economic loss from absenteeism, presenteeism and early retirement due to ill health will by 2030 reach similar levels to that in the developed countries, such as the US, where these conditions are longstanding and their acknowledged importance has led to the development of intervention programs.

While a number of risk factors are in decline in some countries, they are on the rise in others. For instance, the smoking rates remain high in a number of developing countries, such as Indonesia. Overall however, Indonesia may be having some success in managing its disease burden, with the reported rates of burden of diabetes lower in the 2013 burden of disease study compared with the 2010 study (IHME 2016).

It is clear that with time most of the developing and middle income countries will have an increasing proportion of their workforce entering the older age groups where the burden of NCDs is much higher. Of the countries included in this study, Indonesia can expect to have a more rapidly ageing work force. Without greater attention to improved health behaviours, its work force will become less healthy and more subject to absenteeism, presenteeism and early retirement.

Overall, modelling undertaken for this study (summarised in Table 3) has indicated that the economic costs of absenteeism and presenteeism range from 4-6% of GDP by 2030 and 2-4% of GDP for early retirement due to ill health, taking productivity impact to 6-8 % of GDP. Indonesia at 7.2% in 2030 will be

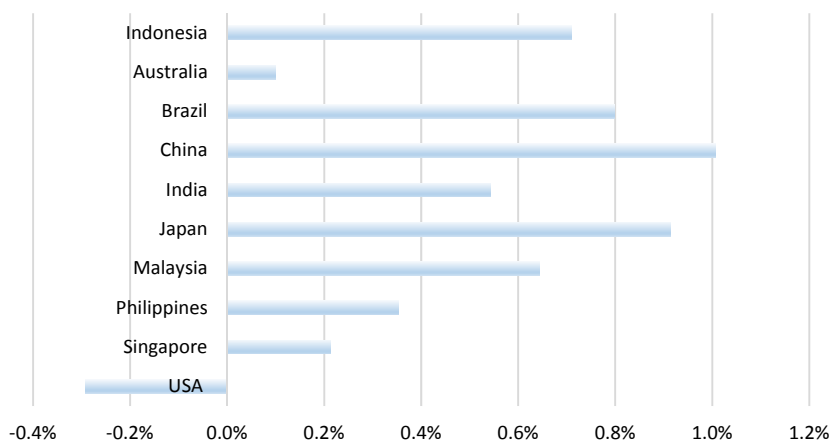
among those countries to have increased most rapidly with an increase of 0.7 percentage points (Figure 6). This is largely due to its more rapidly ageing population moving into older age groups with higher levels of chronic disease.

**Table 3 Total economic impact of absenteeism, presenteeism and early retirement**

	2015			2030		
	Presenteeism & absenteeism	Early retirement	Total	Presenteeism & absenteeism	Early retirement	Total
Indonesia	1.9%	4.6%	6.5%	2.4%	4.8%	7.2%
Australia	3.0%	4.4%	7.4%	2.9%	4.5%	7.5%
Brazil	2.1%	5.1%	7.2%	2.6%	5.4%	8.0%
China	2.1%	3.4%	5.5%	2.8%	3.7%	6.5%
India	2.2%	4.6%	6.8%	2.6%	4.8%	7.4%
Japan	2.9%	3.8%	6.7%	3.5%	4.1%	7.6%
Malaysia	1.7%	4.5%	6.2%	2.0%	4.9%	6.9%
Philippines	2.1%	5.1%	7.1%	2.2%	5.2%	7.5%
Singapore	1.9%	3.3%	5.2%	2.0%	3.4%	5.4%
USA	3.5%	5.0%	8.5%	3.1%	5.1%	8.2%

Source: VISES estimates.

**Figure 7 Change in % GDP total absenteeism + presenteeism + early retirement, 2015-30**



Source: VISES estimates.

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