

# **Cost of Early Retirement Due to Ill Health: Phase II Countries**

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**Report to the APEC Business Advisory Council  
and US Chamber of Commerce**

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## Executive Summary

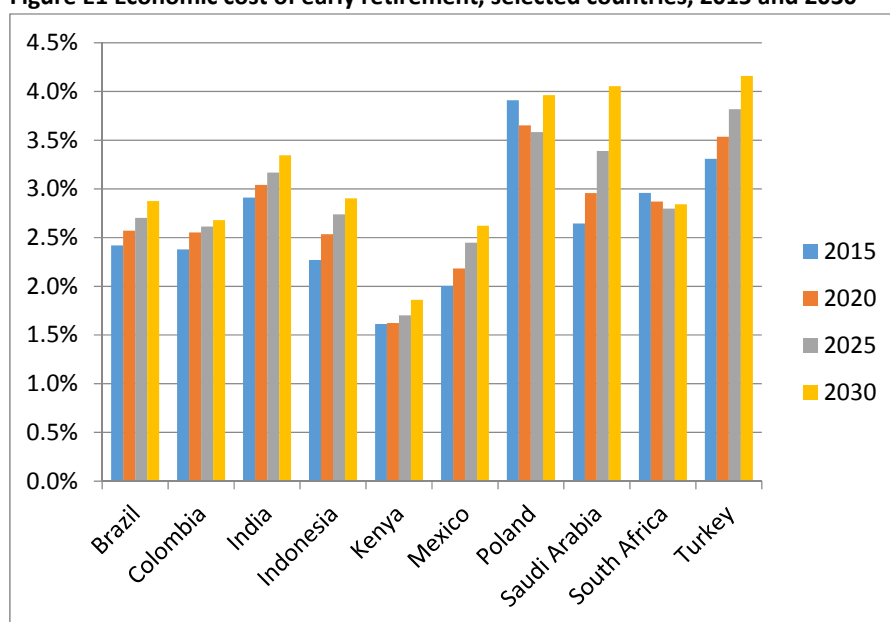
This report provides estimates of the economic cost of early retirement due to ill health for ten selected countries, Brazil, Colombia, India, Indonesia, Kenya, Mexico, Poland, Saudi Arabia, South Africa and Turkey.

The report considers the combined impact of increasing ageing and chronic disease on the ability to work in the years prior to statutory retirement age. The estimated economic costs of this inability to work are estimated to be in the range 2-4% of GDP per annum for this group of countries.

Chronic disease is generally associated with developed countries. The trends in the health risk factors associated with chronic disease are complex across these countries. Some such as BMI are generally rising, while others such as smoking are generally falling. The Global Burden of Disease study provides a comparable and reasonably reliable measure of the impact of chronic and other disease on morbidity. While chronic disease is high in the high income countries of US and Saudi Arabia, it is also high as measured by the Global Burden of Disease study in the developing and middle income countries included in this report, such as Brazil, India and Turkey. Own country estimates for disability are much lower, suggesting that the level of disability identified by the definitions employed by these countries seriously under reports the impact of ill health on those of approaching retirement age.

For the majority the countries covered by this report, the ageing process has resulted in large increases in the proportion of their populations and workforces aged 45 and over. The impact of ill health on the ability of this group to work is a matter of increasing importance. Maximising the productivity of this labour force is becoming a priority. An earlier VISES report in this series for ABAC showed that the economic cost of absenteeism and presenteeism was 4-6% of GDP. This report suggests that there is a further 2-4% of GDP arising from early retirement due to ill health. The details are presented for each country below.

**Figure E1 Economic cost of early retirement, selected countries, 2015 and 2030**



Source: VISES estimates.

Poland currently has the highest economic loss of any of the countries of almost 4% of GDP. It has an above average disease burden and a high proportion of its workforce in the 50-64 age group. Saudi Arabia and Turkey have high disease burdens and adverse demographic trends, which according to these projections indicate that their economic loss will increase from 2.6% and 3.3% respectively in 2015 to over 4% of GDP by 2030.

The results for Brazil and Colombia reflect their lower disease burden and relatively modest ageing process over the period 2015-30. The economic cost for Brazil is expected to increase from 2.4% in 2015 to 2.9% of GDP by 2030 and for Colombia to increase from 2.4% to 2.7% of GDP over the same period.

The results of this report suggest that new models of assistance need to be formulated, which will address the increasing problem of chronic disease, to improve the chances of older workers remaining in the workforce, as well as providing support for those unable to work effectively due to ill health.

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## Introduction

This report provides estimates of the economic costs of early retirement due to ill health for ten selected countries, Brazil, Colombia, India Indonesia, Kenya, Mexico, Poland, Saudi Arabia, South Africa and Turkey. It is an extension of a previous report on the costs of early retirement due to ill health covering Australia, China, Japan, Malaysia, Peru, the Philippines, Singapore and the United States.

This study is in the context of a series of reports which examine aspects of the impact of ill health on productivity. The first VISES report (Sheehan et al. 2014) focused on the impact of absenteeism and presenteeism on productivity in the work place for six APEC economies. That report showed that economic cost of absenteeism and presenteeism was in the region of 4-6% of GDP. A further VISES report, a companion to this report, extends the analysis of absenteeism and presenteeism to a further dozen countries, the same countries as are included in this report, plus Singapore and Japan. It found the economic cost of absenteeism and presenteeism to be in a slightly broader band from 3.5% to 6.7% of GDP.

In summary the four reports for the two topics cover the following countries in the two phases as set out in Table 1.

**Table 1 Summary of reports, topics and countries**

Topic	Phase I countries	Phase II countries
<b>Absenteeism and Presenteeism</b>	Australia, China, Malaysia, Peru, the Philippines and the United States	Brazil, Colombia, India, Indonesia, Japan, Kenya, Mexico, Poland, Saudi Arabia, Singapore, South Africa and Turkey
<b>Early Retirement</b>	Australia, China, Japan, Malaysia, Peru, the Philippines, Singapore and the United States	Brazil, Colombia, India, Indonesia, Kenya, Mexico, Poland, Saudi Arabia, South Africa and Turkey

Together these reports cover much of the economic impact of poor health on productivity. This report examines the prevalence of disability due to poor health which impairs the ability of people, as they age, to continue to work. The illnesses are largely the same chronic conditions which reduce productivity due to absenteeism and presenteeism. So the same risk factors, such as smoking and obesity, discussed in the earlier reports are relevant to the problem addressed here.

Together with the earlier report, our several studies now address the impact on productivity of:

- (i) Premature death.
- (ii) Morbidity which leads to lower productivity (absenteeism and presenteeism) of those still able to work.
- (iii) Morbidity which leads to early retirement (this report).

These are mutually exclusive effects, so the economic costs identified in this report of 2-4% of GDP can be added those estimated in the earlier report. The total potential impact of the two is in the range of 6-11% of GDP.

The economic costs in (iii) are those arising from lost productive capacity due to the lower participation rates of the older age groups, as those impaired to varying degrees are limited in their ability to work.

Early retirement due to ill health arises mostly from chronic conditions, such as often untreatable musculoskeletal and circulatory system disorders, and their high incidence is of particular concern. While these trends have been apparent in developed countries for some time, they are emerging problems for developing countries. Developed countries, such as Australia and the United States, have developed comprehensive retirement and disability support systems. These support systems are much less comprehensive in developing countries. Those that have, tend to be narrow in their coverage and provide only low level support benefits (Park 2012). Provision for retirement and long-term ill health remains predominately a private or family cost and often a prescription for descent into serious poverty.

## Context for the Study

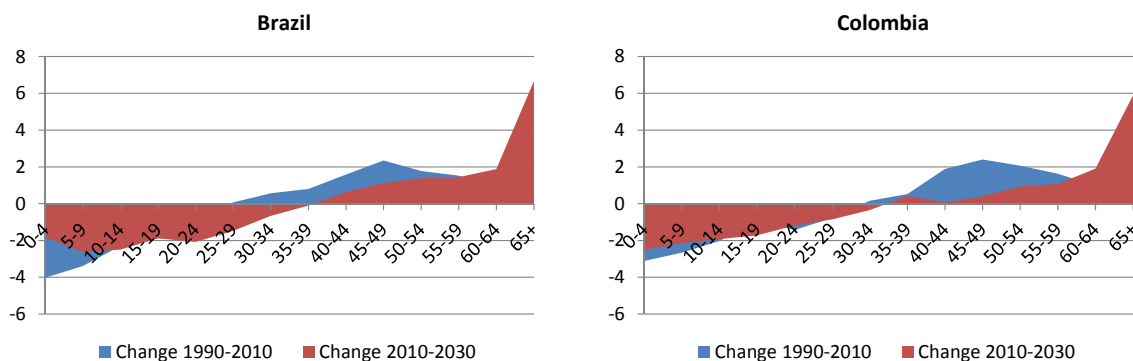
### Population trends

The combined effect of an ageing population and the high overall prevalence of a range of chronic diseases for most of the countries surveyed in this study are having an adverse impact on labour supply. For many countries, conserving labour by extending working lives and improving worker health status has become an important economic priority.

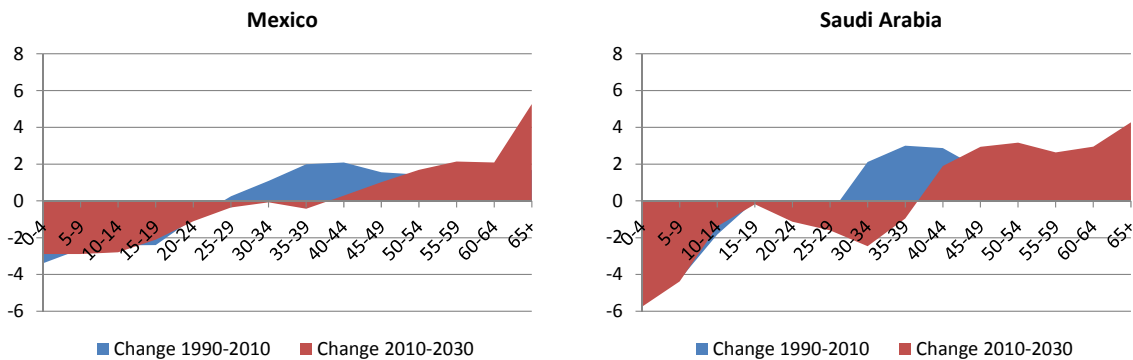
Figure 1 illustrates the rapid transition in the age of the population of some of our selected countries. Although less advanced than some countries, such as China and Japan, common to each of the countries is the pronounced shift in population to the older age groups. The ageing process is evident for Brazil and other Latin American countries from 1990. In the period 1990 to 2010, there was a sizable increase in the population aged 35 to 55. In the second period, this population bulge will age further causing an increase in the population aged over 50. These are the years when chronic disease becomes more prevalent, with as we will see, serious implications for the ability to work.

The position for Saudi Arabia is potentially quite critical. There was a sharp increase in those aged 30 to 45 between 1990 and 2010. This cohort is projected in the period 2010 to 2030 to swell the numbers aged over 50. This is accompanied by a quite significant reduction in those under 10.

**Figure 1 Measures of the extent and timing of population ageing, four selected countries, 1990-2010 and 2010-30 (projected), change in share of population in individual age groups (percentage points)**



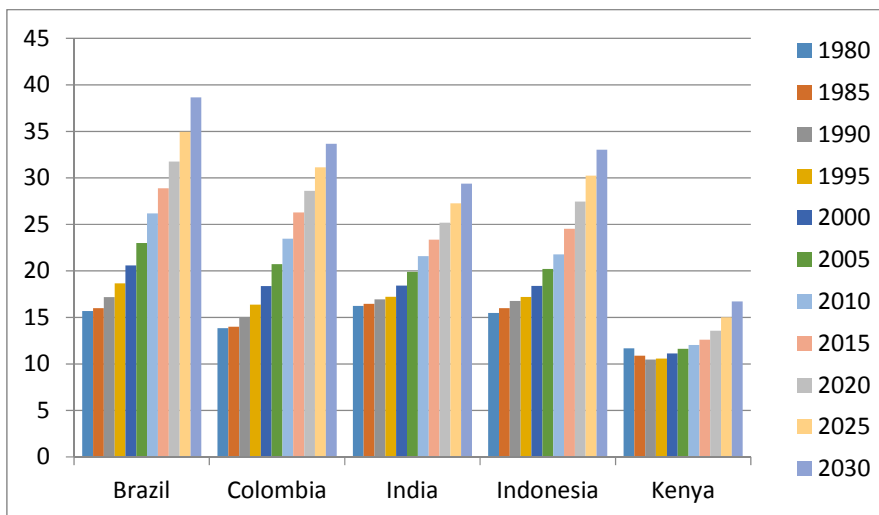




Source: VISES analysis of data from United Nations (2014).

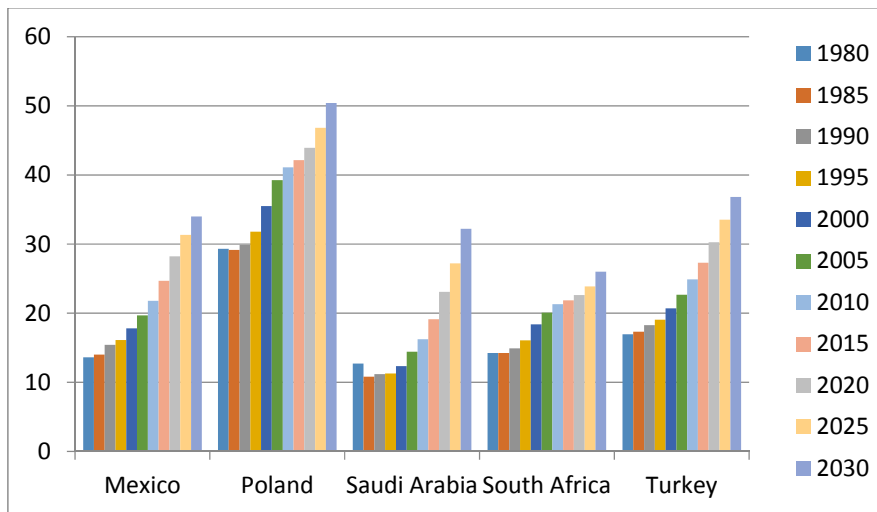
Figures 2a and 2b provide a historical and projected picture of the aging process in the selected countries by focussing on the proportion of the population aged over 45. Some countries, such as Poland, were already old at the beginning of the period and are projected to become increasingly so, reaching 50% by 2030. Some countries such as Brazil have aged rapidly in the period 1980 to the present. The proportion over 45 has increased for Brazil for 15% in 1980 to almost 30% in 2015. Saudi Arabia, on the other hand, is projected to do most its ageing between 2015 and 2030, when the proportion aged over 45 is expected to increase from 19% to 32%. Finally Kenya is an example of country that has aged very little. In the period 1980 to 2015 the proportion over 45 began as the lowest of the group of countries at 11.7% and increased to only 12.6%. It is expected to increase by 4% to 16.7% by 2030, still the lowest of this group of countries.

Figure 2a Proportion of the population aged over 45, 1980 to 2030



Source: United Nations (2014).

**Figure 2b Proportion of the population aged over 45, 1980 to 2030**



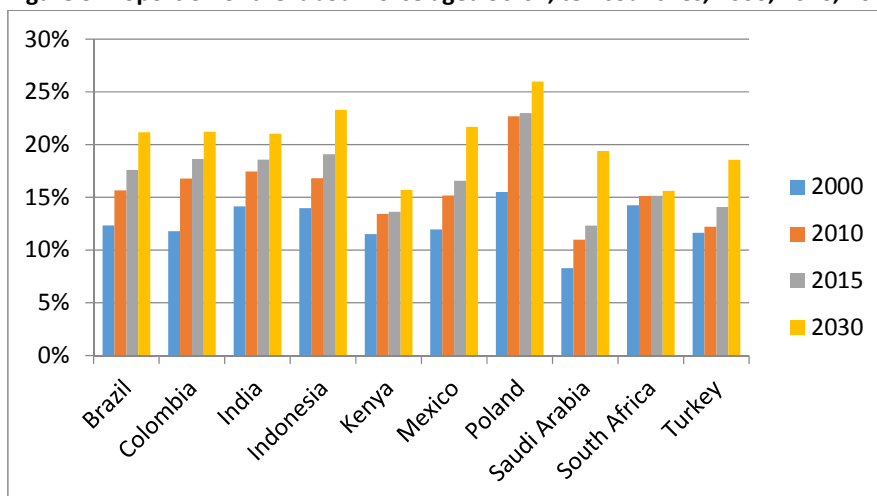
Source: United Nations (2014).

### Implications for labour supply

The population shifts discussed above, which showed increases in those aged over 45, has significant implications for the costs of early retirement.

Figure 3 focuses on the preretirement 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). The pattern for the Latin American countries is similar. Each will have over 20% of its workforce aged 50-64 by 2030. The increase for Mexico is notably high at 5% between 2015 and 2030. The increase for Brazil is 3.6% and 0.6% for Colombia. The largest increase is for Saudi Arabia, where the proportion of the work force aged 50-64 will increase from 12.3% in 2015 to 19.4% by 2030.

**Figure 3 Proportion of the labour force aged 50-64, ten countries, 2000, 2010, 2015 and 2030 (projected)**



Source: ILO (2015).

## Trends in risk factors

Certain risk factors increase the probability that a person will develop non-communicable diseases (NCDs), such as cardiovascular disease and cancer. The major risk factors include smoking tobacco, an inadequate diet, physical inactivity, high blood pressure (hypertension), high levels of cholesterol, being overweight and being diabetic. Trends in these risk factors can provide some insight into the prevalence of major disease.

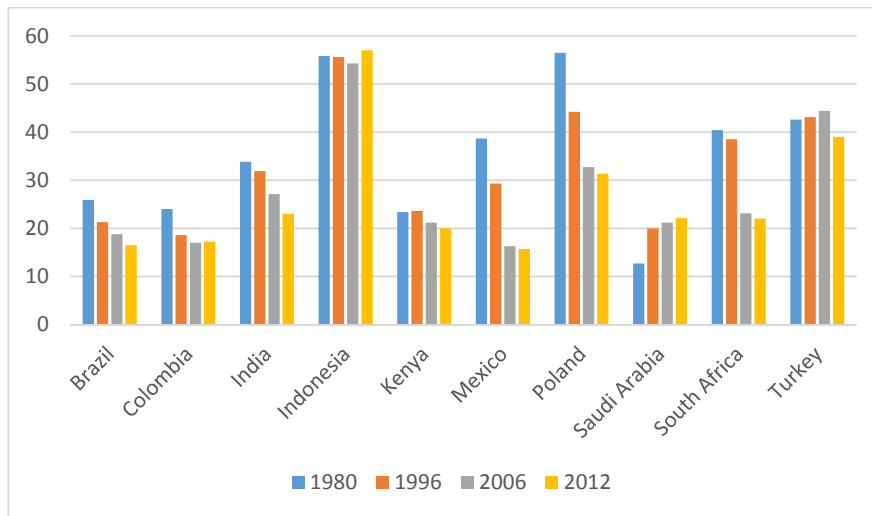
Information on risk factors is patchy, particularly for developing countries, with the most common source being periodic national health surveys and one-off epidemiological studies. However, a number of researchers have attempted to provide as much information as possible on trends in the major risk factors. A number of articles in *The Lancet* in 2011 presented estimates for the years 1980, 1990, 2000 and 2008 of trends in systolic blood pressure (Danaei et al. 2011a), serum total cholesterol (Farzadfar et al. 2011), body mass index (Finucane et al. 2011), and fasting plasma glucose and diabetes (Danaei et al. 2011b). More recently Ng et al. (2014) have estimated smoking prevalence for the years 1980, 1996, 2006 and 2012. Given the data issues discussed above, these figures must be regarded as the best estimate possible by analysing the available data sets, rather than in any sense definitive figures, but we provide below a review of the findings of these and related studies.

The following analysis of risk factors presents the factors for both sexes except where the patterns are similar, in which case the risk factors for males are presented. In most cases, the risk factors for males are above those for women.

### *Smoking*

Smoking rates remain high, especially for men, in many developing countries, and especially in Asia of which Indonesia is a notable example. Figure 4a shows that, in terms of male smoking behaviour, there is great diversity across the selected countries. Indonesia has an extremely high male smoking rate of 57% in 2008 with no sign of any decline. Turkey also has a persistently high rate of about 40% for the period, although the 2008 rate of 39% was somewhat lower than earlier years. The rate in Poland, which in 1980 was one of the highest of the group, has fallen from 56% in 1980 to 30% in 2008. Except for Saudi Arabia, the rates for other countries in the group are declining, particularly so for Poland, Mexico and South Africa. Smoking rates for Brazil and Colombia are at modest levels.

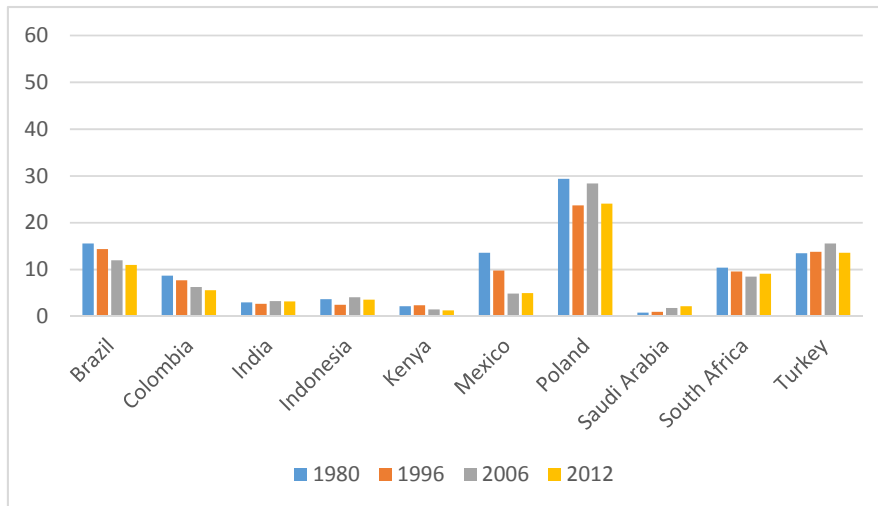
**Figure 4a Smoking rates, males, per cent of population, ten countries, 1980 to 2012**



Source: Ng et al. (2014).

Female smoking rates are significantly lower than their male counterparts in most countries, although the rate for Poland is stubbornly high but lower than the male rate, which as noted above, has declined substantially over the period 1980 to 2012. Female smoking rates for Brazil and Turkey are also relatively high.

**Figure 4b Smoking rates, females, per cent of population, ten countries, 1980 to 2012**

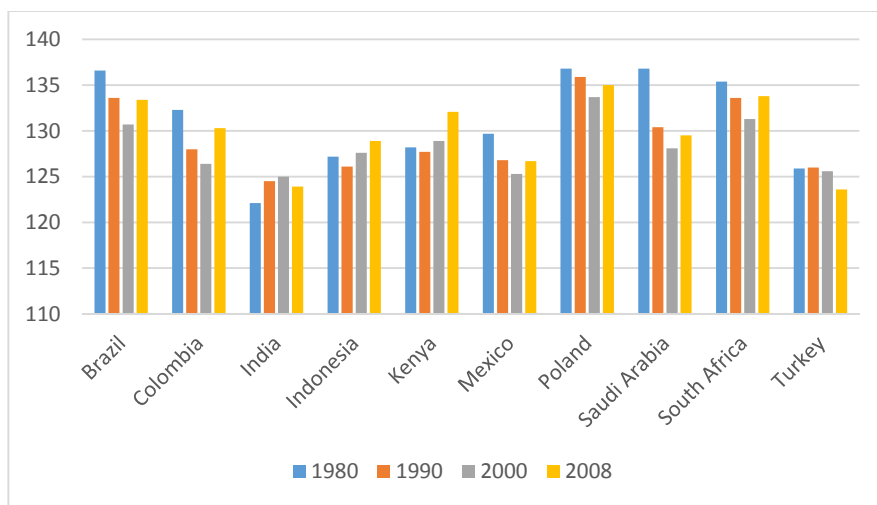


Source: Ng et al. (2014).

*Systolic blood pressure*

High blood pressure or hypertension is an important risk factor for various forms of cardiovascular disease. High blood pressure can be treated by various forms of medication, and the levels reported in the studies are normally actual blood pressure after the effects of any treatment. Figure 5 shows that age-standardised mean systolic blood pressure (SBP in mm Hg) for males is high for Brazil, Poland and South Africa. Further, there is little sign of the consistent fall in blood pressure levels evident in advanced countries, such as Australia and the United States where levels were high but have declined substantially over the past 30 years. Much of this fall is likely to be from the effect of treatment rather than from improvement in the underlying cardiovascular condition.

**Figure 5 Mean systolic blood pressure rates, males, ten countries, 1980 to 2008 (SBP in mm Hg)**

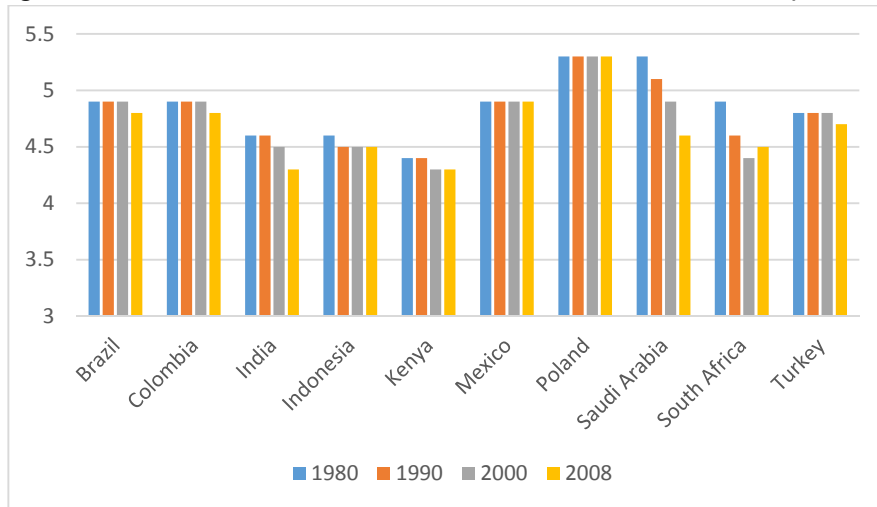


Source: Danaei et al. (2011a).

*Cholesterol*

As with high blood pressure, serum total cholesterol (TC) (reported in Figure 6 in mmol/L) is another risk factor for cardiovascular disease. With exception of Poland, cholesterol levels for this group of countries are relatively modest. The TC rate for Saudi Arabia was high, but has fallen significantly over the period.

**Figure 6 Mean total cholesterol rates, males, ten countries, 1980 to 2008 (mmol/L)**



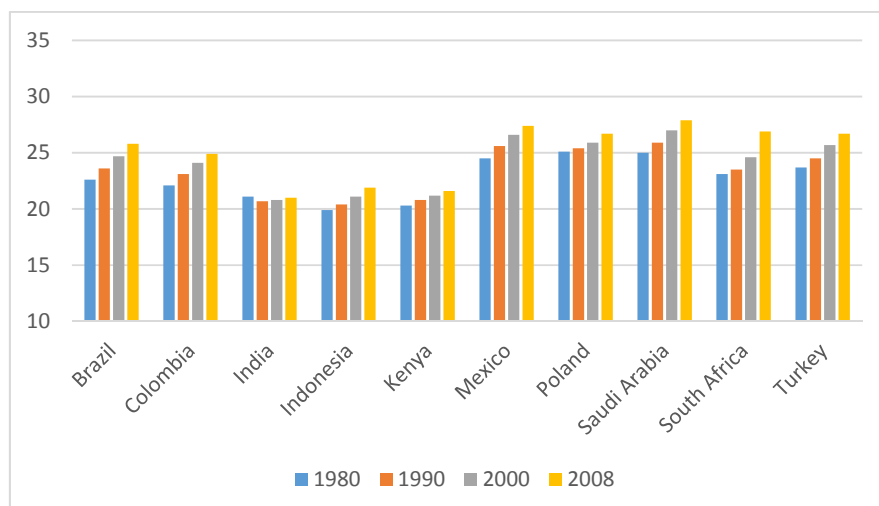
Source: Farzadfar et al. (2011).

### Body mass index

Being overweight and obese is an important risk factor for many (NCDs). The widely used measure is the body mass index (BMI), which is defined as a person's weight in kilograms divided by the square of their height in metres. Overweight is defined as values greater than 25 kg/m<sup>2</sup>, while obesity is defined as greater than 30 kg/m<sup>2</sup>.

BMI for males (Figure 7a) has increased in all countries, and on average those in Mexico, Poland, South Africa and Turkey would be considered overweight. Brazil at 25.8 and Colombia at 24.9 are now both entering this territory. India, Indonesia and Kenya remain below these levels, although they are rising in both Kenya and Indonesia.

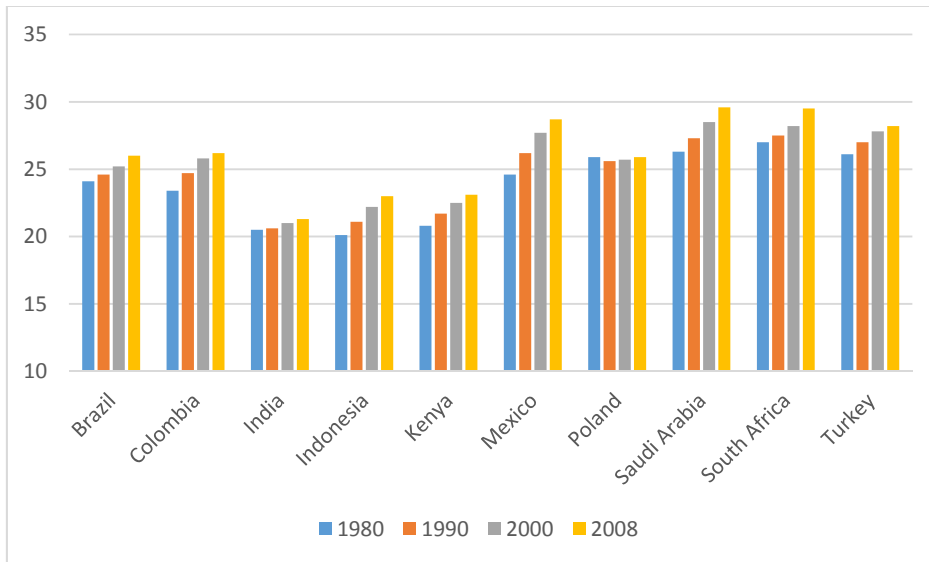
**Figure 7a Mean BMI, males, kg/m<sup>2</sup>, ten countries, 1980 to 2008**



Source: Finucane et al. (2011).

The BMI levels for females are significantly higher for a number of countries in this group. Average BMI levels for Mexico, Saudi Arabia and Turkey are approaching 30 indicating that a high proportion of the female population of those countries are obese. Average female BMI levels for Brazil and Colombia are increasing rapidly, and in 2008 were at similar levels to males at about 25. This means that a high proportion of females are overweight.

**Figure 7b Mean BMI, females, kg/m<sup>2</sup>, ten countries, 1980 to 2008**



Source: Finucane et al. (2011)

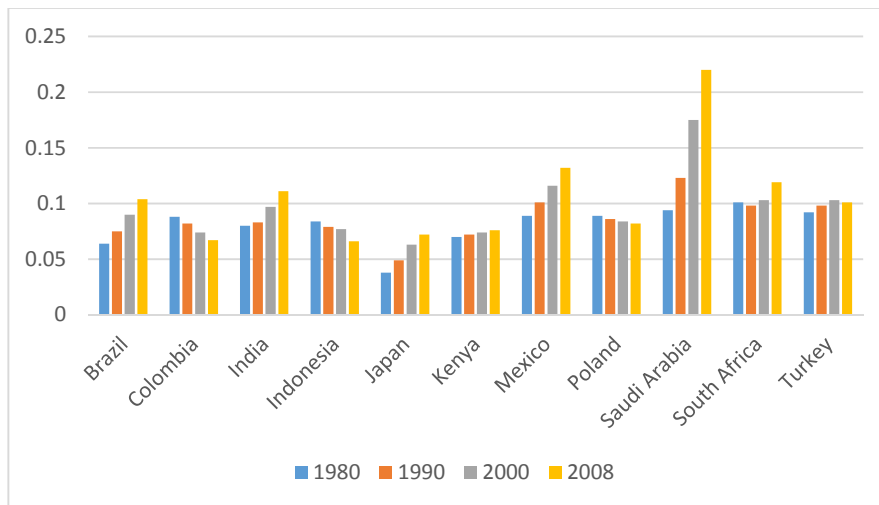
### Diabetes

The final risk factor to be discussed is diabetes, which is both a disease in itself and an important risk factor for many other NCDs. As with hypertension, the measure of diabetes prevalence normally includes diabetes which is treated and controlled, as well as that which is not diagnosed or, if diagnosed, is not controlled by appropriate treatment.

For instance in Australia and the USA, a substantial proportion of the diagnosed level of diabetes is controlled, but it is known that in some developing countries, only a modest proportion of actual diabetes is diagnosed and only part of that is controlled.

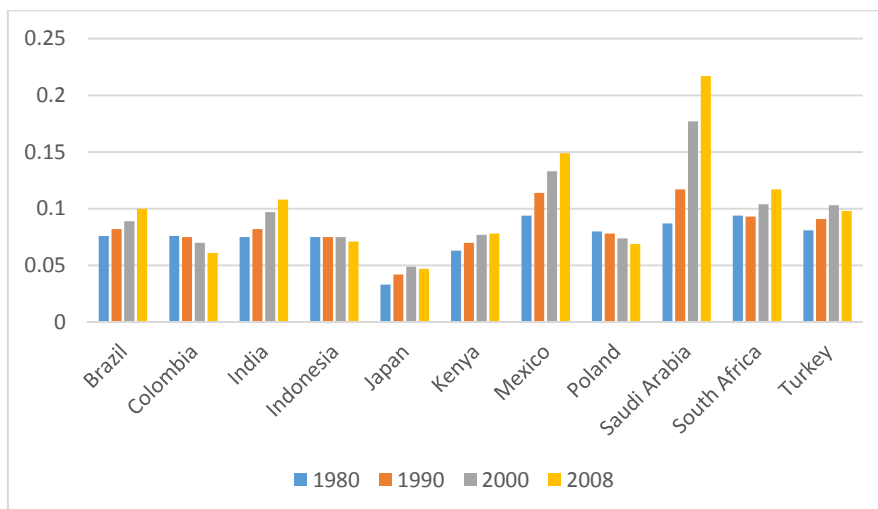
Figures 8a and 8b show that diabetes levels in Saudi Arabia are extraordinarily high and increasing for both males and females with prevalence rates exceeding 20%. Prevalence in Mexico is also high at 13% for males and 15% for females and trending upwards. Prevalence rates are increasing in most other countries but they are at or below 10%.

**Figure 8a Diabetes prevalence, males, per cent of population, ten countries, 1980 to 2008**



Source: Danaei et al. (2011b).

**Figure 8b Diabetes prevalence, females, per cent of population, ten countries, 1980 to 2008**



Source: Danaei et al. (2011b)

### Burden of disease

The risk factors discussed above have a direct bearing on the burden of disease, particularly for chronic conditions. NCDs are generally associated with developed countries. However, a recent paper by Bollyky et al. (2015) not only established that an increase in risk factors, such as obesity and smoking, had a statistically significant effect on adult mortality from NCDs, but also examined the relationship between economic development and NCDs. Their analysis demonstrated that low access to NCD prevention strategies in poorer countries resulted in such countries carrying a higher burden from NCDs than implied by their level of development.

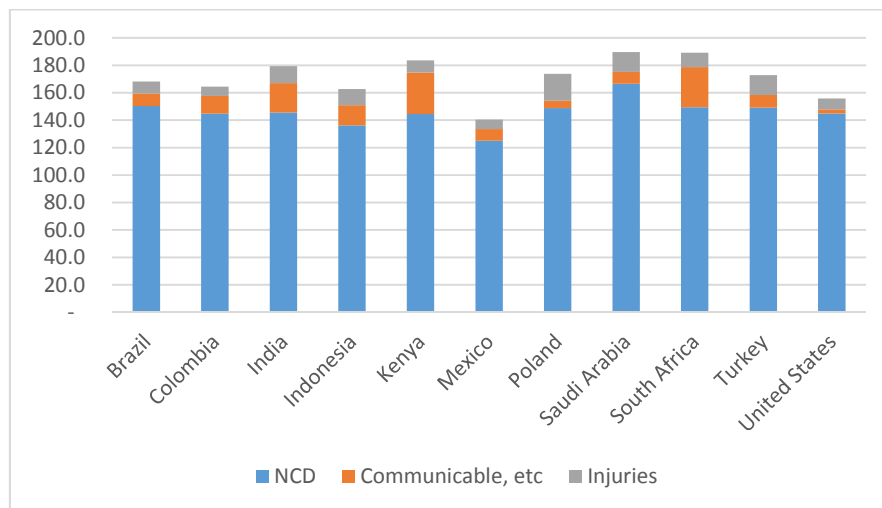


The WHO global burden of disease study (Murray et al. 2015) estimates both prevalence and severity of disease. It uses the number of years lived with disability as an indicator of the impact of morbidity arising from disease. Firstly, they estimate the prevalence of each sequela from a range of data sources, and then weight each of these by a disability factor, which is a relative estimate of the severity of each sequela. The prevalence is multiplied by the disability weight to arrive at the study's indicator of morbidity, the number of years lived with disability (YLDs) for each sequela. These are then all sequela to provide an overall measure of disability from disease measured in YLDs.<sup>1</sup> The results are grouped in three broad sequelae: communicable, maternal, perinatal and nutritional conditions, non-communicable diseases (NCDs) and injuries.

Figure 9 shows the burden of disease for the ten countries for those in their preretirement years, aged 50-65. The United States, which is generally associated with high levels of chronic disease, has been added for comparison purposes. The chart shows that the burden of disease, as measured by YLDs, is highest for Saudi Arabia, largely as a result of the high burden of NCDs. Total DALYs are 190 of which 167 are due to NCDs with diabetes contributing a disproportionately high share. South Africa, Kenya and India each suffer from high burden of disease but the point of difference is a high burden of communicable diseases.

With the exception of Mexico, all countries have high levels of burden arising from NCDs. Six countries have NCD DALYs in excess of the level for United States – Brazil, India, Poland, South Africa, Turkey and Saudi Arabia as noted above. This demonstrates that NCDs are an even greater burden for low and middle income countries as for high income countries as the United States.

**Figure 9 Burden of disease by cause (YLDs) of those aged 50-64, selected countries and United States, 2010**



Source: IHME (2015).

<sup>1</sup> See <http://issuu.com/ihme/docs/generatingevidenceguidingpolicy/9?e=2626063/7448030>

## 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 developed countries. Those operated by the US and Australia, which cost respectively about 1% and 1.5% of GDP compared with some European countries which spend 4-5% of GDP on such schemes, are by no means particularly generous by developed country standards (OECD 2010, p. 10). The differences in the treatment of the disabled between developed and developing countries reflects different attitudes to disability and as a consequence very different definitions of disability.

## Definitions of Disability and their Estimates

As outlined in the WHO report, *World Report on Disability*, disability is a 'complex dynamic, multidimensional and contested' concept (WHO and World Bank 2011, p. 3) which refers to difficulties in functioning due to impairments, activity limitations and participation restrictions. Thus in addition to health conditions, other personal and environmental factors have a bearing on disability (p. 5). Attempts to measure the prevalence of disability and to define it for pension purposes have reflected different aspects of these factors. In particular, developing countries have focused on a narrow choice of impairments, while developed countries tend to have a wider definition, which includes limitations and participation restrictions (p. 23). This means that country reported disability prevalence estimates from developing countries tend to have a downward bias compared with those from developed countries.

There are two global estimates of disability referred to by the *World Report on Disability*:

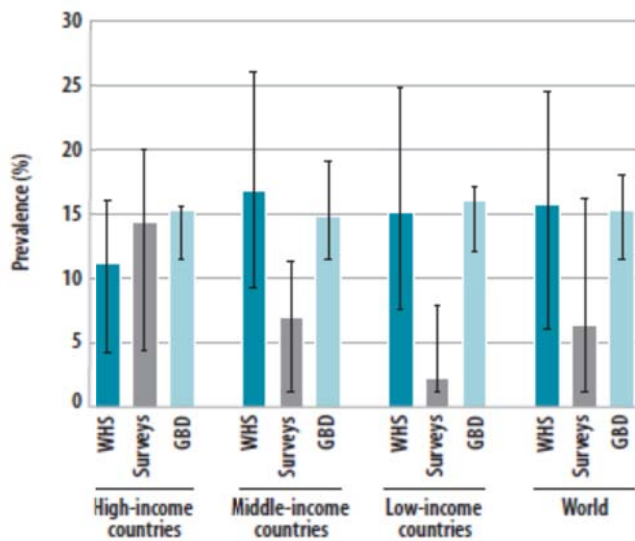
- WHO World Health Survey (WHS),<sup>2</sup> which includes questions about the difficulties in functioning; and
- WHO Global Burden of Disease (GBD) study, which focusses on health conditions and impairments as determinants of disability. The GBD study has given great attention to comparability of estimates across countries, although its estimates are subject to the usual limitations of poor data quality (Murray et al. 2015).

Figure 10 below compares the global prevalence estimates from the WHS, the GBD and the averages of country surveys (in grey). The comparison shows that the GBD and WHS estimates are comparable for both middle and low income countries. However, the estimates derived from country surveys, which tend to use narrower definitions of disability, are much lower for developing countries than the WHS and the GBD based estimates.

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<sup>2</sup> <http://www.who.int/healthinfo/survey/en/>

**Figure 10 Global disability prevalence estimates from different sources**



Notes: This figure compares the population-weighted average prevalence of disability for high-income, middle-income, and low-income countries from multiple sources. The solid grey bars show the average prevalence based on available data, the range lines indicate the 10<sup>th</sup> and 90<sup>th</sup> percentiles for available country prevalence within each income group. The data used for this figure are not age standardized and cannot be directly compared with Table 2.1 and Table 2.3 of WHO World Report on Disability (2011).

WHS = World Health Survey.

Surveys = Technical Appendix A, WHO 2011.

GBD = Global Burden of Disease, 2004 update.

Source: WHO and World Bank (2011, p. 31, Fig. 2.1).

There are, however, conceptual differences between the WHO global burden of disease estimates of disability and those measured by the World Health Survey and own country surveys. These differences are discussed in Mont (2007) and Grosse et al. (2009). Despite their differences, the disability surveys all seek to measure the disability or degree of disability experienced by an individual. The result for the country is the prevalence of those individuals measured as having a disability.

As indicated above, the global burden of disease study estimates the severity of morbidity following an assessment of disability imposed by a particular disease sequela. Each sequela is given a disability weight reflecting the severity of the disease. The burden of a disease for a community is the prevalence of that disease multiplied by its disability weight.

Accordingly, while the global burden of disease is the most comprehensive measure of disease burden, it is not directly comparable with the disability surveys.

Table 2 shows the prevalence estimates provided by the WHS, and other country sources (censuses and surveys)

**Table 2 Disability prevalence estimates from different sources, selected countries, various years**

Country	WHS	Country census	Other country survey
Brazil	18.9	14.9	1.8
Colombia	-	6.4	5.6
India	24.9	2.1	1.7
Indonesia	-	-	21.3
Kenya	15.2	0.7	-
Mexico	7.5	1.8	8.8
Poland	-	14.3	-
Saudi Arabia	-	4.5	-
South Africa	24.2	5.0	5.9
Turkey	20.6	-	12.3
United States		19.3	14.9

Notes: (a) WHS results are weighted and age standardized.

Source: WHO and World Bank 2011, Geneva, Technical Appendix A, pp. 271-275, at [http://www.who.int/disabilities/world\\_report/2011/en/](http://www.who.int/disabilities/world_report/2011/en/)

The country surveys presented in Table 2 show large differences between countries and between within country sources. The WHS prevalence of disability estimates, which are perhaps the most reliable show much higher estimates for South Africa, India, Kenya and Turkey than the country census or other survey. The own country estimates of 1-5%, are a fraction of the WHS survey estimates. This suggests that a narrow definition of disability is being adopted in these developing countries. Some differences are large within countries because of the different definitions used.

Unfortunately, the WHS results are not available for all countries. The results from country censuses and other surveys provide a widely different picture. The inconsistencies suggest that different definitions of disability are as much the reason for the different results, as differences in prevalence.

The results of the 2010 Global Burden of Disease study shown earlier in Figure 9, which provides internally consistent and comparable disability indicators, demonstrates that most countries have a burden of disease, at least comparable level to the US. This suggests that if a consistent definition of disability was applied across the region, the prevalence measures for most countries would exceed the US level.

### The Economic Loss Due to Early Retirement

These results suggest that disability is underreported by the conventional survey methods in a number of developing countries. This means that these countries are suffering economic loss because people experiencing various levels of disability are retiring before the usual retirement age. 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,

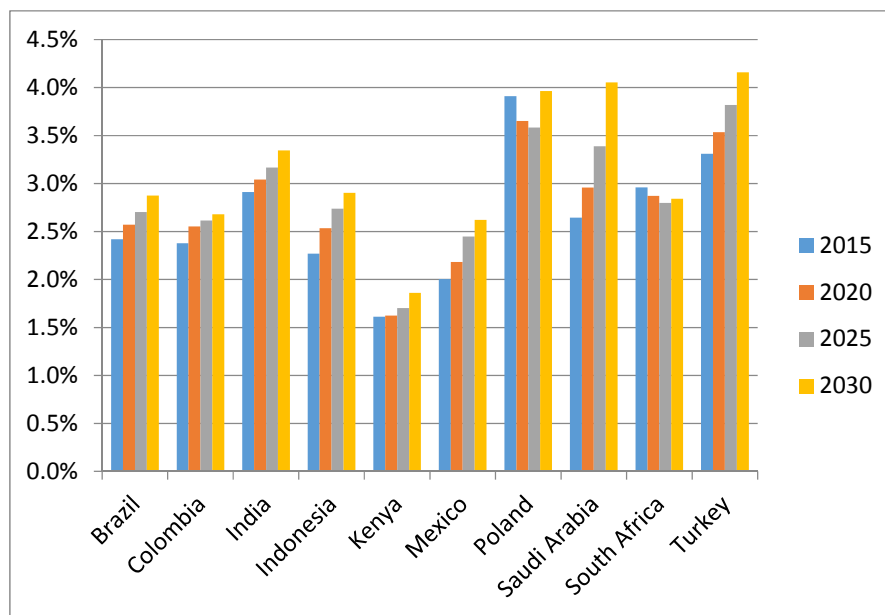
the key parameters seem to be similar. In addition, we have obtained unpublished data about Australian disability pension recipients.

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 economy. 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 (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 using the UN population projections for each economy for those aged 50-64. The results are shown for 2015 through to 2030 in Figure 11. 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 11 Economic cost of early retirement, selected countries, 2015 and 2030**



Source: VISES estimates.

The projections are largely driven by the ageing process, and in particular the proportion for each country in the 50-64 age group. For instance, Poland, currently has the highest economic loss of any of the countries of almost 4% of GDP. As has been noted through this report, Poland has an above average disease burden and a high proportion of its population in the 50-64 age group. Saudi Arabia and Turkey have high disease burdens and adverse demographic trends, which according to these projections indicate that their economic loss would increase to over 4% of GDP by 2030.

**Table 3 Economic cost of early retirement, selected countries, 2015 and 2030**

	2015	2020	2025	2030
Brazil	2.4%	2.6%	2.7%	2.9%
Colombia	2.4%	2.6%	2.6%	2.7%
India	2.9%	3.0%	3.2%	3.3%
Indonesia	2.3%	2.5%	2.7%	2.9%
Kenya	1.6%	1.6%	1.7%	1.9%
Mexico	2.0%	2.2%	2.4%	2.6%
Poland	3.9%	3.7%	3.6%	4.0%
Saudi Arabia	2.6%	3.0%	3.4%	4.1%
South Africa	3.0%	2.9%	2.8%	2.8%
Turkey	3.3%	3.5%	3.8%	4.2%

The results for Brazil and Colombia reflect their lower age disease burdens and relatively modest projected ageing process compared with Saudi Arabia. The economic cost for Brazil is expected to increase from 2.4% to 2.9% of GDP from 2015 to 2030 and for Colombia to increase from 2.4% to 2.7% of GDP over the same period.

### Conclusions from the Analysis

The high level of burden of disease arising from NCDs indicates that for most of the developing countries included in this study, chronic disease is at least as great a health problem for these countries as for the developed countries, such as the US and Australia, 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 decline in smoking rates has stalled in a number of developing countries. Obesity rates are increasing for all countries. Diabetes is also on the increase, particularly in Saudi Arabia. Cholesterol rates are falling for most countries.

While from this complex map of health risk trends across the region it is difficult to project overall future prevalence rates, what is clear is that with time most of the developing and middle income countries will have an increasing proportion of their workforce in the older age groups with consequent health impacts. Without greater attention to improved health behaviours, the work forces of these countries will become less healthy and more subject to absenteeism, presenteeism and early retirement.

This report has demonstrated that the disability arising from chronic and other health conditions is significantly underreported in a number of APEC developing countries. When allowance is made for this underreporting, it is clear that chronic disease is imposing significant economic and social costs. Modelling undertaken for this study has indicated that the economic costs of early retirement due to ill health are of the order 1.5-4% of GDP.

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## Appendix A: Outline of Disability and Retirement Arrangements

### Disability in Developed Countries

In OECD countries, about 6% of the working age population is dependent on disability pensions, and public spending on disability benefits total 2% of GDP on average and as much as 4-5% for some countries such as Norway, Sweden and the Netherlands (OECD 2010, p. 10). Expenditure is particularly high for those aged 50-64, with those on benefits averaging 10-15% across OECD countries. Sickness benefit is frequently the precursor to receiving disability benefits, and once these are received the likelihood of returning to the workforce are close to nil (p. 67).

Mental health problems are the single biggest cause of disability benefit claim in most OECD countries (OECD 2010, p. 63). The OECD suggests that this reflects a more demanding, deregulated and less secure labour market, including shorter term contracts and increasing casualisation. In these circumstances, those suffering ill health are more easily marginalised and find re-entry to the labour force more difficult in the more competitive labour market environment.

Our more detailed work for Australia, suggests that while mental health is a large reason for being on a disability pension, this is not a condition that causes those post age 50 to retire early. The overwhelming reason for accessing disability benefits in this older age group are chronic diseases of which musculoskeletal disorders are by far the most important. Studies of Canada and the US have confirmed these disease patterns (WHO & World Bank 2011, p. 33).

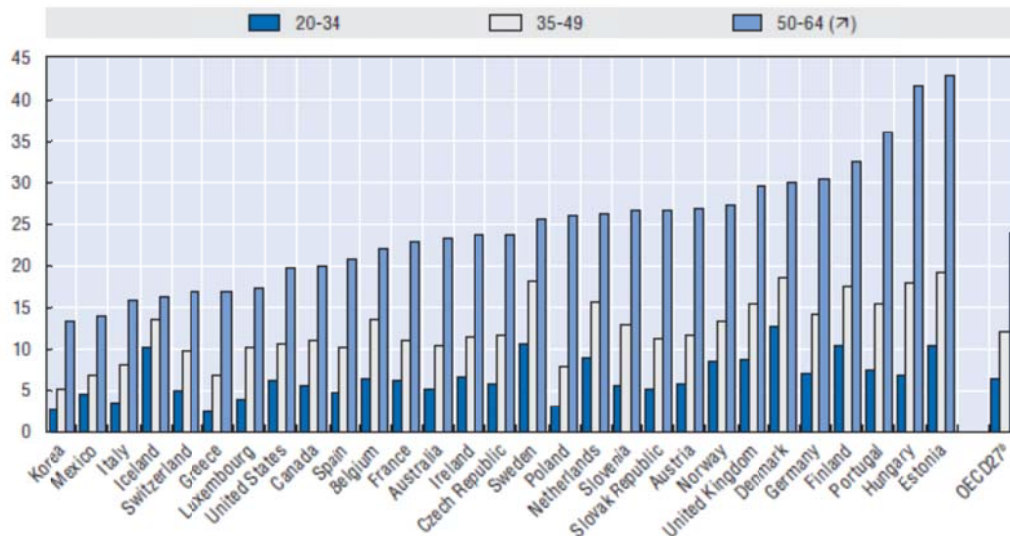
The OECD argues that population ageing is one good reason for increasing efforts to return those on disability pensions to work. OECD modelling (2010, p. 24) shows the impact of interventions to:

1. Increase labour force participation rates of those with disability to those without disability by 2050.
2. Defer retirement of older workers whereby the retirement age of the older cohort is assumed to fall to that of the younger cohort by 2050, i.e. the participation rate for those aged 60-64 is assumed to increase to that of the 50-59 age group by 2050.

For some OECD countries, the impact on the labour force of increasing participation rates for the disabled as proposed in 1 above, has a similar impact on labour supply as the delayed retirement option proposed in 2 above.

Disability prevalence is substantially higher for older age groups. Those aged 50-64 are about twice as likely to be disabled as those aged 35-49 (OECD 2010, p. 37).

**Figure A1 Disability prevalence increases sharply with age which is critical in view of population ageing, self-assessed disability prevalence, as a percentage of the population, by age group, late-2000s**



Notes: a) See definitions of self-assessed disability in OECD (2010, Figure 1.1).  
 b) OECD 27 refers to an unweighted average for 27 countries. Estonia and Slovenia are not included in the OECD average.  
 Source: OECD (2010, Figure 1.9, p. 37).

On average OECD countries spend 1.2% of GDP on disability benefits (2% if sickness benefits are included), almost 3 times the amount typically spent on unemployment benefits.

### Disability in Developing Countries

As indicated in Table 2, disability in developing countries appears to be at least as high, if not higher, than developed countries according to the only comparable data, with a consistent definition provided by the Global Burden of Disease study. As discussed, developing economies in the APEC region tend to have narrow definitions of disability based on level of impairment rather than levels of functioning. In the Philippines for instance, disability is defined in terms of blindness, deafness, severe mental problems and missing limbs. This compares with the ‘functioning’ approach adopted by developed countries as discussed above.

These data difficulties complicate comparing countries using quite different definitional frameworks. If however, we adopt the Global Burden of Disease estimates as being both authoritative and consistent, there is a large gap between those in receipt of disability pensions.

While there are significant differences between developing countries with respect to their support for those disabled in the preretirement period, they are all less generous than those of developed countries

## Outline of Arrangements in the Ten Selected Countries

### *Brazil*

The Brazilian pension system is structured in three pillars:

- a public, mandatory, pay-as-you-go (PAYG) system known as General Social Security Regime (RGPS);
- the Pension Regimes for Government Workers (RPPS); and
- the Private Pension Regime (RPC) – Occupational and Individual plans.

### Social assistance

There is a benefit for those who do not qualify for a retirement benefit. The BPC-LOAS was created to assist disabled people whose household income per capita is under one-quarter of the minimum wage (floor) or old-age people (65 years old and over, both male and female). They receive the amount equal to the minimum wage and their conditions are revised every two years. This benefit is exclusive: beneficiaries cannot receive any another non-contributory benefit from the government. The logistics is made by the INSS (medical certification and means-test), but the responsibility for the benefit is given to the Ministry of Social Development and Fight Against Hunger (MDS) (OECD 2013).

The OECD estimates that Brazil's public social expenditure was 16.7% of GDP in 2010. The old age pension represented 9.6%, health 4.2% and other social expenditure 2.8%. The health system is also public, free and of universal access (OECD 2014).

However, the ILO estimates that Public Social Protection Expenditure in Brazil was 21.3% of GDP in 2011, with non-health expenditure accounting for 15.5% of GDP (ILO 2014).

One measure from the World Bank indicated that the prevalence of disability in Brazil was 14.5% of GDP in 2000 (Mont 2007).

### *Colombia*

Income insecurity among Colombia's elderly is high compared to OECD countries, resulting in very low levels of well-being. Less than 40% of Colombians have a pension and half of the elderly live below the poverty line. This reflects low coverage of the pension system, especially for women and lower-skilled workers, and the lack of other income support for the elderly. Only formal sector workers have been able to contribute to the pension system. Recent reforms have aimed at raising coverage with old-age savings schemes for low-income informal workers, and extending income support for the poorest. So far, the uptake and the level of income support have been low. Reforming the pension system and old-age income support is becoming urgent to enhance equity, reduce income inequality and improve elderly well-being (OECD 2015a).

To deal with the lack of pensions for workers in the informal sector, the government has recently launched the Beneficios Económicos Periódicos (BEPS) programme to extend coverage. However, because pensions are required to be at least equal to the minimum wage, the lower BEPS benefits cannot be called "pensions". The BEPS programme sets up individual retirement accounts, for which the government subsidises 20% of individual contributions for low-income households. People can contribute to the scheme even if they earn less than the minimum wage. Thus, in principle, it allows for a contributory old-age pension without the minimum wage constraint. The reform is welcome, although so far only a few thousand people have joined the system. This may reflect the difficulty lower-income people face in saving for old-age. The average benefit is about a tenth of the minimum wage, which is in relative terms below that of most OECD countries, and is well below the Colombian poverty line. It is also reflected in the low share of public spending on old-age income support (Colombia Mayor – see next paragraph), at 0.02% of GDP compared to Latin American peers. While the number of recipients of

Colombia Mayor has increased significantly from almost 900,000 recipients in 2010 to more than 1.2 million currently, this expansion was in part financed by a 50% reduction in the average benefit. The Government plans to increase its coverage further to a total of 2.4 million potential legitimate recipients (OECD 2015a).

To deal with old-age poverty, Colombia has recently introduced Colombia Mayor – previously called Programa de Protección Social al Adulto Mayor (PPSAM) – and the PSAP (Programa de Subsidio al Aporte en Pensión) financed from the social security system. Colombia Mayor is financed by levies on higher salaries. Employees with a monthly contributory base salary higher than four times the minimum wage must make additional contributions to the Solidarity Pension Fund, which finance Colombia Mayor (on a scale from 1% on four times the minimum wage to 2% on 20 or more times the minimum wage). It covers 36% of the population aged 65 and over. The PSAP programme has around 200,000 beneficiaries, of which 82% are independent workers in cities, 16% rural workers, 1% communitarian mothers, 1% town councillors and only 0.3% disabled people. The coverage of both schemes together is about the average of OECD countries for old-age income support. To be eligible, a person should be at least 65 years old and belong to the Sisbén 1 and 2 groups (social groups based on income levels) (OECD 2015b).

One measure from the World Bank indicated that the prevalence of disability in Colombia was 1.8% in 1993 (Mont 2007).

### *India*

The drive for pension reform stemmed from ballooning unfunded pension liabilities under the defined benefit system for civil servants, which was not fiscally sustainable for both central and state governments. The current occupational pension system for civil servants and salaried employees in the private sector barely covers 14% of India's paid workforce. Most of India's workforce is employed in the informal sector, and are excluded from the benefits of a regulated retirement income system (ADB 2015).

The Disability Division in the Ministry of Social Justice and Empowerment facilitates empowerment of the persons with disabilities, who as per the 2001 Census are 2.19 crore<sup>3</sup> and are 2.13% of the total population of the country. These include persons with visual, hearing, speech, locomotor and mental disabilities (DDA 2015).

According to the 58th round of the National Sample Survey (NSS) of 2002 there were 208 lakh<sup>3</sup> persons with disabilities in 2002 (Report No. 485 at S.No. 88). The NSSO Survey indicates that 75% of persons with disabilities live in rural areas, 49% of disabled population is literate and only 34% are employed.

The Census and the NSS have different sampling design. The Census is an enumeration of the entire population of India, while the NSS has a nationally representative stratified sample. In both sources, disability was self-reported. Different definitions of overall disability and disability types seem to have contributed to differences in estimates. In the next census in 2011, it was proposed to move from the traditional approach of asking one about disability to one based on a functional approach consistent with the International Classification of Functioning.

The Constitution of India ensures equality, freedom, justice and dignity of all individuals and implicitly mandates an inclusive society for all including the persons with disabilities. The Constitution in the schedule of subjects lays direct responsibility of the empowerment of the persons with disabilities on the State Governments. Therefore, the primary responsibility to empower the persons with disabilities rests with the State Governments.

Accord to the IMF, India spent only 2.6% of GDP social protection in 2010-11.

### *Indonesia*

The current pension system comprises: a program for civil servants; a separate, similar program for the armed forces; and private sector schemes, including employer pension funds, financial institution pension funds offered

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<sup>3</sup> Crore = 10 million and lakh =100,000.

by banks and insurance companies and open to all workers, and the publicly sponsored Jamsostek Program that theoretically provides a lump-sum payment at age 55 or earlier when employment terminates. While 100% of civil servants and military personnel are covered, only 14% of private formal sector workers are covered, and there are great disparities in benefits. Unlike the private sector schemes, civil service pensions are based on final pay, indexed to wages, and financed on a pay-as-you-go basis. In January 2014, the Social Security Manpower Agency (BPJS Ketenagakerjaan) replaced the Employees' Social Security System (Jamsostek). The goal is to achieve universal coverage by 2029.

The Government of Indonesia has recognised the problems people with disabilities face. Long before this new concept of functional limitation, the Government of Indonesia had been highly committed to improving the well-being of persons with disabilities (PWDs), as seen in Law No. 4 of 1997 concerning the 'handicapped', hereafter referred to as PWDs. This law claims equal rights and opportunities for PWDs in all aspects of life, including the right to obtain education, employment, a proper standard of living, equal treatment in participating in national development, accessibility, rehabilitation, including and especially children with disabilities. The law states that the government and the community shall conduct rehabilitation and social assistance, and maintain social welfare standards. This was followed up by ratification of the United Nations' Convention on the Rights of Persons with Disabilities (UNCRPD) on 30 March 2007, which was strengthened through enactment of Law No. 19 of 2011 on Ratification of the UNCRPD. This new law reaffirmed that Indonesia is committed to respecting, protecting and meeting the rights of PWDs. Nevertheless, despite these strong commitments from the government, programmes and activities to improve the living conditions of PWDs are still minimal (Adioetomo et al. 2014).

According to the IMF, Indonesia spent only 2.6% of GDP social protection in 2010-11 of which 1.03% was public health care expenditure.

Disability prevalence in Indonesia was 4.29% in 2010 (Adioetomo 2014).

### *Kenya*

The National Social Security Fund (NSSF) was established in 1965. The Fund initially operated as a Department of the Ministry of Labour until 1987, when the NSSF Act was amended transforming the Fund into a State Corporation under the Management of a Board of Trustees. The Act was established as a mandatory national scheme whose main objective was to provide basic financial security benefits to Kenyans upon retirement. The Fund was set up as a Provident Fund providing benefits in the form of a lump sum.

The National Social Security Fund (NSSF) Act, No.45 of 2013 was assented to on 24 December 2013 and commenced on 10 January 2014, thereby transforming the NSSF from a Provident Fund to a Pension Scheme to which every Kenyan with an income contributes a percentage of his/her gross earnings, so as to be guaranteed basic compensation in case of permanent disability, basic assistance to needy dependants in case of death and a monthly life pension upon retirement (NSSF 2015).

An Invalidity benefit is paid to members who are certified to be permanently incapable of working because of physical or mental disability and members who are at least 50 years of age and suffer from a partial incapacity of a permanent nature that prevents them from undertaking employment. The member must have made not less than 36 monthly contributions immediately preceding the date of the invalidity.

Contributory and safety net programmes covered 13% of the population, on average, from 2005 to 2010. The average annual growth of contributory members from 2005 to 2010 was 18.5%. This increase was mainly driven by the National Hospital Insurance Fund (NHIF). In 2010, safety net programmes reached almost 13.7% of the population. The General Food Distribution supported 40% of all safety net beneficiaries. The coverage of safety net programmes tends to be highly correlated with poverty rates at the county level. Currently, less than 7% of any vulnerable group is covered by safety nets, with the exception of Orphans and Vulnerable Children, among which coverage is 28% (MSP 2012). The coverage for the disabled was less than 1% (Table A1).

**Table A1 Coverage of safety nets amongst absolute poor vulnerable groups, 2010**

Households include	Percentage of total Kenya population	Percentage of group absolute poor	Estimated number of absolute poor HH	Current group coverage (HH)	Coverage as percentage of group	Possible coverage of absolute poor (%)
Disabled	8.5	36.1	277,252	2,894	0.38	1.04
OVC	6.8	50.3	310,697	171,571	27.80	55.22
Over 60 years	6.7	41.8	255,707	21,587	3.52	8.44
PLWHA or chronically ill	7.5	40.8	277,459	13,033	1.91	4.70
Children under 18 years	72.9	46.4	3,071,093	198,919	6.48	13.96

Source: MSP (2012, p. 34).

Safety net schemes reached 13.7% of Kenya's population in 2010.

One measure from the World Bank indicated that the prevalence of disability in Kenya was 0.7% in 1987 (Mont 2007).

### Mexico

Social security in Mexico is still fragmented, as there are several pay-as-you-go and defined contribution schemes run by different social security institutions, which do not operate in an integrated way. Currently, the main contributory pension systems cover around 39.9% of the economically active population (EAP), with the most important being the Mexican Social Security Institute (IMSS), to which formal workers in the private sector contribute to, with a coverage of 32.9% of the EAP; and the Social Security Institute for Public Sector Workers (ISSSTE) for government workers which covers 5.6% of the EAP. The two pension systems were reformed in 1997 and 2007 respectively, and operate with DC schemes based on individual accounts whose resources are managed by the Pension Fund Administrators (Afores). There are the state government pension systems as well, those of public universities and state-owned companies, which are mainly defined benefit (DB) schemes, all of them covering 2% of the EAP. Independent workers are not legally obliged to contribute to a pension scheme, so 60% of the working population is excluded from the mandatory pension system (Alonso et al. 2014).

Some 6.6% of Mexico's population had some form of disability, out of which 51% of were elderly people, 34% between the age of 30 and 59, 7% were aged between 15 and 29, and 7% were children. Most of them lived in poverty. (<http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=15046&LangID=E>)

### Poland

Poland's pension system has first and second pillars that are complemented by voluntary pension savings. In addition to voluntary occupational pension plans, also introduced in 1999, personal voluntary schemes, sometimes referred to as the fourth pillar, exist in order to encourage additional private savings. Poland established a demographic reserve fund in 2002 to cover future deficits.

Reforms in 2011 to reduce the contributions paid to second tier pension funds tilt the system towards reliance on the state pension pillar (Pension Funds Online 2015).

According to IMF data, Poland has a generous social protection system accounting for 20.5% of GDP. The social protection excluding health was 15.9% of GDP. OECD data shows that public disability expenditure in Poland was 1.1% of GDP in 2011 (OECD 2014).

The generosity and eligibility criteria, have the largest impact on the number of disability pensioners. This statement holds in particular for Poland, where the reform of 1997 and 2005 significantly limits an inflow to the system with tightening eligibility criteria, and increases the outflows via reclassifying of the beneficiaries from the



disability scheme to the old-age pension scheme, once the statutory retirement age is reached. As a consequence, the number of the disability beneficiaries dropped in Poland from nearly 2million in 2005 to 1.3million in 2010. In the long term, the ageing process may influence the number of disability beneficiaries. For Poland, a tremendous increase in the number of potential disability pensioners – reflected by the high risk age group 50-64 – is predicted in the period 2025-40 (Jabłonowski and Müller 2014).

A disability social pension (social assistance) of 709.34 zlotys a month (84% of the minimum monthly pension for a total disability) is paid for the duration of the disability (SSA and ISSA 2015).

One measure from the World Bank indicated that the prevalence of disability in Poland was 10% in 1988 (Mont 2007).

### *Saudi Arabia*

The Social Insurance System in Saudi Arabia covers the private-sector and some categories of public-sector Saudi workers. The coverage is voluntary for persons who are self-employed, are working abroad, or no longer satisfy the conditions for compulsory coverage. There are however major exclusions – agricultural workers, fishermen, household workers, family labour and foreign workers. Excluded workers may be covered under certain conditions. There are special systems for civil servants and military personnel. Under certain conditions, former contributors under the civil and military scheme may request to have contribution periods credited toward the public social insurance scheme and vice versa. Employees contribute 9% of gross earnings, employers 9% of the payroll and self-employed 18% of declared income. The Government covers any shortfall (SSA and ISSA 2015). The estimated effective coverage is only 23% of the working population (Hujo 2014).

The social affair representative in Medina estimated the number of disabled to be 720,000, about 4% of the total Saudi population (Arab News 2012). Also another estimation of the disabled is 900,000, about more than 8% of Saudi population (English.news.cn 2012). In a demographic survey the number of disabled was said to be 135,000, (0.8%) of the total population (Jahid 2013).

The Ministry of Social Affairs has approximately 400,000 persons with a disability as registered beneficiaries for financial support.

Non-occupational disability pension payments were 3.2% of total pension payments in 2013, down from 4.6% in 2009 (CDSI 2014).

The number of the disabled is probably far higher than the values estimated, because those who are searching for jobs are not the elderly, children, complex disabled, and never ever most of the disabled women (Elsheikh and Alqurashi 2013).

Road traffic accidents, stroke, cerebral palsy, head and spinal cord injuries, infection and inflammation are the major causes of mortality, hospitalization, and chronic disability in Saudi Arabia. Furthermore, the incidence of consanguineous marriages is high. A study reported that the overall prevalence of consanguinity was 56%. The first-degree cousin consanguinity was 33.6% being more frequent than all other relations (22.4%). As a result, the risk of disabilities associated with genetic causes is also significant (Al-Jahid 2013).

### *South Africa*

In South Africa, there are two government employee pension schemes: the Government Pensions Administration Agency (GPAA) administers pensions on behalf of its primary clients, the Government Employees Pension Fund (GEPF) and National Treasury; and the Government Employees Pension Fund (GEPF), Africa's largest pension fund. It has more than 1.2 million active members, in excess of 300,000 pensioners and beneficiaries, and assets worth more than R1 trillion (GEPF 2015).

The South African Social Service Agency (SASSA) administrates seven long-term grants (SAASA 2014a):

- **Grant for Older Persons** (3 million recipients as of 31 August 2014).
- **Disability Grant** (1.1-million recipients). R1,350 per month for people who are unable to work because of disability. Recipients must be between 18 and 59, submit a medical assessment or report no older than three months, and may not receive another social grant.
- **War Veteran's Grant** (373 recipients).
- **Care Dependency Grant** (123,000 recipients).
- **Foster Child Grant** (548,000 recipients).
- **Child Support Grant** (11.5-million recipients).
- **Grant-in-Aid** (93,800 recipients). R320 per month for people receiving the Grant for Older Persons, Disability or War Veteran's Grant, and who require full-time care because of physical or mental disability (see also Africa Check 2015).
- **Social Relief of Distress.**

**Table A2 Number of grant benefits by year, South Africa, various years**

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Old Age	2,390,543	2,546,657	2,678,554	2,750,857	2,873,197	2,969,933
War Veteran	1,500	1,216	958	753	587	429
Disability	1,286,883	1,264,477	1,200,898	1,198,131	1,164,192	1,120,419
Grant in Aid	46,069	53,237	58,413	66,493	73,719	83,059
Care Dependency	107,065	110,731	112,185	114,993	120,268	120,632
Foster Child	474,759	510,760	512,874	536,747	532,159	512,055
Child Support	8,765,354	9,570,287	10,371,950	10,927,731	11,341,988	11,125,946
Total	13,072,173	14,057,365	14,935,832	15,595,705	16,106,110	15,932,473

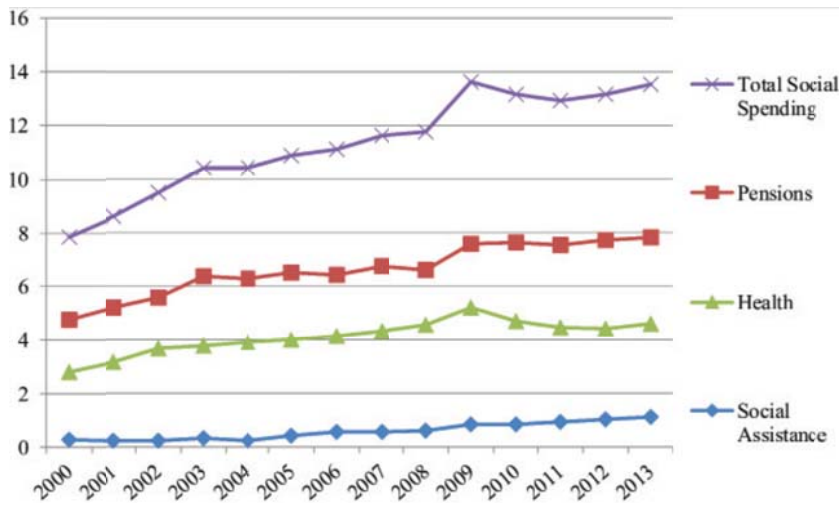
Source: SAASA 2014b.

### Turkey

Turkey has an earnings-related public scheme with an income-tested safety net and a flat-rate supplementary pension. In May 2006, the separate systems for public- and private-sector employees and the self-employed were merged into one under the newly created Social Security Institution. Employees contribute 9% of earnings, employers 11% of employees earnings. (SSA & ISSA 2014).

The means-tested pension is payable only to those with no other social security rights who are disabled or those aged 65 or over (OECD 2013).

Figure A2 Total public social expenditures, Turkey, 2003 to 2013, % GDP



Source: Uckardesler (2015).

In 2013, about 13.5% of Turkey's GDP was spent on public social expenditure, up from 8% in 2000. Although increasing it is still well below the OECD average of 22%. Only 1% of GDP was spent on social assistance including for the disabled (Uckardesler 2015).

Between 2000 and 2013, total social protection expenditure has increase by an annual average of 23% from 14 million TL to 220 million TL. Disability expenditure increased by 37% over the same period (Turkish Statistical Institute 2015). OECD figures suggest that disability spending in Turkey is less than half of one per cent of GDP.

Disability prevalence in Turkey was estimated to be 1.4% (World Bank 2007).

## Public Social Expenditure

According to the ILO:

Social protection is also an *economic necessity* to sustain domestic consumption and demand by raising household income. Adequate social protection enhances productivity and human development, enables workers to adapt to change, and facilitates equitable and inclusive structural change. Investing in social protection is investing in a healthy, productive and equitable society. (ILO 2014, p. 44)

**Table A3 Total public expenditure on social protection and health expenditure, % GDP**

	1990	1995	2000	2005	2007	2009	2010–11	Public health care (% of GDP)	Public social protection (excluding health care) (% of GDP)
Brazil	13.65	15.48	16.26	17.96	19.25	21.18	21.29	5.79	15.50
Colombia	3.68	8.33	7.32	9.67	9.80	11.38	10.49	1.91	8.58
India	1.73	1.55	1.61	1.54	1.87	2.59	2.64	0.96	1.42
Indonesia	...	1.61	1.80	2.04	2.75	2.94	2.63	1.03	1.60
Kenya	1.47	1.54	1.51	2.35	3.05	3.31	2.61	2.33	0.93
Mexico	3.26	4.33	5.30	6.92	6.90	8.22	7.72	2.76	4.97
Poland	14.92	22.61	20.50	21.02	19.69	21.52	20.51	4.65	15.87
Saudi Arabia	...	...	...	...	...	3.90	3.64	2.54	1.10
South Africa	5.97	6.78	6.88	8.92	8.90	10.17	9.79	4.74	5.05
Turkey	5.68	5.59	9.77	9.87	10.51	12.82	13.11	5.90	7.21

Source: Socialprotection.org (2015).

**Table A4 Public social expenditure as a percentage of GDP and poverty level**

	Public social protection expenditure (% GDP), latest (2010-2011) (regional estimates)	Poverty headcount ratio at \$2 a day (PPP) (% of population)
Brazil	21.29	10.82
Colombia	10.49	15.82
India	2.64	68.72
Indonesia	2.63	46.12
Kenya	2.61	67.21
Mexico	7.72	8.11
Poland	20.51	0.2
Saudi Arabia	3.64	n/a
South Africa	9.79	31.33
Turkey	13.11	4.16

Source: ILO 2014.