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# Health inequalities in Taiwan

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UCL Institute of Health Equity



**Promoting Your Health**

Health Promotion Administration,  
Ministry of Health and Welfare

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## About the Health Promotion Administration

The Health Promotion Administration, Ministry of Health and Welfare, is responsible for health promotion and non-communicable disease prevention work in Taiwan. It reinforces preventive medicine and community health, especially in response to the change of population structure, and more closely integrates social welfare and cross-department resources. The Health Promotion Administration, provides comprehensive health promotion services from the womb to tomb, promoting the health of families to communities. Its goal is to prolong healthy expectancy, reduce health inequality, so that citizens can live longer and better regardless of wealth region, gender, and ethnic group. [www.hpa.gov.tw](http://www.hpa.gov.tw)

## About the UCL Institute of Health Equity

The Institute is led by Professor Sir Michael Marmot and seeks to increase health equity through action on the social determinants of health, specifically in four areas: influencing global, national and local policies; advising on and learning from practice; building the evidence base; and capacity-building. The Institute builds on previous work to tackle inequalities in health led by Professor Sir Michael Marmot and his team, including the Commission on Social Determinants of Health, Fair Society Healthy Lives (the Marmot Review) and the Review of Social Determinants of Health and the Health Divide for the WHO European Region. [www.instituteofhealthequity.org](http://www.instituteofhealthequity.org)

## About this report

This report was commissioned by Shu-Ti Chiou, Director General of the Health Promotion Administration, and prepared at the UCL Institute of Health Equity by Peter Goldblatt, Jessica Allen, Laura Grobicki and Ellen Bloomer. Information for the report was collected and analysed in Taiwan by staff of Surveillance and Research Division of the Health Promotion Administration, with advice from Tung-Liang Chiang. The authors are grateful to Georgina Kyriakou for her meticulous checking of the report and to Angela Scott and colleagues at UCL Creative Media Services for the graphic design of the report.

## Foreword



Health and well-being are fundamental human rights that contribute to national stability and social and economic development. Yet, countries around the world are now facing public health issues and challenges like aging populations, lower birth rates, and socially determined health inequities. As “health equity can be a marker of national progress,” it has become an international trend to advance health and health equity, which is also the focus of the 2030 Agenda for the United Nations’ Sustainable Development Goals. Therefore, protecting citizens’ health, improving the quality of healthcare, ensuring social fairness and justice, and increasing social harmony and welfare, all while maintaining the country’s economic vitality and competitiveness, are important tasks for Taiwan in the 21st century.

Over the years, Taiwan has taken health impacts into consideration in policy implementation, and has strived to drive up health outcomes and improve the quality of life for everyone. The nation’s many achievements regarding public health include our National Health Insurance, obesity control, mental health, decreased drunk driving and international assistance programs. Yet, with the interlocking nature of disparities in health, disparities in healthcare, and the role of social determinants, it is indeed a great challenge to achieve good health for all in society.

To do our part and participate in universal efforts to build a better world with no one left behind, from 2014 to 2015, the Health Promotion Administration under our Ministry of Health and Welfare collaborated with the University College London Institute of Health Equity (UCLHIE) on Health Inequalities in Taiwan, which involves completion of a health inequality report, drafting of a national plan to reduce health inequalities, and establishment of long-term monitoring mechanisms for health inequalities.

Concrete recommendations in this report have been incorporated into the Sustainable Development Policy Guidelines drafted by the National Council for Sustainable Development as instructed by our Executive Yuan (Cabinet).

Moreover, the Council is drafting medium- and long-term quantitative sustainable development goals for the nation based on the United Nations’ 17 Sustainable Development Goals (SDGs) and 169 targets, while also establishing an inter-ministerial platform for collaboration on health equity to formulate and implement integrated cross-government policies to enhance public health and gradually rectify health inequalities.

The pursuit of health equality is a whole-of-government and whole-of-society challenge. Government objectives are best achieved when all sectors include health and well-being as a key component of policy development. I earnestly hope that this report will increase public awareness of health inequalities and serve as a foundation for the nation’s efforts to advance human development, sustainability and equity, as well as to improve health outcomes, striving for the World Health Organization’s goal of Health for All and thereby contributing to the health and wellbeing of the global community.

Ma Ying-jeou  
President  
Republic of China (Taiwan)

February 2016

## Foreword



Health is not solely the responsibility of public health departments; instead, all levels of government agencies should take health into account in decision-making. Action on health's social determinants can also bring social and economic benefits. To seek synergies and enhance policy-makers' accountability for impacts on health and health equity, our government seeks political commitment from leaders at all levels.

These leaders can build inter-sectoral partnerships across government. They can promote the acquisition, dissemination and implementation of the best available evidence for policy-making, they can also create capacities to undertake health impact assessment of all policies, as well as incorporating health impact assessments in evaluating policies in all sectors. Human-centered social development requires this whole-of-government and whole-of-society approach.

To improve health for all, Taiwan has proposed a 2020 Health White Paper in line with the 2008 WHO Commission on Social Determinants of Health's final report, *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health*. The white paper included public health equity as a major policy objective of the Ministry's commitment to health equity. The guiding principles of our social welfare policy were revised and approved in 2012 in *Toward a New Society of Equity, Inclusion and Justice*. In this vision of strengthening the health and welfare system with greater care for the disadvantaged, the Ministry of Health and Welfare was established in 2013 by integrating the former Department of Health's services with the Interior Ministry's social

programs. Our Ministry collaborates with the education sector on health-promoting schools, teams up with the labor sector to encourage health-promoting workplaces, and works with all relevant stakeholders to advance active aging and age-friendly cities.

To improve our people's health, reduce health inequalities and improve national health and social policies, we adopt a life-course approach to policy-making and promote health in all policies. We provide evidence-based policies for disease prevention and care needed by people in each stage of life. We promote health in various settings such as healthy cities, healthy and safe communities, health-promoting and safe schools, health promoting workplaces and hospitals, and have introduced various health promotion initiatives to create environments that foster health.

Based on the insights and recommendations in this report, we will promote multi-sectoral public policies that take into account health impact assessments in decision-making to address the social determinants of health, reduce inequalities and promote socially just development.

Been-Huang Chiang 蔡 石 區

Been-Huang Chiang  
Minister  
Ministry of Health and Welfare  
Taiwan, R.O.C.

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## Foreword



The improvement in health in Taiwan has been quite remarkable: life expectancy is now close to the OECD average. Such improvement reflects dramatic advancements in quality of life for the people of Taiwan. As with so many countries, however, such improvement in health has not eliminated striking inequalities in health: the more deprived the area of residence, the lower the life expectancy. It is a major challenge to achieve good health for all in society and reduce unnecessary inequalities. However, it is of the utmost importance as these inequalities damage many lives and are hugely costly to society.

My colleagues and I at the UCL Institute of Health Equity are impressed with the initiative of the Health Promotion Authority to take a strategic approach to improvement of health equity and reduction of health inequalities in Taiwan. We were, therefore, very pleased to respond to the invitation to prepare this report. Key to improving health equity is action on the social determinants of health. Evidence from round the world, and from Taiwan itself, points to the conditions in which people are born, grow, live, work and age as fundamental causes of health inequalities. These are the domains in which action is needed.

Taiwan has a range of impressive programs ensuring access to health care and health promotion. What is now needed is a national commitment, across the whole of government, to action on social determinants of health. Such concerted action not only holds out the prospect of increasing health equity but improving society as a whole.

This report gives the building blocks for such a national strategy. We look forward to the implementation of this strategy, the continued monitoring of its effects and to reductions in health inequalities for the Taiwanese people.

A handwritten signature in black ink that reads "Michael Marmot".

Michael Marmot  
Director  
UCL Institute of Health Equity  
Department of Epidemiology and Public Health



## **Evidence and transparency as the first step to accountability**

The existence of health inequalities is a universal phenomenon and is well-known in the Western world. However, such a phenomenon has rarely been documented systematically and officially by the governments in Asian countries. Do social determinants of health affect Eastern societies in a similar way to Western societies? To what extent, and with what trends? Are things getting better or worse along with the country's development? To see is to believe. What's measured gets done. This is why we decided to overcome all the technical and administrative barriers, for the first time ever both in Taiwan and in Asia, to analyze, document and publish Taiwan's inequalities in health. This is the first step of our government's efforts towards a fairer and healthier society for all of our people.

## **Reduction of inequality is both a domestic and a global goal**

Social equity is one of the major dimensions of the 2030 Agenda for Sustainable Development, supported by the goals to end poverty and hunger; to combat inequalities within and among countries; to build peaceful, just and inclusive societies; to protect human rights and promote gender equality; to create conditions for sustainable and inclusive economic growth, shared prosperity and decent work for all; and to ensure inclusive and equitable quality education for all.

Achievements of these goals will lead to health for all. From 2016 on, the whole world has embarked on a collective journey to make sure that no one will be left behind. Our efforts in documenting the existence of and trends in health inequalities, in collaboration with Sir Michael Marmot and his team at University College London Institute of Health Equity, have produced timely evidence and a momentum for Taiwan to join this global journey and make sure that no one in the 23 million population will be left behind.

## **Health & equity in all policies as a commitment from the top**

This report was based on the concept and analytical framework of the "Fair Society, Healthy Lives: A Strategic Review of Health Inequalities in England Post-2010 (the Marmot Review)". During the drafting process, we held a workshop for representatives of the related ministries and sectors to look at the analytical results and the strategies proposed in the Marmot Review, and to discuss on feasible action plans to reduce the gaps. Further consultation meetings & press conferences were convened to share the results and foster grass-root participation.

In addition, the results were also reported to the National Committee of Sustainable Development chaired by the Prime Minister with ministers and civil representatives on board. A proposal to develop a comprehensive monitoring framework for SDGs has been made, so that monitoring and follow-up of progress and synergies between ministries can take place.

## **Health equity everywhere with the people and by the people**

Tackling health inequalities is an on-going process. Realization of health equity relies not only on strong political commitment from the top but also on broad and long-term actions, developments and oversight. This can only be achieved by full participation and empowerment of the people. The publication of this report is only the first step. We look forward to further disseminations, discussions and implementations jointly with all stakeholders to make it happen that no one is left behind.

Shu-Ti Chiou  
Director-General  
Health Promotion Administration  
Taiwan, R.O.C.

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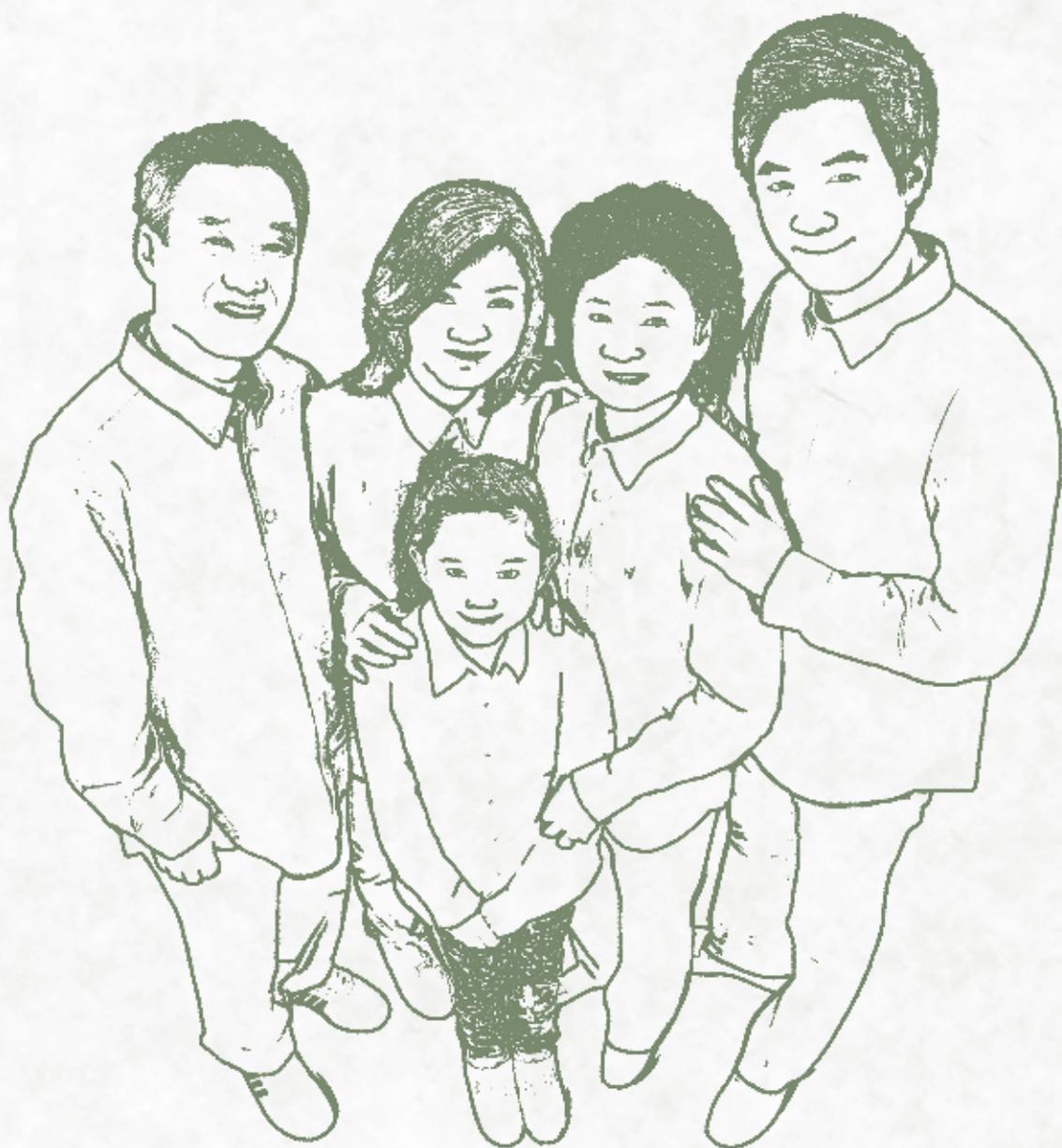
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# Executive summary

## Summary of health inequalities and social determinants of health in Taiwan

- Infant mortality rates are higher in the most deprived quintiles than in the least deprived, both for pre- and full-term births
- There is a clear relationship between maternal education and:
  - low birth weight
  - post-partum depression
  - reading frequently to children at age three
  - teeth brushing at age three
- There is a strong relationship between family income and educational attainment at age eight, likely to lead to poorer life chances and poorer health outcomes in later life for children from poor families
- Those in lower status occupations are more likely to become unemployed than those in higher status occupations
- There are sharp gradients in mortality by level of education for those both in and out of employment. At each level of education, mortality of those without a job at the time of the Census was higher in the next ten years than it was for the employed
- People with limiting physical disabilities – hearing, vision, mobility or communication problems – are less likely to be employed than those with more general health symptoms
- For men with long-standing illness, the proportion in employment is strongly related to their level of education
- There are steep gradients in clinical risk factors such as hypertension, hyperlipidemia and hyperglycemia, by educational level
- There are clear inequalities in both original and final income, with those in the lowest quintile of income having only a sixth of the final income of those in the highest income quintile
- There is a steep gradient in road traffic death rates among children related to levels of township deprivation. This is the most common avoidable cause of death for children aged one and over

Taiwan has seen remarkable improvements in health for the whole population in recent years. On average in Taiwan, life expectancy increased 2.3 years over the 10 years to 2012, placing it near the average for OECD countries (1) – impressive achievements. Yet despite this encouraging progress in overall health, there are persistent and widespread inequalities in health within Taiwan, as in all countries in the world. These health inequalities are closely related to social, economic, cultural and political factors – the social determinants of health, which shape people's health to create social gradients: those with greater levels of social advantage are likely to experience better health throughout their lives and live longer than those who are relatively less fortunate.

Inequalities in the social determinants lead to health inequalities that are unnecessary and unfair: they have an adverse effect on the lives of all below the very top in society and they result in unnecessary illness and premature death, all of which impact not just on the individual but also on their families, communities and the country. The unnecessary loss in productivity and tax receipts and increased costs to health services and in terms of welfare payments are a considerable burden on the national economy. There are also significant costs to individuals and households.

The Health Promotion Administration in Taiwan commissioned a report, of which this is a summary, as part of a drive to reduce health inequalities in Taiwan and improve health outcomes for everybody. The report describes health inequalities in Taiwan, and provides evidence about the drivers of these inequities at all stages of life. It lays the basis for an important step forward in prioritising and shaping action on improving health equity in Taiwan. It sets a whole of society and cross government and cross sector programme of action to reduce health inequalities through action on the social determinants.

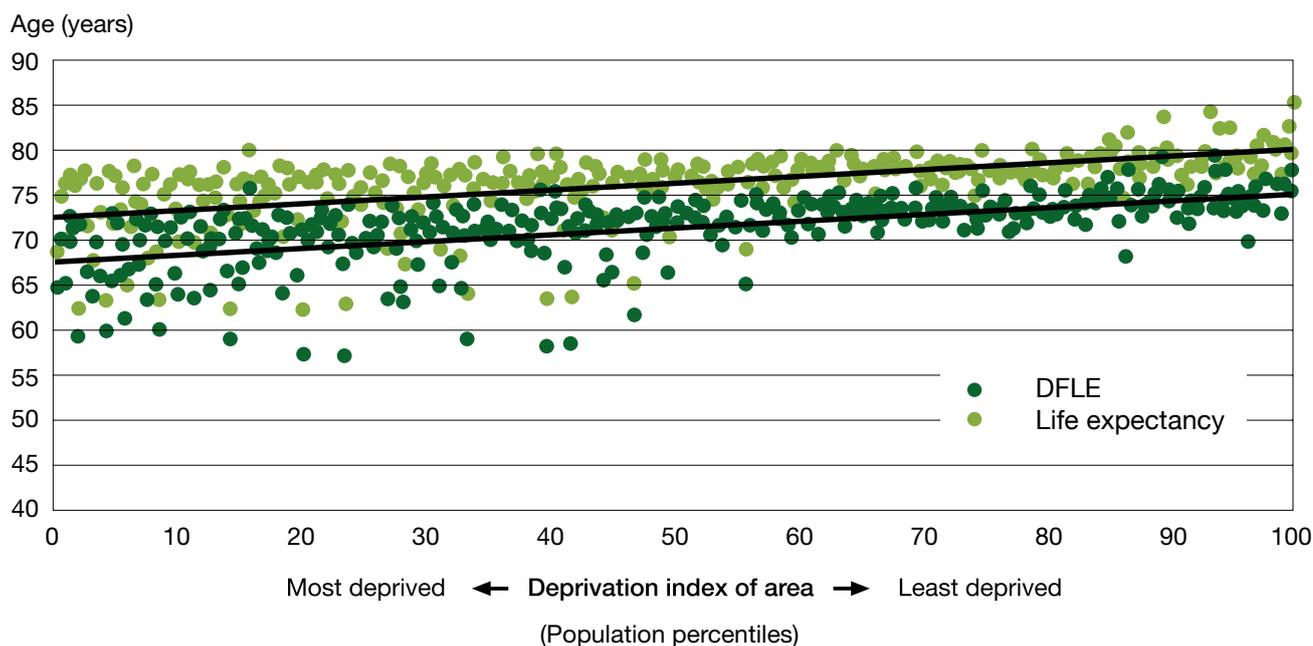
Experiences from Taiwan and other countries across the world have provided the evidence and learning to demonstrate clear ways to act both locally and nationally. Context is important and the report sets out ways to implement and deliver strategies that are both adapted to local conditions and based on evidence from around the world.

### The extent of health inequalities in Taiwan

Average life expectancy in the most deprived townships in Taiwan was 73 years in 2001 to 2010 – some eight years less than the average for the richest townships, the top curve in Figure 1.

Not only does this represent a dramatic difference between the least deprived and the most deprived townships, but the relationship with deprivation is a graded one: the less the amount of deprivation in a township, the longer people in the township could expect to live and be free of disability. The number of years people spent with a disability, however, did not change with increasing township deprivation – it averages at around five years for all townships in Taiwan.

**Figure 1** Life expectancy (LE) and disability-free life expectancy (DFLE) at birth, persons by deprivation index of area (township level), Taiwan, 2001–2010



**Sources:**

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2001–2010 (2).
2. The Disabled Population for each county in Taiwan, 2001–2010 (3).

**Notes:**

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (4).

Although life expectancy has increased for everyone a gender gap and the gradient by township deprivation have persisted over time with only small variations. As Figure 2 shows, life expectancy for women was higher than for men in every deprivation quintile in each time period. The gender gap was greater the more deprived the area – ranging from five years in the least deprived quintile to eight years in the most deprived.

Rates of mortality by quintile of township deprivation between ages 30 and 70 years in 2010–12 from circulatory disease, cancer and suicide were all higher among men than women in all quintiles and showed consistent gradients related to deprivation.

In the period 2004 to 2010 infant mortality rates were

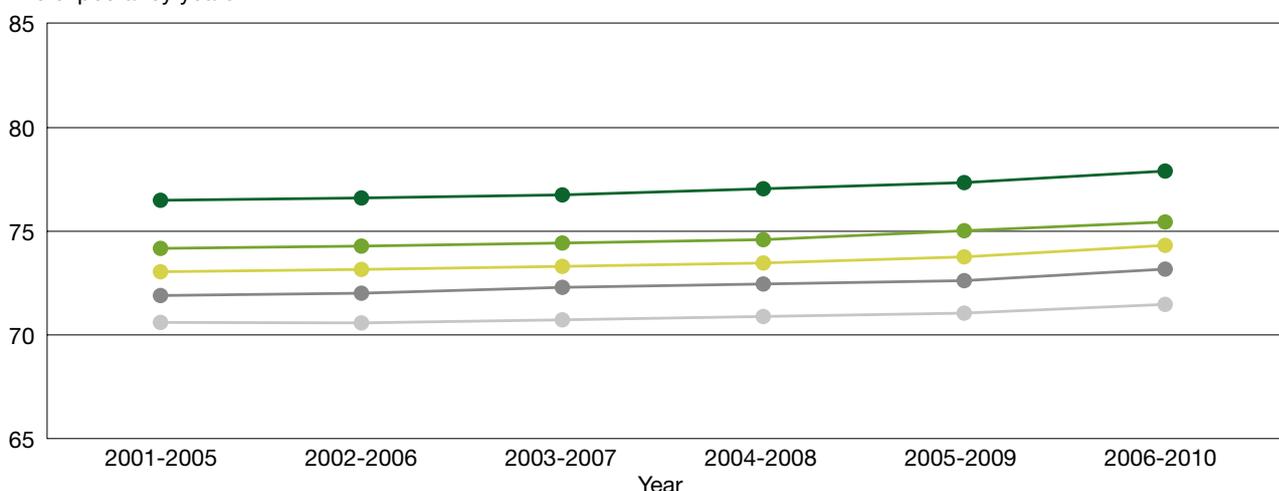
above five per thousand live births for mothers who had not attended senior high school, while falling below three for mothers who had attended senior high school. This widening inequality varied by age and this was associated with a change in fertility patterns by age. There was a reduction of nearly 50% in the number of babies born to mothers aged under 25 in Taiwan between these two periods, but less than a 6% decrease at ages 25 to 34 and around a 20% increase at older ages. As the proportion giving birth at ages 25–34 increased as a result, infant mortality for mothers of this age decreased – to below three per thousand for those who had attended senior high school.

Conversely, as births to teenage mothers became less common, infant mortality rates rose to over eight per thousand for those who did not attend senior high school.

**Figure 2** Life expectancy at birth, by deprivation quintile, Taiwan, 2001–2010

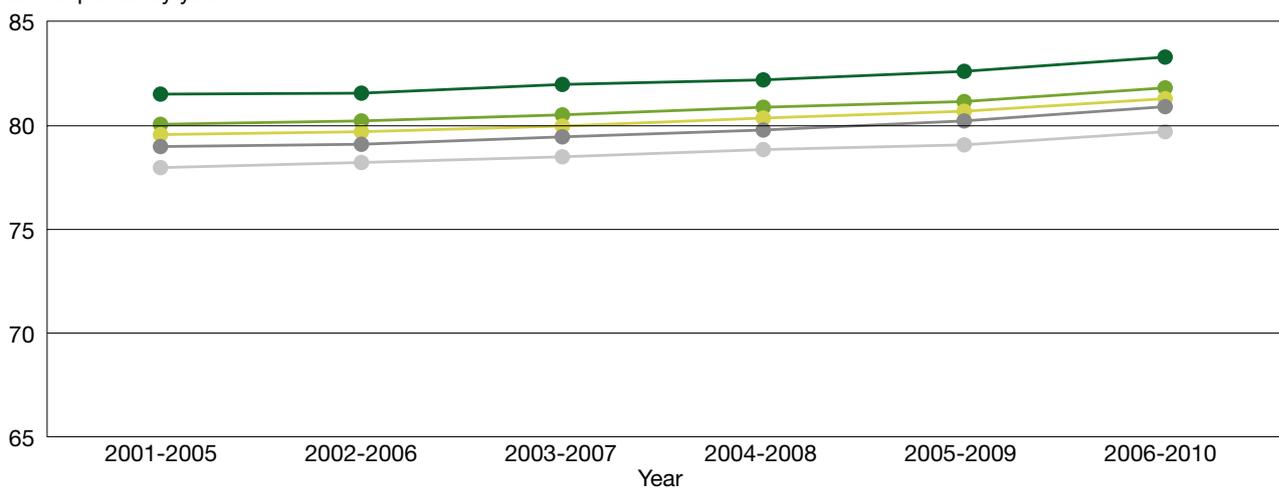
### a) Males

Life expectancy years



### b) Females

Life expectancy years



—●— Least deprived —●— Second quintile —●— Third quintile —●— Fourth quintile —●— Most deprived

Sources:

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2001–2010 (2).
2. The Disabled Population for each county in Taiwan, 2001–2010 (3).

Notes:

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (4).

For men aged 25–64, mortality rates by occupational group were 84% higher among blue-collar workers than white-collar workers. Rates for skilled agricultural, forestry and fishery occupations and elementary laborers were more than six times those of professionals. The gap in death rates between white- and blue-collar workers was similar in all regions except Eastern – where both the gap and ratio were much higher than elsewhere. This larger excess among blue-collar workers in Eastern region partly explained the region’s higher overall death rate in men.

There are also clear social gradients in morbidity across life related to the highest level of education attended. People who finished their education at secondary school level or earlier had higher rates of limiting illness later in life than those who stayed on longer.

### The social determinants of health

These socioeconomic inequalities in health, at birth, at working age and at death are reflected in the causes recorded at death: cancer, circulatory diseases and suicide. There are also clear inequalities in health behaviors, which relate to poor health and higher risk of death – smoking, alcohol, obesity and drug use. Illustrative examples of social gradients in smoking and alcohol are discussed below.

### Smoking

Compared with current international levels, a large percentage of men in Taiwan who were born after 1955 smoke (Figure 3). For these men, a steep gradient based on education levels persisted throughout the period 2004 to 2012, with those leaving after junior high school being more than twice as likely to smoke as those with a university or higher qualification. This difference was widest in 2010, but has narrowed slightly as smoking rates increased slightly in 2011 and 2012 among those with a university education.

Rates of smoking among men born before 1955 were lower than in this cohort. Rates for all women in Taiwan were very much lower than those for men and women in many other countries in this period.

### Alcohol

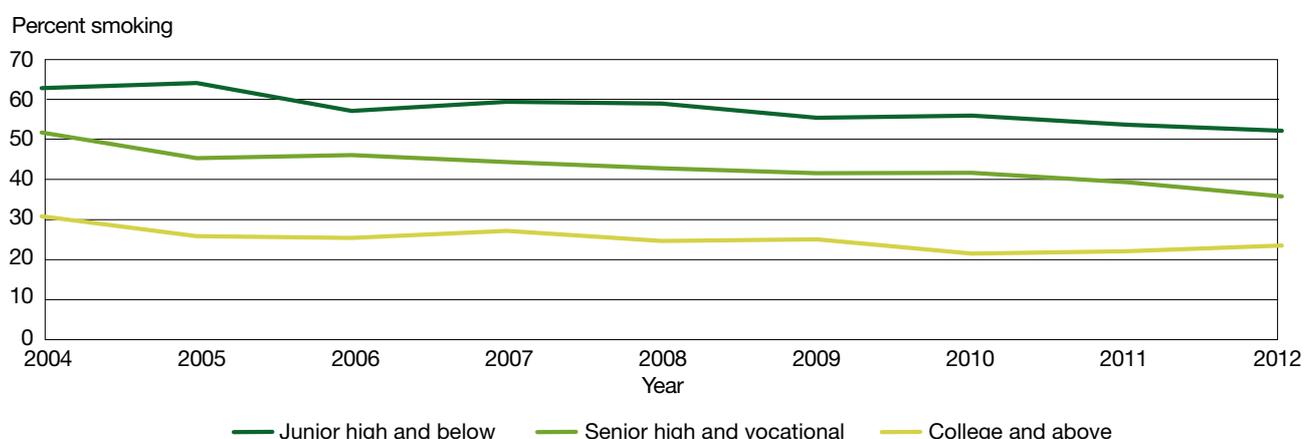
There were steep gradients in alcohol-attributable hospital admissions by level of education for both men and women (Figure 4). For all levels of education, men had considerably higher rates than women (between 5.9 times higher for those with elementary and lower education and 15.6 times higher for those with senior high education). Among men, rates for those who left school after elementary or junior high school were both nearly 14 times higher than for those who attended university. For women, the rates for these two groups were 28 and 21 times higher than for those who attended university.

Evidence shows, however, that simply focusing on health behaviors, by themselves, will largely fail to deal with the main causes of ill health. In order to improve health and reduce health inequalities we must look behind the immediate cases of poor health and focus on the causes of the causes of ill health and premature mortality. These are the social and economic factors that are largely responsible for health inequalities; these factors are known as the social determinants of health.

There have been a number of important evidence reviews about health inequalities and the main drivers of ill health. The Commission on Social Determinants of Health (CSDH), published in 2008, summarized the global evidence and stated: “Where systematic differences in health are judged to be avoidable by reasonable action they are, quite simply, unfair. It is this that we label health inequity” (7). The Commission identified the conditions of daily life – the circumstances in which people are born, grow, live, work and age – and structural drivers of these conditions – the inequitable distribution of power, money and resources – as the social determinants of health. It concluded that “these are responsible for a major part of health inequities between and within countries” (7).

Subsequent reviews in England published in 2010, and across Europe published in 2014, have described the close relationships between a range of social determinants and health outcomes and made proposals for action to reduce inequalities in the social determinants.

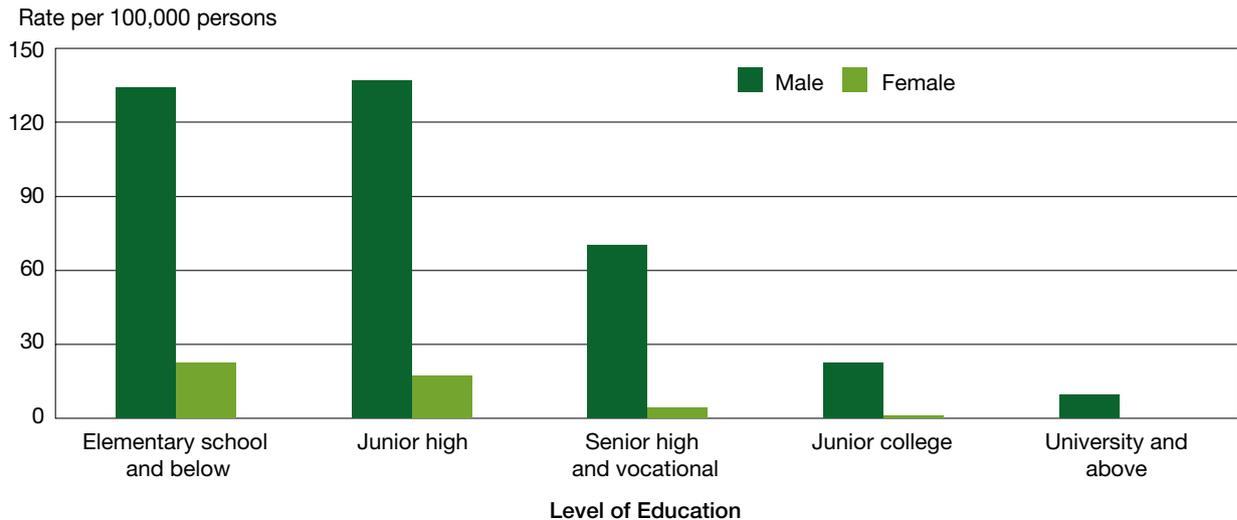
**Figure 3** Percentage of males born after 1955 who smoked by education, 2004–12



Source: Taiwan Adult Smoking Behavior Survey (2004–2012) by Health Promotion Administration, Ministry of Health and Welfare (5).

Note: Definition of smoker: someone who has smoked more than 100 cigarettes (five packs) during their lifetime and smoked within the past 30 days.

**Figure 4** Age standardized alcohol-attributable hospital admission rates at ages 18 and over by level of education in Taiwan, 2011–12

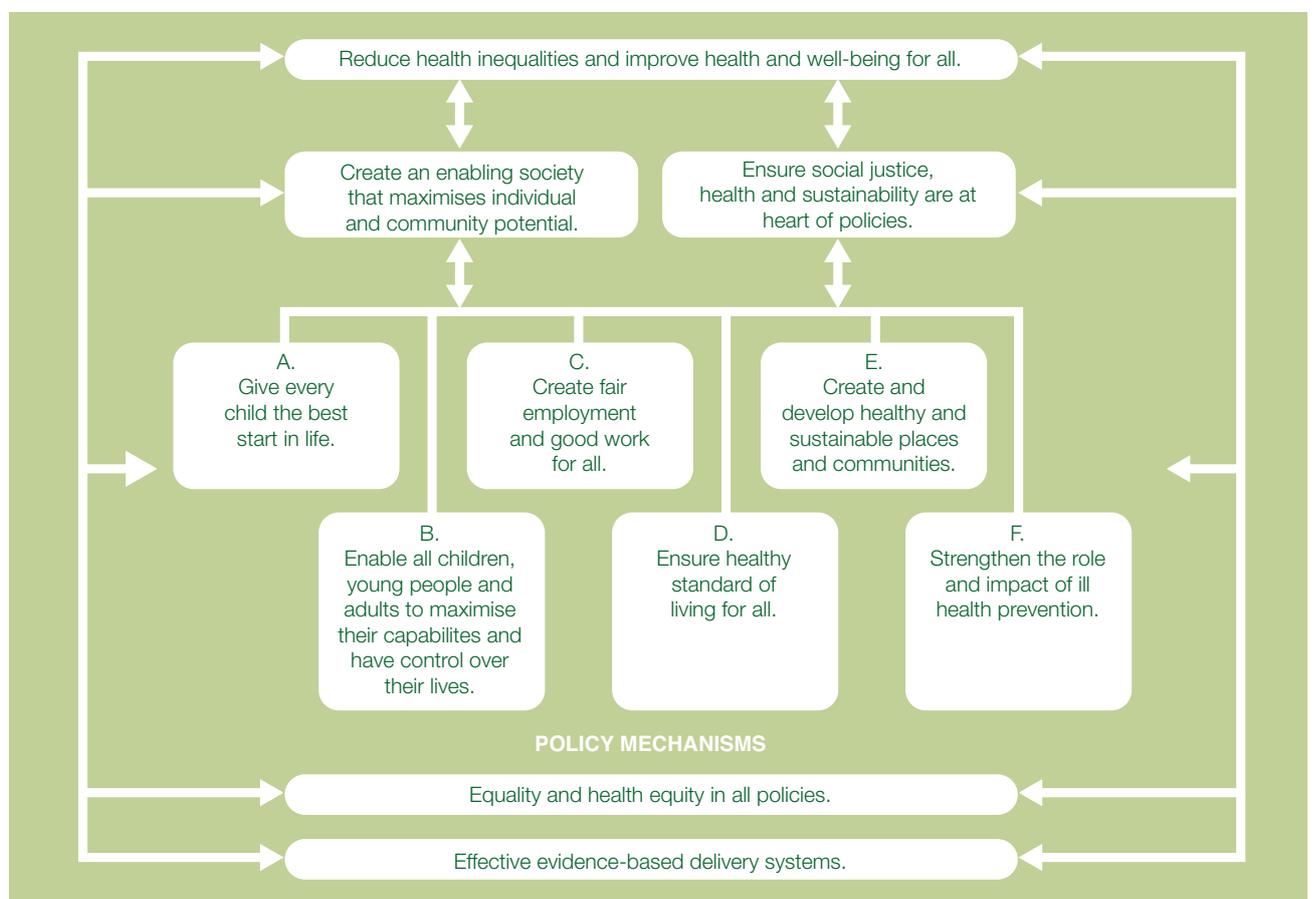


Source: National Health Insurance Research Database, 2011–2012 (6).

Figure 5 shows the framework used in the English review, *Fair Society, Healthy Lives*, to group its recommendations into six policy areas (8).

This framework describes important areas where action is necessary in order to tackle health inequalities. The same framework has been used in the report for Taiwan and analysis and recommendations have been developed under the six main policy objectives shown in Figure 5.

**Figure 5** Conceptual policy framework



Source: Marmot Review Team (8).

Action to improve health equity through the social determinants is also likely to lead to desirable reductions in inequities in other areas, such as quality of early years provision, education, working conditions, income and the communities in which people live. The areas are widespread and diverse, and action needs to be taken across many sectors, areas of government and local stakeholders. There is a strong global evidence base linking performance in all these areas with health outcomes and indicating which interventions are needed to make improvements.

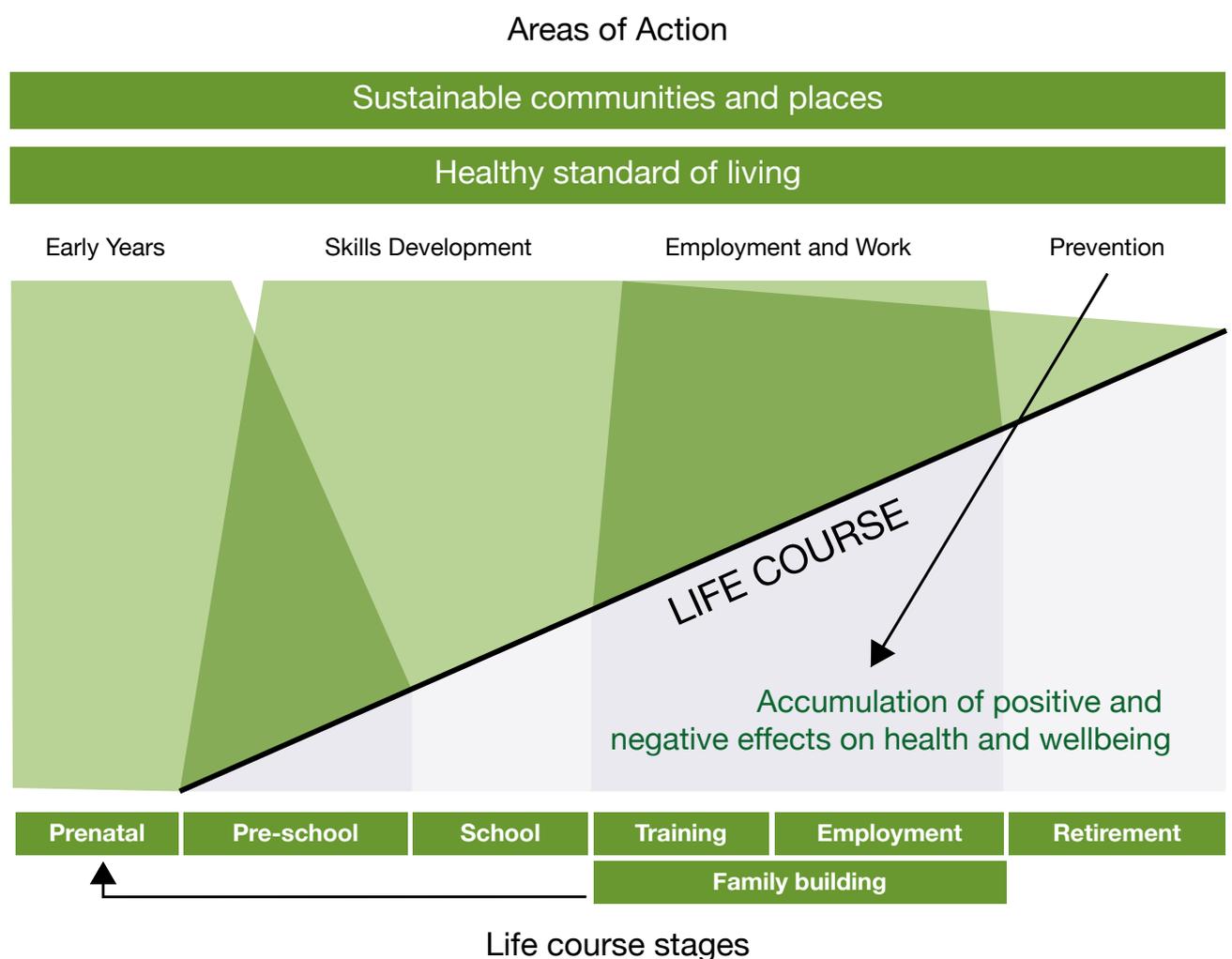
### The life course

The actions identified in this framework need to take place across the life course, as shown in Figure 6.

Action should be taken at all stages of life, but the highest priority is to ensure a good start to life for every child. This requires, as a minimum, adequate social and health protection for women, mothers-to-be and young families and a universal, high quality, affordable early years, education and child care system.

Emphasis on a good start in life does not of course mean that actions at later stages of the life course are not important – in early adulthood, working ages and older ages. All are important, to reinforce the improvement in skills and individual empowerment provided by a good start, but also to achieve greater health equity among the existing adult populations. In particular, it is essential to reduce stress at work, reduce long-term unemployment through active labor-market programs and address the causes of social isolation.

**Figure 6** Action across the life course



Source: Marmot Review Team (8).

## Areas for action: evidence, existing policies and recommendations for Taiwan

Given what we know about the importance of social determinants in shaping distributions of health, both internationally and in Taiwan, it is vital that action focuses on these social determinants. Below we describe evidence from Taiwan about inequalities in the six policy areas described in the Marmot Review for England and listed in Figure 5, and we set out key recommendations in each area to reduce these inequalities.

### A GIVE EVERY CHILD THE BEST START IN LIFE

#### Evidence

Socially graded inequalities are present prenatally and increase through early childhood. The first year of life is crucial for neuro-development to provide the foundations for children's cognitive capacities (9). There is good evidence to show that if children fall behind in early cognitive development, they are more likely to fall further behind at subsequent educational stages (10). The evidence also shows that the development of early cognitive ability is strongly associated with later educational success, income and better health (11–13). Abundant evidence suggests that socioeconomic status is associated with a multitude of developmental outcomes for children. Furthermore, the literature indicates that socioeconomic gradients in early childhood replicate themselves throughout the life course (14).

In Taiwan there is a clear relationship between maternal education and low birth weight. In each age group mothers with a lower level of education were much less likely to suffer postpartum depression than those with higher levels (Figure 7). Evidence shows that in many countries maternal postnatal depression is associated with a range of relatively poor outcomes for children as well as mothers (15).

There is also a sharp gradient by mother's education in reading frequently to children at age three (Figure 8). Those with college education or above are five times as likely to read frequently than those with only elementary education, 3.4 times as likely as those with junior high education and 1.8 times as likely as those with senior high education.

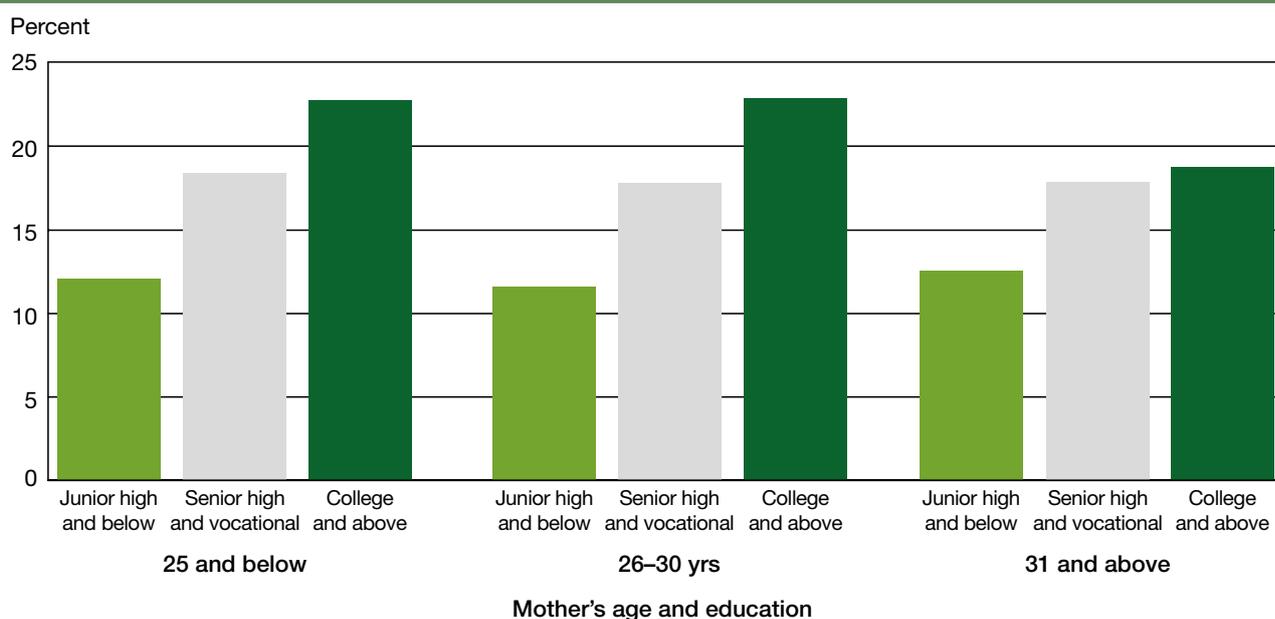
There is also a clear gradient in teeth brushing at age three by mother's education, with college educated mothers twice as likely to brush their children's teeth before bed as those with only elementary education. This presumably reflects differential levels of health literacy.

All the inequalities experienced in the early years will have important influences – directly on children's health and educational attainment – and which go on to have important ramifications throughout life. Importantly, the early years is also the stage of life where interventions can make the greatest impact, potentially disrupting the patterns of accumulating disadvantage which were depicted in Figure 6.

Gender inequities are evident from the start of life. Currently male-biased sex ratios at birth in Taiwan are largely achieved through the use of sex selection technologies provided by the health care sector. This enables expectant parents to target female foetuses for abortion. Addressing this issue requires acting on the gender inequities that shape the desire to choose males over females.

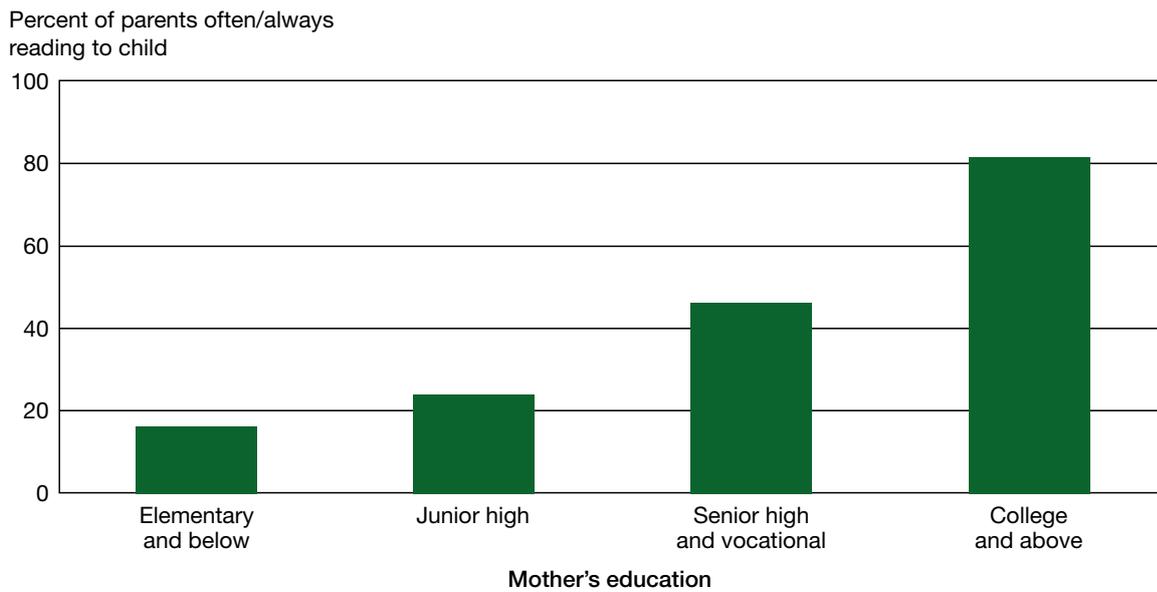
The social and economic roles performed by men and women significantly affect the health risks to which they are exposed over the life course. A specific source of psychosocial stress for women is balancing the burdens of caregiving to different generations with paid work and housekeeping. Men's health is more frequently affected by work conditions. Risk-taking and other behavior, such as violence, among men is encouraged by gender norms and endangers the health and wellbeing of both men and women.

**Figure 7** Percentage of mothers who experienced postpartum depression, 2005–6



Source: Taiwan Birth Cohort Study (TBCS) (16).

**Figure 8** Reading frequency at age three, 2008



Source: Taiwan Birth Cohort Study (TBCS) (16).

Note: 'Reading frequently' at age 3 means parents always/often read to child.

### Existing policies in Taiwan

- Universal coverage of comprehensive preventive interventions: antenatal care visits, new-born screening for congenital metabolic disorders, infant stool color card, hearing screening, vaccination, seven well-child check-ups, and fluoride application to teeth
- Special program for disadvantaged groups: enrollment in the national health insurance, life skill education and guidance, and multilingual versions of child and maternal handbooks for foreign-born mothers

### Recommendations

#### A1 REDUCE SOCIAL GRADIENTS IN ADVERSE BIRTH OUTCOMES

Provide accessible, adequate-quality sexual and reproductive health services for women and girls in all existing health centers and facilities.

Every woman/family should receive a basic package of universal services during and after pregnancy. In addition those with greater social and/or health needs should receive more services proportionate to their needs.

#### A2 REDUCE SOCIAL GRADIENT IN OUTCOMES FOR MOTHERS AND BABIES AND CHILDREN IN THE EARLY YEARS

Postpartum support for mothers and focus on mental health of mothers through health care services and community programs.

Provide high quality universal parenting, childcare programs and other support services (including crèches and kindergartens) that assist and empower families with parenting and employment services delivered according to social and health needs (including additional support for the most vulnerable).

### A3 GREATER GENDER EQUITY

Develop gender equity strategies to improve sexual and reproductive health and high quality parenting with a focus on:

- improving conditions to balance work and child rearing
- greater support for new parents – at community level and at work.

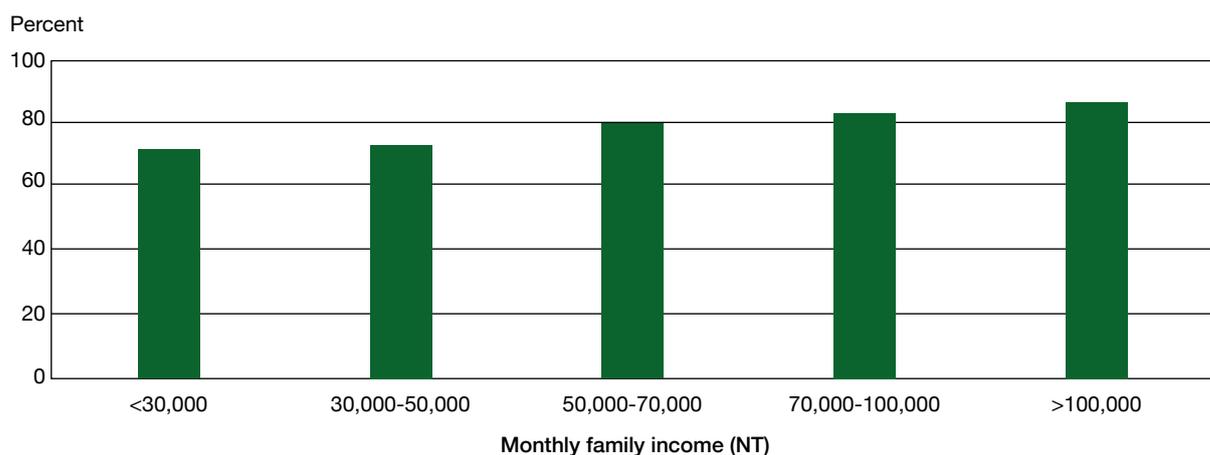
### B ENABLE ALL CHILDREN, YOUNG PEOPLE AND ADULTS TO MAXIMIZE THEIR CAPABILITIES AND HAVE CONTROL OVER THEIR LIVES

#### Evidence

The social position of parents accounts for a large proportion of the difference in educational attainment between higher and lower achievers in Taiwan, as elsewhere. These differences emerge in early childhood and tend to increase as children get older (17).

Children from disadvantaged backgrounds are more likely to begin primary school with lower personal, social and emotional development and communication, language and literacy skills than their peers (18).

**Figure 9** Percentage of pupils achieving a good level of performance in Chinese and mathematics, by monthly family income, 2012



Source: Taiwan Birth Cohort Study (16).

Note: Good level of performance in Chinese and mathematics means both excellent and good learning in class judged by teacher at age eight years survey.

There is a strong relationship between family income and educational attainment at age eight in Taiwan (Figure 9). Children from the poorest families achieve a good level of performance by international standards (72%). However, this compares with 87% of children in the highest income families. This is likely to lead to poorer life chances and poorer health outcomes in later life for children of poor families.

These differences in educational performance relate to differences in health by level of education attainment in Taiwan throughout adulthood. In particular, those with secondary school education and below had much higher rates of limiting long-term illness than those who had attended education for longer.

#### Existing policies in Taiwan

- National compulsory education: increased to six years in 1946, nine years in 1968 and 12 years from 2014
- Increase gender equity in subjects undertaken
- Education for students with special needs: special education schools, special education classes at regular schools, home education, and bedside education
- Financial assistance program for disadvantaged college students: financial aid, free dormitory, living expenses supplements, and emergency relief assistance
- Lifelong education: employment training, vocational training, community colleges, tribal community colleges, elder colleges, social education centers and social work stations

#### Recommendations

- B1 ENSURE INCREASE IN COMPULSORY EDUCATION TO AGE 18 PROVIDES SKILLS TRAINING NEEDED FOR BOTH WORK AND COLLEGE
- B2 ENSURE SUFFICIENT INCOME TO IMPROVE PARTICIPATION AMONG STUDENTS FROM POORER FAMILIES
- B3 ENSURE QUALITY EDUCATION SERVICES ARE AVAILABLE TO ALL, NON-DISCRIMINATORY AND GUARANTEED TO THE MOST VULNERABLE
- C CREATE FAIR EMPLOYMENT AND GOOD WORK FOR ALL**

#### Evidence

Unemployment results in many elevated health risks. There are increased rates of limiting long-term illness, mental illness (19) and cardiovascular disease. The experience of unemployment has also been consistently associated with an increase in overall mortality, and in particular with suicide. The unemployed have higher use of medication (20,73) and much worse prognosis and recovery rates (19).

Unemployment has both short- and long-term effects on health. The immediate negative impact of being made redundant on a person's health outcomes has been frequently reported (21) while other studies emphasize the steady negative effects, proportional to the duration of unemployment, which progressively damage health (22). Therefore adverse effects on health are greatest among those who experience long-term unemployment (23, 24).

Figure 10 shows marked gradients in mortality in Taiwan, by level of education and employment status in the 10 years following the 2000 Census, for men who were aged 15–64 at the time of the Census. There were steep gradients both for those with a job and those without one at Census. At each level of education, mortality of those without a job was higher than of those who were employed. Men who had attended junior college or university and were in employment at Census had particularly low levels of mortality and the excess mortality risk associated with being unemployed was over 60% for them. Among less educated men, the excess risk was between 40 and 50%.

Additionally, reporting of limiting long-term illness was higher among those with fewer years of education and, among men who reported these problems, the proportion in work increased with duration of education attended. One factor affecting employment levels was the type of disability. People with limiting physical disabilities (hearing, vision, mobility or communication problems) were less likely to be employed (employment rates between 11 and 47%) than those with symptoms such as fatigue, anxiety, pain or depression (employment rates between 59 and 79%). These observations have policy implications for improving access to the workforce for people with limiting disabilities and impairments.

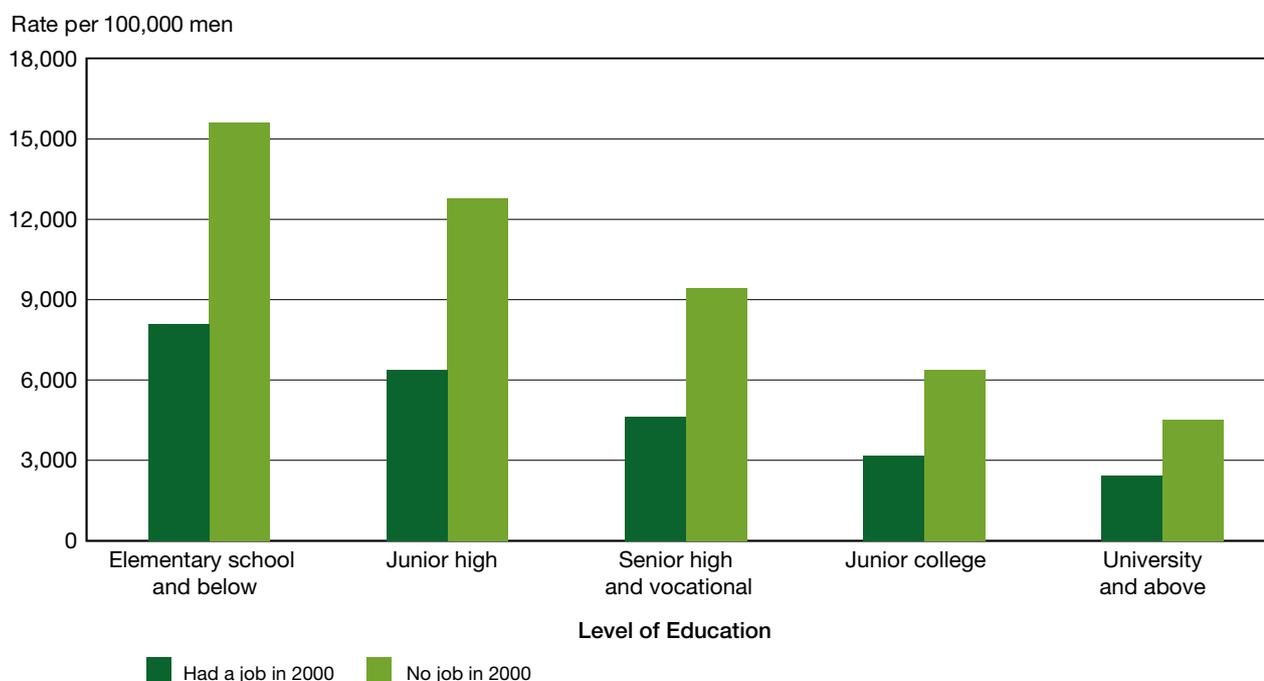
It is clear that getting people into employment is an important strategy for improving health. However, not all work is protective of health. People’s health can be damaged at work by factors including exposure to physical hazards,

physically demanding or dangerous work, long or irregular working hours, shift work, health-adverse posture, repetitive injury and extended sedentary work (25, 26).

Psychosocial stress in the work place can also cause ill health; for example, stress resulting from an imbalance between demands made on the worker and the control they can exercise over the job, or an imbalance between the effort the worker makes and the ways in which they are rewarded. These factors have become more widespread as the nature of employment and work has changed worldwide. Technological advances and economic growth in the context of globalized markets have resulted in new types of tasks (for example, information processing, personal services and service centers), leading to a demand for greater flexibility of employment arrangements and contracts, often combined with less job stability and security, more intensive work and longer hours (27). Related adversities include conflicts within workplace hierarchies, restricted participation of employees in decision-making, and covert or overt discriminatory practices. ‘Toxic’ combinations of these factors are frequent in the current labor market, yet unequally distributed between occupations.

These factors are most prevalent among the most deprived workers, specifically those in ‘precarious’ jobs that are defined by a lack of safety at work, by exposure to multiple stressors including strenuous tasks over which the worker has little control, low wages and high job instability (28). There is ample evidence on the adverse effects on health and wellbeing produced by these conditions.

**Figure 10** Age standardized mortality rates in Taiwan, 2001–2010, by level of education and employment status for men aged 25–64 at 2000



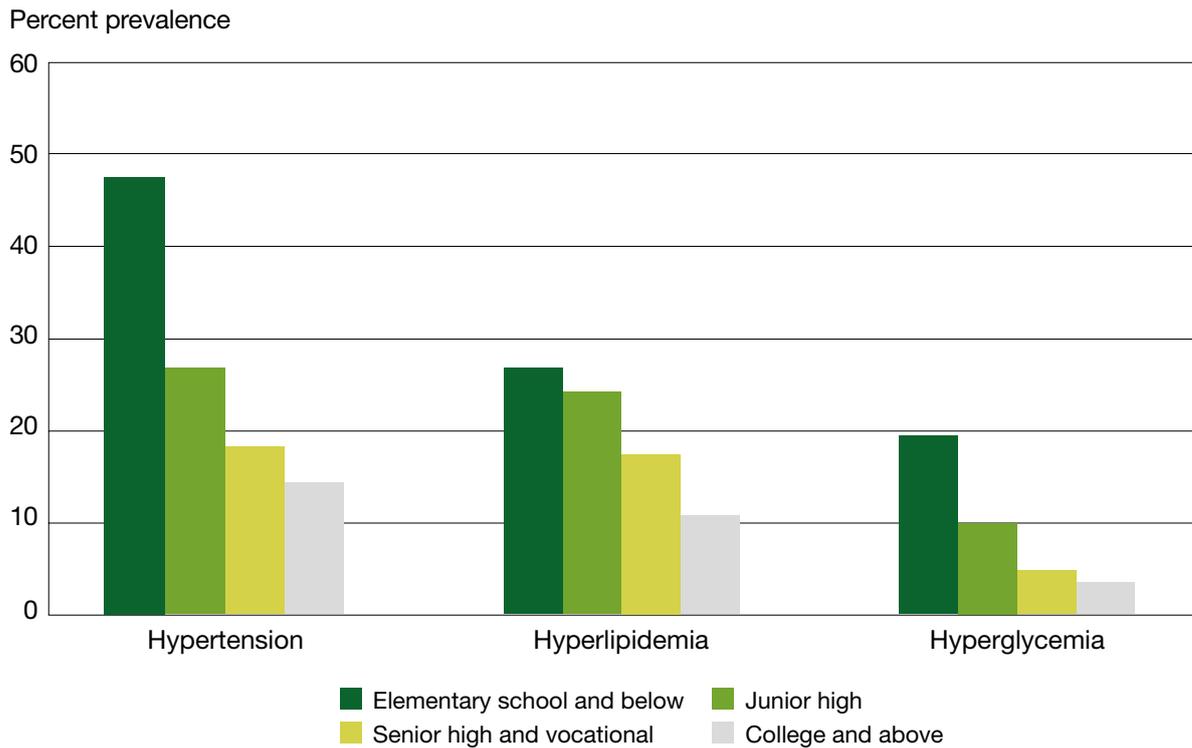
Sources:

1. Population and Housing Census, 2000 (4).
2. Population and Housing Census, 2000 (4) and deaths in 2001–2010, by level of education (2).

Note:

Age standardization based on WHO world standard population, 2000–25.

**Figure 11** Prevalence of hypertension, hyperlipidemia, hyperglycemia by level of education, Taiwan, 2007



Source: Taiwanese Survey on Prevalence of Hypertension, Hyperglycemia and Hyperlipidemia, 2007 (29).

Figure 11 provides evidence of the link between skills, as measured by educational level, and the distribution of clinical risk factors such as hypertension, hyperlipidemia and hyperglycemia. There are gradients in all three risk factors – with those having only a primary school or lower education having over three times the rate of hypertension than those with college or higher education, 2.5 times the rate of hyperlipidemia and over five times the rate of hyperglycemia.

#### Existing policies in Taiwan

- Basic wage: there is a minimum wage in Taiwan, the lowest hourly or monthly remuneration that employers may legally pay to workers (around 20,000 NT per month in July 2015)
- Implementation of occupational health and safety policies
- Occupational gender equality: prohibition of sex discrimination, prevention of sexual harassment, and measures for promoting equality in employment
- Occupational rights protection for aborigines and people with disabilities: government sections are required to employ one aborigine employee for every 100 employees, and organizations must employ at least one disabled person for every 34 employees

#### Recommendations

##### C1 CONDITIONS OF WORK

Promote the use of management standards aimed at reducing the causes of workplace stress, particularly for those in routine and repetitive jobs.

Focus on safety in high-risk employment.

Promote gender equity and family-friendly policies in the workplace, engaging with employers.

##### C2 EMPLOYMENT POLICIES

Develop active labor market policies to integrate the most vulnerable into good quality work and retrain and up-skill long-term unemployed.

Ensure high level of employment for those who are in vulnerable situations – such as people with disabilities, long-term unemployed, those in deprived areas, foreign born wives and indigenous populations – in accordance with principles of a sustainable economy, without compromising standards of decent work and policies of basic social protection.

Work with employers to increase employment rates among those with long-standing health problems or disabilities.

Create employment opportunities for all young people and ensure they are positioned to take up good quality work through education, training and active labor market policies.

### C3 UNEMPLOYMENT POLICIES

Policies for growth should give priority to reducing the long-term unemployment of young people.

Improve social protection for unemployed and others out of work, including an explicit focus on gender and vulnerability in social welfare measures and policies.

### C4 GENDER EQUITY AT WORK

Achieve parity of esteem for women in the workplace.

Promote family-friendly policies.

Employ greater action to prevent discrimination, bullying and exploitation.

## D ENSURE A HEALTHY STANDARD OF LIVING FOR ALL

### Evidence

The relationship between low income and poor health is well established. It operates in several ways. People with low incomes refrain from purchasing goods and services that maintain or improve health or are forced to purchase cheaper goods and services that may increase health risks. Having a low income also prevents people from participating in a social life and can leave them feeling they are less worthy or have a lower status in society than the better-off (30, 31). The relationship can operate in both directions: low income can lead to poor health (for example

through its adverse impact on the conditions of daily living) and ill health can result in a lower earning capacity.

The adverse effects on health caused by having a low income have been shown in several studies (32). The gradient is important to address, as it is not always those on the lowest incomes who find it most difficult to make ends meet. Figure 12 shows the gradient in income according to the type of occupation in which people are employed.

### Existing policies in Taiwan

- Basic economic security through social insurance and pensions: Government Employee Insurance since 1958, Labor Insurance since 1950, Farmers' Health Insurance since 1985, National Pension since 2008, National Health Insurance since 1995
- Employment Promotion Plan, 2010
- Unemployment services: provide information on resources available for obtaining employment

### Recommendations

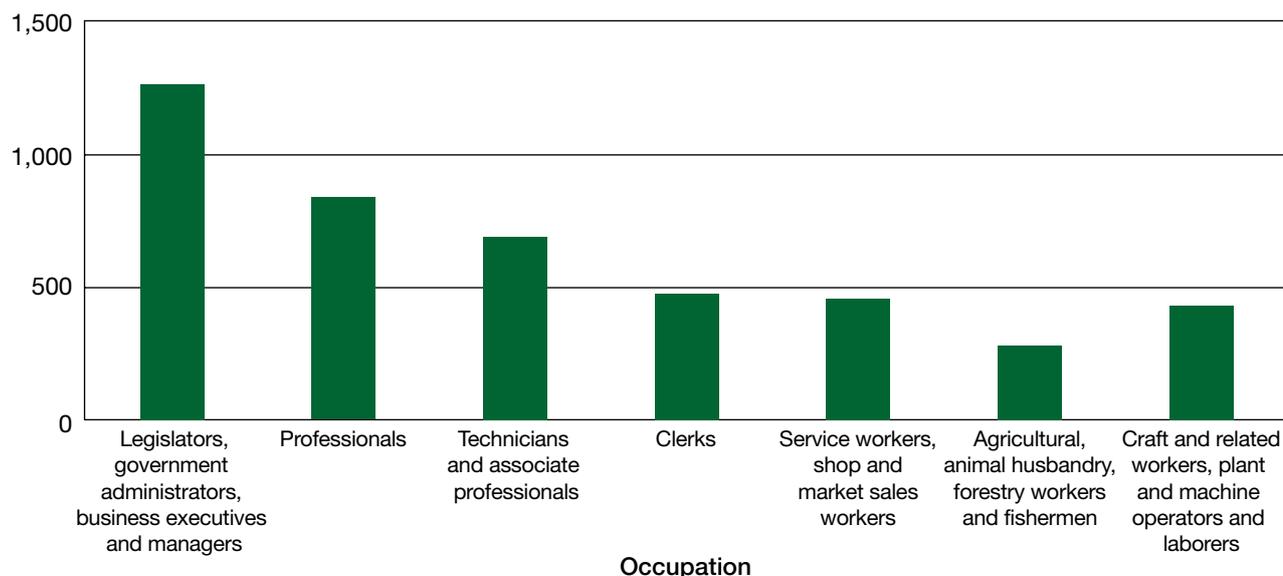
#### D1 MINIMUM STANDARD OF INCOME

Older people should have an appropriately calculated minimum standard of living based on income, social participation and health care provision requirements.

Policies aimed at protecting older women from absolute poverty and isolation should be a particular priority.

**Figure 12** Average primary income per employed person by type of occupation, 2012

Average primary income  
NT (thousands)



Source:

The Survey of Family Income and Expenditure, 2012 (33).

Notes:

- a) Occupation groups are based on the Standard Occupational Classification System of the Republic of China (Rev.6).
- b) Soldiers are included in 'Technicians and Associate Professionals'.

Ensure that there is an equity focus in the tax and transfer system, by leveling up the gradient, investing in programs that show evidence of making the poorest more productive and economically engaged. This includes health, education, welfare and active labor market programs.

Social protection systems must be sufficient to enable recipients to live a healthy life and provide a safety net against adversity (for example ill health, disability, redundancy from employment).

Develop a national minimum standard for healthy living based on a standard international framework.

### E CREATE AND DEVELOP HEALTHY AND SUSTAINABLE PLACES AND COMMUNITIES

#### Evidence

#### The social gradient in places and communities

There is substantial evidence of a persistent gradient in health according to the level of neighbourhood deprivation in Taiwan (Figures 1 and 2).

#### Transport

The impact of transport on health inequalities is most significant when looking at deaths from road traffic injuries. The main avoidable cause of death in childhood in Taiwan is unintentional injury, with road traffic accidents the most common cause in children aged one and over (34). Road deaths by township deprivation quintiles are shown in Figure 13. There is a steep gradient for both deaths of car occupants and pedestrians and cyclists.

#### Existing policies in Taiwan

- Healthy City Project: integrates planning, transport, housing, environmental and health systems to address social determinants of health in each locality
- Healthy communities and health promoting settings: promote community participation and action; reduce social isolation

#### Recommendations

Focus more on deprived townships, as they are likely to reap the greatest benefit from interventions that provide a healthier and safer environment, since they tend to be disproportionately exposed to inadequate environmental conditions.

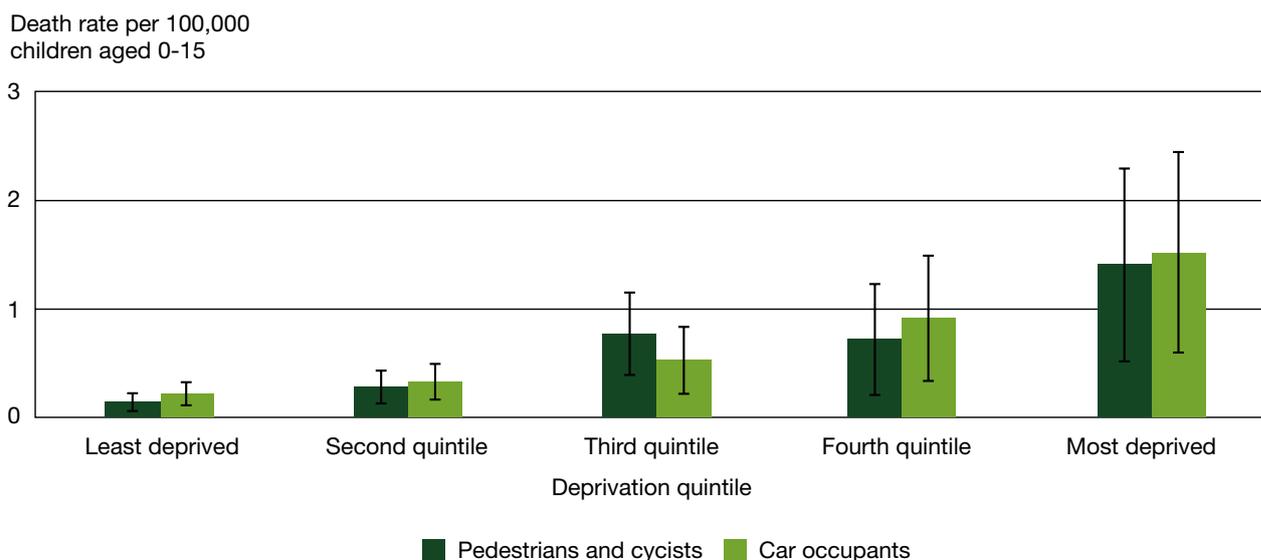
Improvements are needed in levels of air quality, particularly where this is unequally distributed according to the social composition of areas.

Ensure that all population groups, particularly those who are excluded (such as homeless people and refugees) or vulnerable (young and elderly), experience safe and healthy environmental conditions.

All new policies should be subject to health equity and environmental impact assessment. The links between health, equity and environment need to be explicitly recognized in these assessments.

Action should be taken to mitigate the impact of extreme natural events and climate change, based on both social need and geographic location of communities likely to be affected.

**Figure 13** Child road traffic death rates by deprivation quintiles of Taiwan townships, 2008–2011



Source: Death Reporting System, Ministry of Health and Welfare, Taiwan, 2008–2011 (2).

Notes:  
 a) Townships are small areas containing around 65,000 people.  
 b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (4).  
 c) —|— represents a 95% confidence interval.

The risks to children associated with road traffic should be reduced, through providing safer urban and rural road systems and traffic calming measures.

## F STRENGTHEN THE ROLE AND IMPACT OF ILL HEALTH PREVENTION

### Evidence

There are inequalities in risk factors, such as smoking and alcohol misuse (as illustrated in Figures 3 and 4). As the main drivers of ill health and risky health behaviors lie in the broader social determinants, public health and health care systems should be enhanced by placing a greater emphasis on social determinants including addressing the causes of inequalities in risk factors for the major causes of morbidity and deaths. The report contains examples of existing public health programs in Taiwan including cervical cancer screening and the reduction of smoking, TB and diabetes.

### Existing policies in Taiwan

- Investment in health prevention: utilized income from tobacco surcharge to expand budget for prevention
- Comprehensive coverage on treatment and health prevention: National Health Insurance pays for disease treatment, Centers for Disease Control pays for vaccination, Taiwan Health Promotion Administration pays for preventive services such as check-ups, cancer screening, smoking cessation, oral health and so on
- Population-wide intervention on health risks: Taiwan ratified the WHO Framework Convention on Tobacco Control in 2005 and adopted the WHO MPOWER strategies on tobacco control
- Reducing inequality in healthcare delivery
- Comprehensive monitoring on social determinants and health: mortality, morbidity, surveillance of risk factors, evaluation of public awareness and practice

### Recommendations

Action is needed to stem the transition to some of the unhealthy patterns of consumption that are developing, leveling up the social gradient in lifestyles through action both on behaviors and their social determinants.

These actions include increasing prices: a minimum price for alcohol and greater taxation on smoking; and ensuring extensive bans on smoking in public places and near children/pregnant women.

Ensure that public health delivery systems have shared objectives with other sectors involved in addressing social determinants.

## Proposals for delivery and governance

### Governance for health equity through a whole of government approach

#### Summary of system requirements

- 1) A high level of political commitment.
- 2) All sectors of society and government must be involved in endeavors to reduce health inequalities in Taiwan.
- 3) Health systems' focus on prevention must be enhanced with an emphasis on social determinants.
- 4) An effective monitoring system must be implemented which focuses on social determinants and the social distribution of health outcomes.
- 5) The line of responsibility for reporting and accountability for action on health inequalities at local and national level must ultimately lead, through the Executive Yuan, to the Premier.

Governance systems should strengthen accountability and coherent action across sectors and stakeholders at all levels if they are to reduce health inequalities through action on social determinants. The aim is to prioritize actions to tackle inequities in health and its social determinants, increase resources and make better use of what is available in order to redress the current patterns and magnitudes of health inequalities, and improve the distribution of determinants across the population. Governance arrangements to achieve health equity that are capable of building and ensuring joint action and accountability of health and non-health sectors, public and private actors and citizens need to be in place for this to happen (35).

Clear lines of accountability are required at executive level for addressing the social determinants of health effectively on a whole-of-government basis. Accountability alone is not a panacea to resolving these structural issues – where it exists, it is often notional or spread so widely across the executive as to be ineffectual. Clear leadership and strong advocacy are also required (35).

Any strategic plan should include a compelling narrative on why improving equity is a priority not only for health, but also for the attainment of other societal goals and aspirations.

It should describe the delivery mechanisms, based on systems that demonstrate evidence of:

- a defined delivery chain
- ownership and active management
- levers and incentives
- performance management
- strong civic, executive and political leadership
- sustainable financing and training
- political support and statutory responsibilities
- high public visibility and engagement (35)

Proportionate universal policies are central to any plan to reduce inequalities in social determinants. The universal element is needed to ensure that these policies are sustainable, achieve social buy-in and political will, reduce stigmatization and avoid marginalization to attract sufficient investment.

Those targeted at specific groups are less effective socially than actions that include the whole of society. To be cost-effective, the approach requires that investment and intensity of activity are proportionate to social need to ensure the population coverage needed to achieve a leveling-up of the social gradient.

Taiwan will need to develop a comprehensive life-course approach to policy action, beginning with the earliest years of life and sustained throughout each subsequent stage as described in previous sections.

## Systems that both improve health and level up the gradient

### Recommendations

Universal healthcare systems, delivered with an intensity that is proportional to health and social need, is essential to maintain and improve health levels across the social gradient.

Put in place core planning and review mechanisms.

Identify the potential of existing systems to deliver change in existing inequalities in healthcare access and outcomes.

Ensure that a whole of government approach is taken throughout the planning and review cycle for health-promotion, health-protection and disease-prevention systems.

Ensure that health care delivery systems have shared objectives with other sectors in addressing the social determinants of access and outcomes.

## Whole of government approaches to health equity

### Whole of government approaches

Develop a clear strategy for action on the social determinants of health to reduce health inequalities, involving all sectors and action across government. Ensure that the National Plan addresses the current patterns and magnitude of health inequalities. Embed the strategy for action in mainstream policies.

Ensure that a whole of government approach is taken to setting up a planning and review cycle. Ensure that delivery systems have shared objectives in addressing social determinants.

### Health equity in all policies

“Health equity in all policies” approaches should be used to assess current policies across government and aid in the development of new policies to ensure greater health equity.

### Intergenerational equity in all policies

Adopt an intergenerational approach and assess policies for impacts on equity in future generations as well as for the current generation.

### Accountability and review

Measurement and indicators should be built on available evidence. This should include identification of gaps in basic data and development of long-term plans for data improvement.

Efforts should be made to collate as much as possible of the available evidence in the country, in order to identify as accurately as possible improvements needed to the strategy.

Analysis of reports should identify where improvements are needed, for example to understand life-course issues and evaluate the effectiveness of interventions.

Minimum standards should be developed to guide development across sectors of more sophisticated evidence collections and evaluations.

There should be annual reporting, measurement and monitoring of health inequalities – nationally and by local area.

Legislation is needed to support accountability and review mechanisms, such as health inequalities legislation.

Policies and legislation should be framed in a way that provides effective mechanisms for adequate participation, engagement and consultation of those most at risk of vulnerability and exclusion.

## Summary of key actions required

### 1) Take action at every stage of life

Advantage and disadvantage accumulate across the life course – beginning before birth and continuing into old age. This requires:

- at the start of life, addressing the transfer of disadvantage in social determinants and ill health between generations
- in the early years, supporting families and good parenting
- reducing educational inequalities by developing the skills and capacities of all young people
- improving opportunities for good quality work for all, reducing inequalities in unemployment and adverse work conditions
- supporting older people's social participation, health and wellbeing

### 2) Develop the good examples of action in Taiwan

Promising examples must be scaled up and intensified, so that issues of inequity are addressed across the whole of society but with a response that is proportionate to the inequality experienced by each group or sector. For example:

- addressing key gaps in gender equity – such as work/family balance, education and access to amenities – can contribute to greater health and socioeconomic equity
- reducing inequalities in the quality of environments, housing transport and green spaces will improve health equity
- enhancing healthy aging initiatives will address the impending “demographic time-bomb”

### 3) Ensure effective social protection systems that reduce health inequalities

Social protection systems must be sufficient to enable recipients to live a healthy life and provide a safety net against adversity (for example ill health, disability, redundancy from employment)

### 4) Tackle the drivers of exclusion and vulnerability

Several groups in Taiwan are particularly vulnerable to processes that lead to disadvantage and exclusion, impacting on their right to health. These include:

- foreign-born wives
- vulnerable migrants
- disadvantaged indigenous groups
- some fishing and farming communities

### 5) Governance system requirements

- All sectors of society and government must be involved in efforts to reduce health inequalities in Taiwan
- Health systems' focus on prevention must be enhanced with an emphasis on social determinants
- An effective monitoring system must be implemented which focuses on social determinants and the social distribution of health outcomes
- The line of responsibility for reporting and accountability for action on health inequalities at local and national level must ultimately lead, through the Executive Yuan, to the Premier

### 6) Strategic approach required

- Ambition, opportunities and potential barriers
- Leadership, champions and advocacy
- Levers and incentives
- Developing indicators, targets and review plans
- Accountability and evaluation

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# Chapter 1

## Context

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### 1.1 Introduction

Taiwan has seen remarkable improvements in health for the whole population in recent years. On average in Taiwan life expectancy has increased 2.3 years over the 10 years to 2012, placing it among the top five in Asia (1) and near the average for OECD countries (2) – impressive achievements. Yet despite this encouraging progress in overall health, there are persistent and widespread inequalities in health within Taiwan, as in all countries in the world. These health inequalities are closely related to social, economic, cultural and political factors – the social determinants of health, which shape people’s health to create social gradients – those with greater levels of social advantage are likely to experience better health throughout their lives and live longer than those who are relatively less fortunate.

### 1.2 The report

This report is part of a drive by the Taiwanese Government and Health Promotion Administration to reduce health inequalities in Taiwan and drive up health outcomes for everybody, to the levels enjoyed by the top socioeconomic group.

The report consists of three main parts – Chapter 2 provides an analysis of the distributions of health outcomes and life expectancy in Taiwan and highlights inequalities for particular groups and places. Chapter 3 provides a detailed analysis of the data that describes the factors that are driving these health inequalities: principally the social determinants of health.

The third part of the report, Chapters 4 and 5, is based on data analysis. It sets out a framework for tackling health inequalities and makes recommendations for policies and actions at national and local level, involving a variety of sectors across government and civil society. These proposals for action are relevant for the health sector, including public health and all those other policy sectors that cover the social determinants of health. The recommendations are also appropriate and specific to Taiwan’s political, economic, social and governance context and relate to other national policy ambitions, such as the important ambition for greater gender equity in Taiwan.

### 1.3 Taiwan context

This section provides an overview of health, health inequalities and the key factors (such as demography, geography, education and labor market) that drive these in Taiwan. These relationships are all described in more depth in Chapter 2.

#### Key statistics on Taiwan

- A rapidly aging population
- A very low fertility rate – 1.1 children per woman
- A relatively high ratio of boys to girls at birth
- Low infant mortality and high life expectancy, comparable to levels in Western Europe
- Women can expect to live six years longer than men
- A steep social gradient in life expectancy – eight years’ difference between the most and least deprived townships
- A relatively low unemployment rate, but also relatively low labor force participation among men by international standards
- Very good levels of educational performance, particularly in mathematics, compared with countries reported in the OECD’s Programme for International Student Assessment (PISA)
- Low levels of spending on health (0.2% GDP) and education (1.8%) by international standards, though comparatively more on social security and welfare (3.4%)
- Only 5% of achievement is considered lost due to gender inequality compared with a world average of 46%

### 1.3.1 Demography

#### Population age structure

Taiwan has a rapidly aging population. In the 50 years from 1964 to 2013, the percentage of population who were children aged under 15 fell from 45.5% to 14.3% and the percentage who were 65 and over rose from 2.6% to 11.5% (3). As a consequence, the proportion aged 15–64 rose from 51.9% to 74.2%. However, this figure is projected to fall steadily back to around 51% by 2060 as the percentage aged 65 and over rises to around 40% (4).

In terms of absolute population size, the total population increased by 90% (from 12 to 23 million) over the 50 year period. The number of children decreased by 40% while the number aged 15–64 increased by around 170% and the number aged 65 and over by around 750%. It is projected that the numbers aged under 15 and 15–64 will both be halved from their current levels by 2060 while the number aged 65 and over will increase by a further 160%.

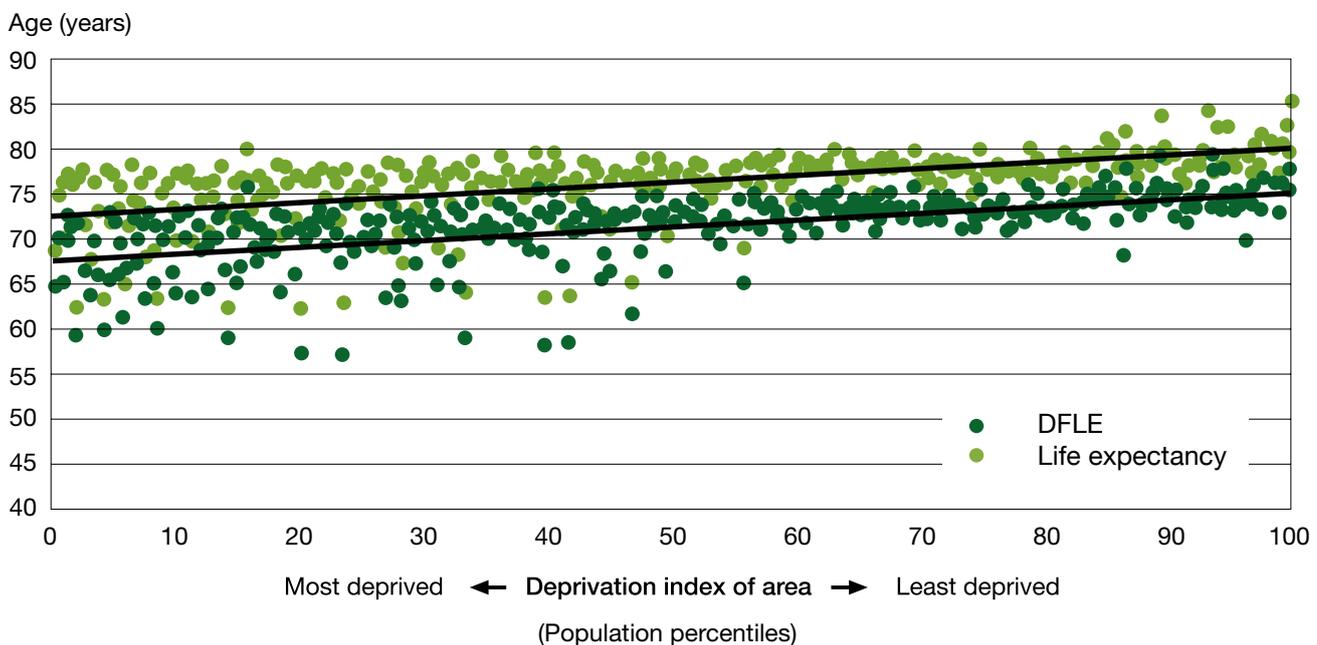
#### Age-dependency ratios

The child dependency ratio (children aged under 15 as a percentage of those aged 15–64) decreased from 88% to 19% over the 50 years to 2013 and is projected to fall only slightly (to 17%) by 2060. By contrast, the aged dependency ratio (those aged 65 and over as a percentage of those aged 15–64) rose from 5% to 16% in the 50 year period and is projected to continue rising to reach around 80% in 2060.

#### Fertility rate

Taiwan has a low birth rate, both compared with its own history and internationally. In the 50 years to 2013, the total fertility rate fell from 5.1 to 1.1 children per woman, having fallen below replacement rate in the 1980s and below one in 2010. The current figure is among the lowest in the world, raising the prospects of future labor shortages, falling domestic demand, and lower tax revenues as this feeds through to reduced numbers at age 15–64 and an increased aged dependency ratio (5, 6). The sex ratio at birth (males per 100 females) was around 107 until 1986, after which it increased to reach 110 in 1990. Since 2011 it has fallen back to slightly below 108. The reasons for both the level and variation in this ratio are discussed in more detail in Chapter 3.

**Figure 1.1** Life expectancy (LE) and disability-free life expectancy (DFLE) at birth, persons by deprivation index of area (township level), Taiwan, 2001–2010



#### Sources:

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2001–2010 (2).
2. The Disabled Population for each county in Taiwan, 2001–2010 (3).

#### Notes:

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (4).

## Infant mortality

Infant mortality in Taiwan fell by around 25% in the 10 years to 2012 to a value of 3.7 per 1,000 (7). This corresponds closely to the Western European average and places it in the lowest decile of world rates (8).

## Life expectancy

Life expectancy at birth for people in Taiwan was 80 years in 2013, 77 for males and 83 for females (7). The figure for all people was comparable to the Western European average and in the top decile in the world. However, while the figure for females was in the highest 5% of countries, that for males was in the second decile (8).

### 1.3.2 Health inequalities

Inequalities in health exist across a range of social and demographic indicators in Taiwan, including income, occupation and parental occupation, level of education, neighborhood quality and level of deprivation, geographic region, gender and ethnicity. These inequalities are evident in many health outcomes, including mortality, morbidity, self-reported health, mental health, death and injury from accidents and violence - see Chapter 2 (9, 10). For example, Figure 1.1 shows that the average life expectancy in the most deprived townships in Taiwan was 73 years in 2001 to 2010 –some eight years less than the average for the richest townships (the top curve in Figure 1.1). Not only does this represent a dramatic difference between the least deprived and the most deprived townships in Taiwan, but the relationship with deprivation is a graded one: the less the amount of deprivation in a township, the longer people in the township could expect to live.

Disability-free life expectancy (the lower curve in Figure 1.1) was, on average, around six years less than life expectancy at each level of deprivation. This difference reflects the number of years a person in each township could expect to live with a disability. It did not vary systematically with area deprivation.

### 1.3.3 Labor market

#### Unemployment rate

The unemployment rate in 2013 was 4.2%, around the 20th percentile point of countries in that year (13), based on World Bank figures (14).

#### Labor force participation

In 2013, Taiwan had a total labor force participation rate of 58.5%, with a male rate of 66.7% and a female rate of 50.5% (13). While the rate for males is in the lower quintile in the world, this is consistent with Taiwan's relatively high age-dependency ratio. The female participation rate is at around the 40th percentile point of countries across the world (13, 15).

### 1.3.4 Government spending

In 2011, the government of Taiwan spent relatively low amounts on health and education as a percentage of GDP (0.2% and 1.8% respectively) compared with other countries in the region. However, it spent more, by international standards, on social security and welfare – 3.4% of GDP (5).

### 1.3.5 Gender equity

A lower value in the Gender Inequality Index indicates higher level of gender equity. The world average score is 0.463, reflecting a percentage loss in achievement due to gender inequality of 46.3%. Taiwan has a very low score of 5.3%, reflecting a very high achievement of gender equity (1). An alternative measure, the Gender Equity Index, takes account of education, empowerment and economic activity. The value of this indicator is 73 for Taiwan, which also indicates a high level of achievement compared to the global average of 56 (1).

### 1.3.6 Education

According to the OECD PISA 2012 survey (16), Taiwan was placed fourth in mathematics among all countries/economies measured, with a mean average score of 560 compared with the OECD average of 494. In Taiwan, 37% of student scores were in the two top proficiency categories (levels 5 or 6), compared with an average of 13% for OECD countries, making Taiwan the third highest ranking in the survey. Taiwan was placed eighth in reading and thirteenth in science among all countries measured. Taiwan's mean score was 523 for both reading and science, higher than the OECD averages of 496 and 501, respectively (17).

## 1.4 The social determinants approach to health inequalities

There have been a number of important evidence reviews about health inequalities and the main drivers of health and life expectancy. The Commission on Social Determinants of Health (CSDH), published in 2008, summarized the global evidence and stated “where systematic differences in health are judged to be avoidable by reasonable action they are, quite simply, unfair. It is this that we label health inequity”. The Commission identified the conditions of daily life – the circumstances in which people are born, grow, live, work and age – and structural drivers of these conditions – the inequitable distribution of power, money and resources – as the social determinants of health. It concluded that “these are responsible for a major part of health inequities between and within countries” (18).

Subsequent reviews in England and across Europe have described the close relationships between a range of social determinants and health outcomes. The review in England, *Fair Society, Healthy Lives*, set out six priority areas for action to reduce health inequalities (19):

- Give every child the best start in life
- Enable all children, young people and adults to maximize their capabilities and have control over their lives
- Create fair employment and good work for all
- Ensure a healthy standard of living for all
- Create and develop healthy and sustainable places and communities
- Strengthen the role and impact of ill health prevention

None of these recommendations has a specific health care focus. As described in this and many other reports, it is mainly factors outside the health care sector that mostly drive widespread inequalities in health.

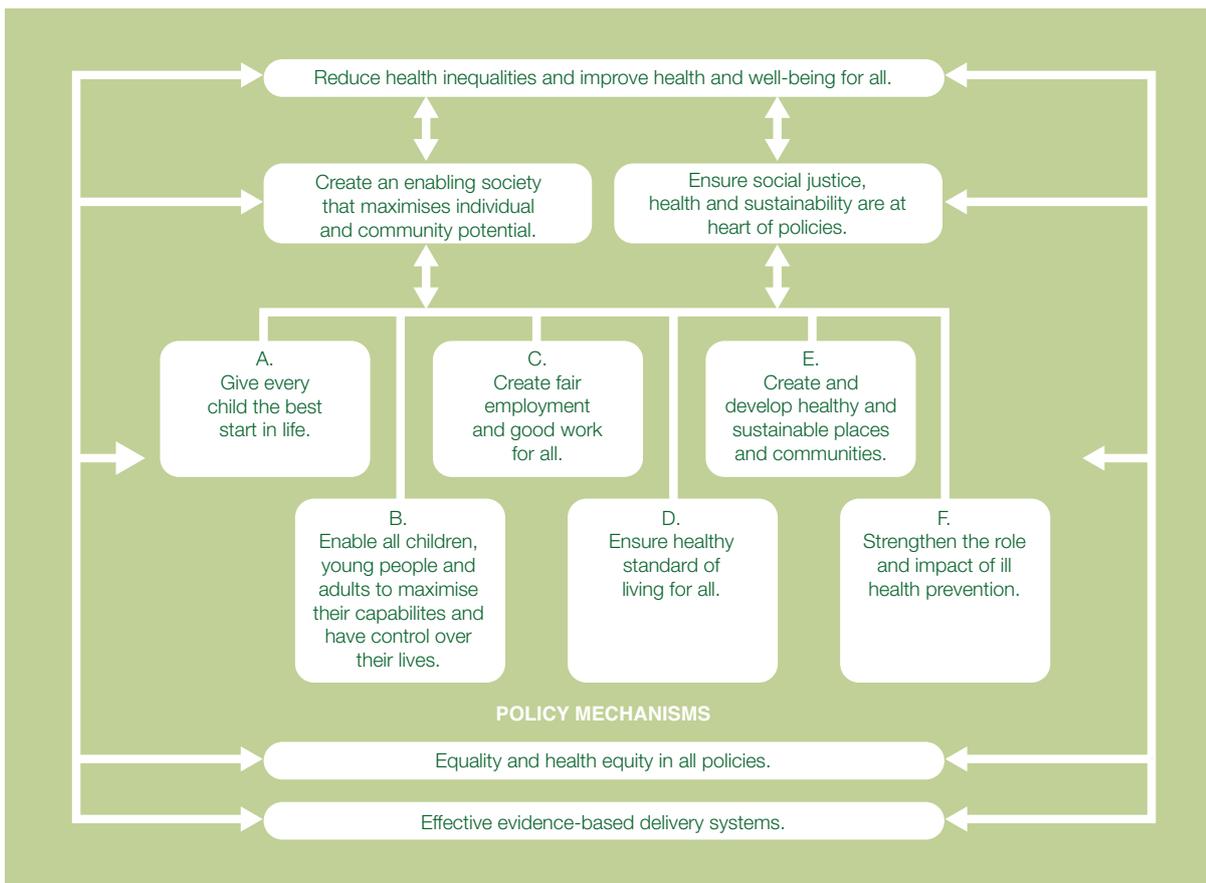
### 1.4.1 Conceptual framework

The framework below shows the framework used in the English review, Fair Society, Healthy Lives, to group its recommendations into six policy areas (19).

This framework describes important areas where action is necessary, in order to tackle health inequalities. Action to improve health equity through the social determinants is also likely to lead to desirable reductions in inequities in other areas, such as quality of early years provision, education, working conditions, income and the communities in which people live. The areas are widespread and diverse, and action needs to be taken across many sectors, areas of government and local stakeholders. For all these areas there is a strong global evidence base linking performance in these sectors with health outcomes and providing evidence of interventions to make improvements.

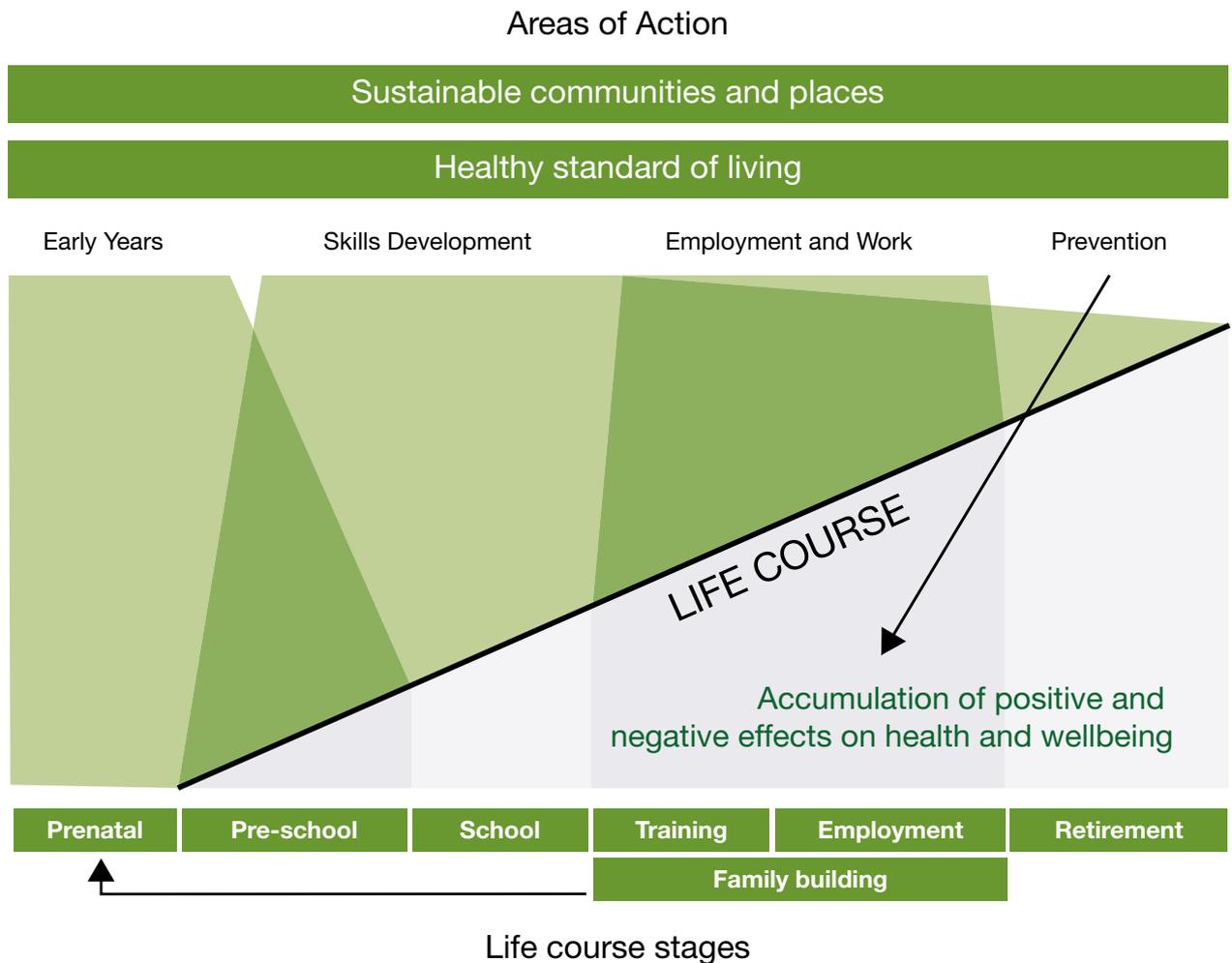
The actions identified in this framework need to take place across the life course, as shown in Figure 1.3.

**Figure 1.2** Conceptual policy framework



Source: Marmot Review Team (19).

**Figure 1.3** Action across the life course



Source: Marmot Review Team (19).

### The life course

Action should be taken at all stages of life, but the highest priority is to ensure a good start to life for every child. This requires, as a minimum, adequate social and health protection for women, mothers-to-be and young families and a universal, high quality, affordable early years, education and child care system.

Emphasis on a good start in life does not of course mean that actions at later stages of the life course are not important – in early adulthood, working ages and older ages. All are important, to reinforce the improvement in skills and individual empowerment provided by a good start, but also to achieve greater health equity among the existing adult populations. In particular, it is essential to reduce stress at work, reduce

long-term unemployment through active labor-market programs and address the causes of social isolation.

Action on disease prevention must include reducing the immediate causes of inequality in health – alcohol consumption, smoking and obesity. Effective strategies go beyond providing information and include taxation and regulation. Evidence suggests that addressing the ‘causes of the causes’ is the right way to proceed on these – ensuring that people have the skills and control over their lives to be able to change behaviour. Action must tackle the social determinants of behaviour. The four most significant risk factors for non-communicable diseases globally are physical inactivity, unhealthy diet, harmful use of alcohol and the use of tobacco (20), all of which are driven by the social determinants.

## Healthy standard of living

Ensuring all people have the minimum standard of living needed to participate in society and maintain and protect health throughout their lives is essential to ensure the progressive accumulation of positive effects on health and wellbeing, both for themselves and to give their children a good start in life while they build their families.

## Sustainable communities and places

The places where people live, and the communities in which they live, shape their lives, human rights and health. It is critical that approaches to environmental, social and economic policy and practice be integrated.

### 1.5 Additional benefits of a social determinants of health approach

In this section we outline some of the main benefits to health and to social and economic factors which a national and regional social determinants of health approach to reducing health inequalities should bring.

#### 1.5.1 Improving health is essential to social and economic development

Poor health is, of course, a serious impediment to greater social and economic development. Without significant improvements to health and reductions in unnecessary health inequalities, progress on development is unlikely (21). On a macroeconomic scale, reductions in adult mortality, morbidity and disability increase the contribution that individuals can make to their economies. Furthermore it reduces the costs borne by governments through healthcare costs, unemployment and associated losses of tax revenue and increased social protection.

Economic gains through a healthy workforce also have flow-on effects to foreign investment and trade (22). There are economic gains at an individual and household level including direct savings from healthcare costs and reduced loss of earnings incurred during time spent in ill health.

There are many social benefits to improved health. At a family level, improving child health and reducing child mortality places less strain on carers and reduced 'time lost' by carers who have invested time in children who die prematurely. Adverse health outcomes among middle aged adults have particularly harmful social effects as they are often carers both for children and the elderly as well as being the primary income earners. There are also further far reaching societal impacts, for example increased child mortality is associated with increased levels of child-bearing and reduced investment in education (23).

### Early child development: Improving health, education, employment and economic development

A robust evidence base shows that good quality early child development reaps significant short and long-term benefits across a range of desirable national social and economic outcomes as well as improving health equity. These outcomes mean that investing in good quality early years is effective and cost-effective – reducing dependency on social protection, reducing poverty, violence and anti-social behavior, improving revenue through better employment and income and leading to long-term gains in mental and physical health. The close relationship between all these factors has been clearly demonstrated (24-26).

#### 1.5.2 The cost case

One of the most serious and intractable obstacles to taking action on the social determinants of health is financial cost. It might seem that additional sizeable amounts of investment are required to improve health equity, and investment of this level is often unavailable and of course there are many other pressing government priorities. However, there is a clear cost case to be made in tackling health inequalities.

Firstly, health inequalities are expensive in economic terms to the national economy as well as costly to individuals and their families. Action to improve health will help reduce the burden on health care services as well as a wide range of other sectors such as social protection, and improved health will lead to enhanced economic productivity.

### Case study: the cost of doing nothing to tackle health inequality in England

The following estimates have been made of the annual human and economic costs of doing nothing to tackle existing levels of health inequalities in England:

- between 1.3 and 2.5 million potential extra years of life lost
- productivity losses of £31–33bn
- reduced tax revenue and higher welfare payments of £20–32bn
- increased treatment costs well in excess of £5bn (19)

There is some evidence that benefits to action on the social determinants of health outweigh the costs. For instance, improvements in early years education have repeatedly been shown to yield high returns for relatively low cost (28, 29).

Even so, cost-benefit evidence is difficult to generate and results can be inconclusive; health impacts are long-term and complex social programs produce complex changes over a prolonged period- not all amenable to measurement and costing.

This apparent scarcity of 'hard' financial, clear-cut cost-benefit evidence for the region should not, though, act as a brake on endeavors to tackle health inequalities. Cost is of course not the prime motivation for acting to tackle health inequalities, and there is sufficient global evidence to point to widespread and significant benefits and savings to be made in broad and long-term social and economic spheres (30).

### Case study: Economic costs of doing nothing to tackle health inequality in the European Union

In 2011, the cost of doing nothing about existing levels of health inequalities in the EU was estimated to be more than €980 billion annually (27). This avoidable cost is greater than most European nations' GDP and poses a risk to economic recovery. It is a result of ill health and disability reducing productivity, lowering taxes collected and increasing welfare payments (23).

#### 1.5.3 Action on the social determinants of health is effective

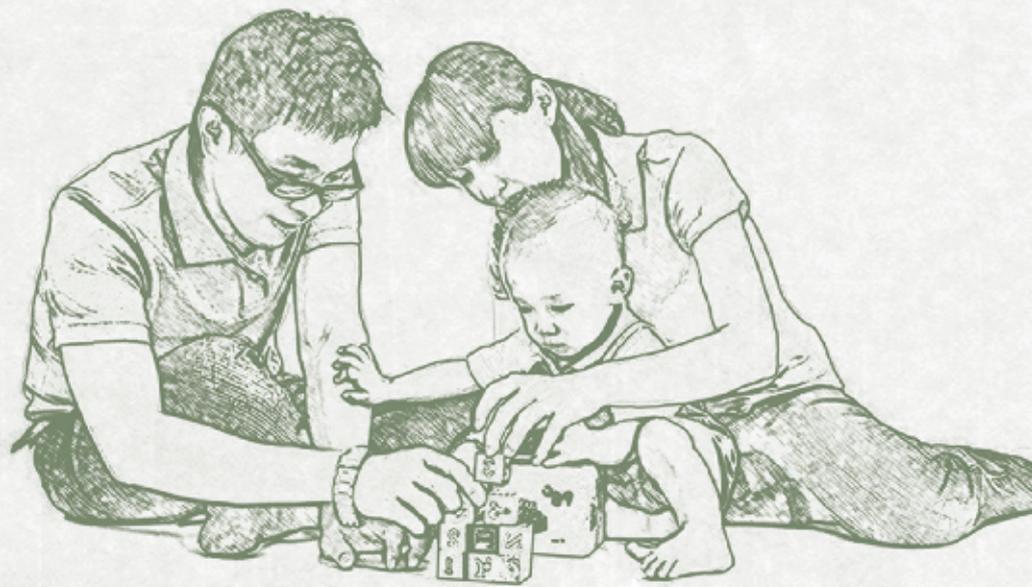
Reviews across the world have synthesized the evidence around taking action on the social determinants to improve health equity. In 2008, the Commission on the Social Determinants of Health reported on global evidence about the causes of health inequalities and set out actions to tackle inequalities between and within countries (18). Since then the 2010 English review, a wide ranging review for the WHO European region and another for the EU have added significantly to this evidence base (18, 19, 31, 32). Much activity in the Pan American Health Organization (PAHO) has been focused on health equity and taking action on the social determinants of health (33).

All these endeavors have meant there is a sound scientific evidence base describing:

- reasons for taking action on the social determinants of health
- ways to prioritize action
- examples of successful interventions
- important principles for delivering action on the social determinants of health

There is, of course, no blueprint for action, nor any magic bullets. These are highly complex social and economic issues and local and regional contexts differ. Tailoring evidence to suit local terrain and adapting to new and emerging global concerns is vital.

While the challenges are significant, the rewards are great. Placing health equity at the heart of all government policies would bring multiple health, social and economic benefits. Indeed, so close is the relationship between health equity and social and economic development and wellbeing that health equity can be a marker of national progress.



## Chapter 2

# Health inequalities and the social determinants of health

### Summary of the analysis of health inequalities in Taiwan

- A social gradient in life expectancy, based on township deprivation, has persisted over time with a gap of 6.4 years for males and 3.5 years for females between the most and least deprived quintiles
- While a woman in the least deprived quintile can expect to live five years longer than a man, the gender gap is eight years in the most deprived quintile
- Infant mortality in the period 2004 to 2010:
  - remained persistently high among mothers who did not attend senior high school (over five per thousand live births), but decreased to below three for those who had attended senior high school
  - increased to over eight per thousand among teenage mothers as births became less common in this age group. By contrast, infant mortality decreased to below three for those aged 25–34
- For men aged 25–64, mortality rates by occupational group:
  - broadly followed the gradient in their social position, with rates for skilled agricultural, forestry and fishery occupations and elementary laborers more than six times that of professionals
  - were 84% higher among blue-collar workers than white-collar workers. The gap in death rates for these groups was similar in all regions except Eastern – where both the gap and ratio were much higher than elsewhere. This larger excess among blue-collar workers in Eastern region partly explained the region's higher overall death rate in men
- Metropolitan areas have had persistently higher life expectancy than non-metropolitan areas – 3.3 years difference for males and 1.5 years for females
- Those who ceased education at secondary school level or earlier had higher rates of limiting illness later in life than those who stayed on longer
- Numbers of years spent with a disability did not increase with township deprivation – averaging around five years at every level
- Rates of mortality by quintile of township deprivation between ages 30 and 70 years in 2010–12 from circulatory disease, cancer and suicide:
  - were higher among men than women in all quintiles
  - showed consistent gradients related to deprivation, although all were steeper for men than women

## 2.1 Health inequalities in Taiwan

As discussed in Chapter 1, inequalities in health exist across a range of social and demographic indicators in Taiwan, including income, occupation and parental occupation, level of education, neighborhood quality and level of deprivation, geographic region, gender and ethnicity. In this chapter, inequalities in a variety of health outcomes are set out, followed by descriptions and analysis of inequalities in the social determinants of health, which drive these unequal health outcomes.

### 2.1.1 Inequalities in mortality

#### Life expectancy by township deprivation

As Figure 1.1 showed, the relationship between social circumstances in townships and health is a graded one: the less the level of deprivation, the longer people can expect to live and be free of disability. To illustrate the importance of the gradient: even excluding the 5% of least and most deprived townships, the average gap in both indicators is six years. But some townships experience considerably worse health than

this average suggests. Among the 50% of more deprived townships, there are around ten where life expectancy is less than 65 and disability-free life expectancy is less than 60 years. This phenomenon has a regional component, discussed further in Sections 2.2 and 2.3.

Although life expectancy increased for everyone between 2001–5 and 2006–10, Figure 2.1 shows that the gradient by township deprivation quintile has persisted for both men and women – at around 6.4 years for men and 3.5 years for women. Although life expectancy for women was higher than for men in every deprivation quintile, the gender gap increased with level

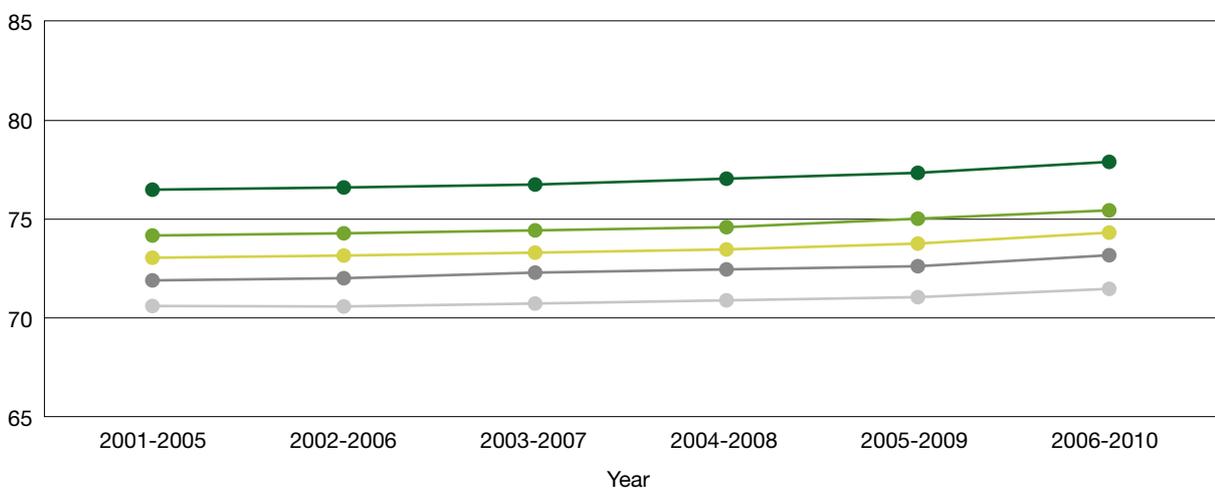
of deprivation – from five years in the least deprived quintile to eight years in the most deprived. As a result of the size of the gender gap, the social distributions for men and women did not overlap. Life expectancy for women in the most deprived quintile was 80 years in 2006–10, compared to 78 for men in the least deprived quintile, a difference of two years.

Gradients in life expectancy can be influenced particularly by death rates at younger ages – since early mortality results in more years of life lost per person. Variations in infant mortality rates and those at ages 25–64 are illustrated below.

**Figure 2.1** Life expectancy at birth, by deprivation quintile, Taiwan, 2001–2010

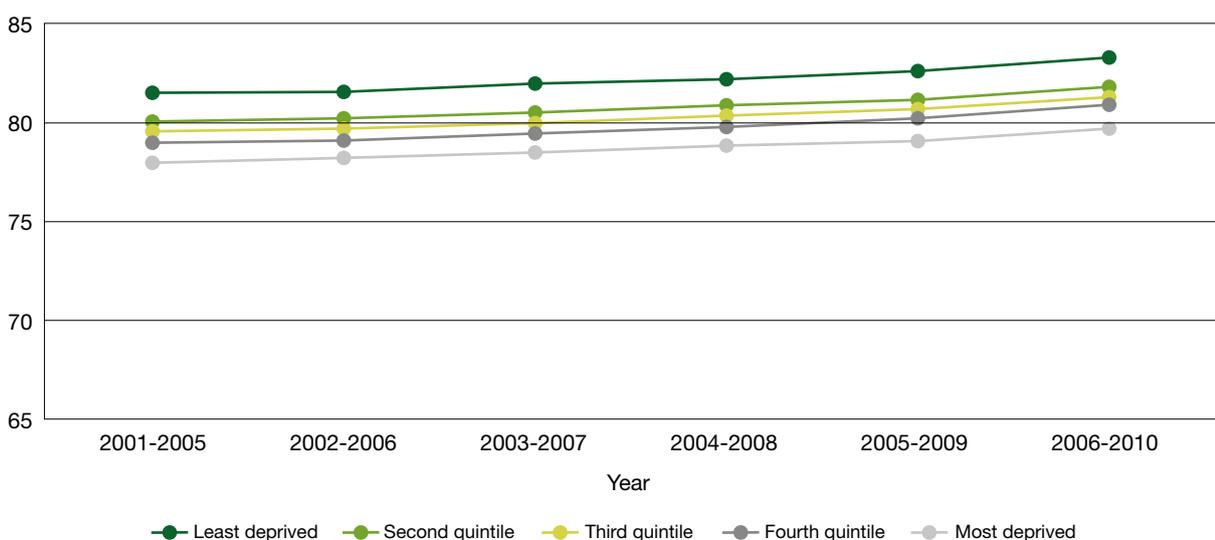
### a) Males

Life expectancy years



### b) Females

Life expectancy years



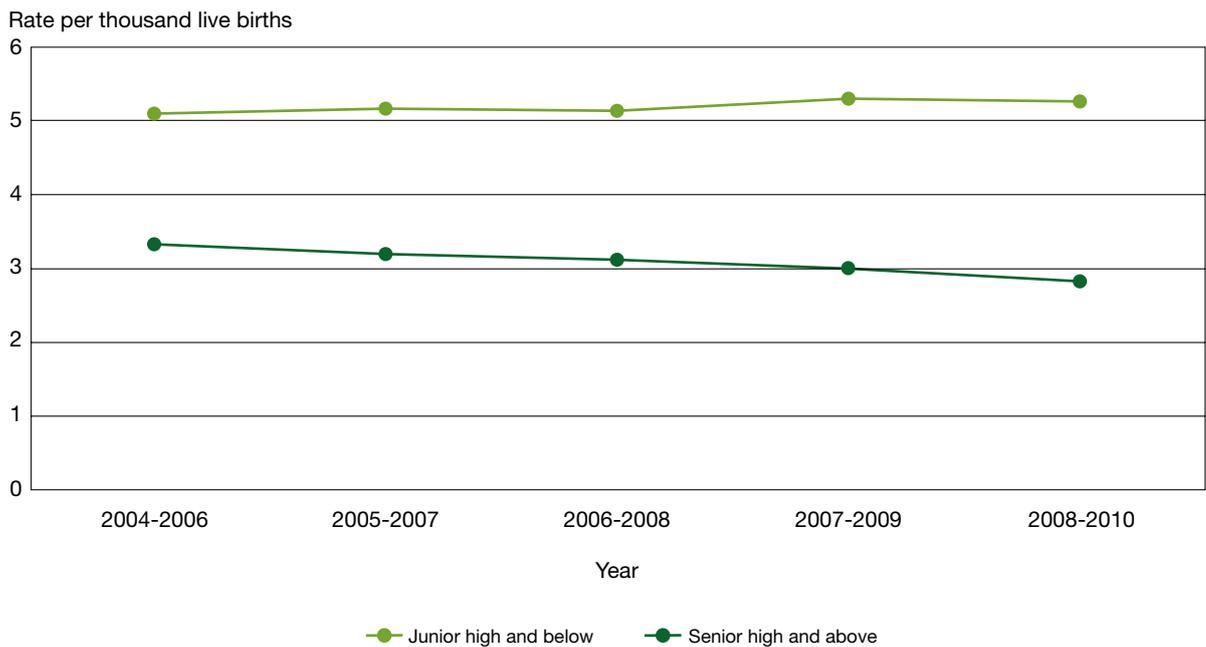
Sources:

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2001–2010 (10).
2. The Disabled Population for each county in Taiwan, 2001–2010 (11).

Notes:

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12).

**Figure 2.2** Trends in infant mortality by mother's education, 2004–2006 to 2008–2010



Sources:

1. Statistics of Fertility, Ministry of Interior, Taiwan, 2004–2010 (6).
2. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2004–2011 (10).

### Infant mortality

There are substantial differences in infant mortality associated with the educational level of the mother (Figure 2.2). In 2004–6 rates were about 50% higher for mothers who had not attended senior high school than for those who had. By 2008–10 this difference had widened to 80% because rates had remained above five per thousand live births for mothers who had not attended senior high school, while falling below three for mothers who had attended senior high school.

This widening inequality varied by age (Figure 2.3) and this was associated with a change in fertility patterns by age. There was a reduction of nearly 50% in the number of babies born to mothers aged under 25 in Taiwan between these two periods, but less than a 6% decrease at ages 25 to 34 and around a 20% increase at older ages. Following these changes over 71% of babies were born to mothers aged 25–34 in 2008–2010 (compared to 67% in 2004–2006). As illustrated in Figure 2.3 infant mortality rates fell between the two periods among mothers with senior high school education or higher in all age groups, except among the reduced number of births to teenagers. Conversely for those with junior high school education or lower, rates increased in all age groups except among the growing number of births at ages 25–34.

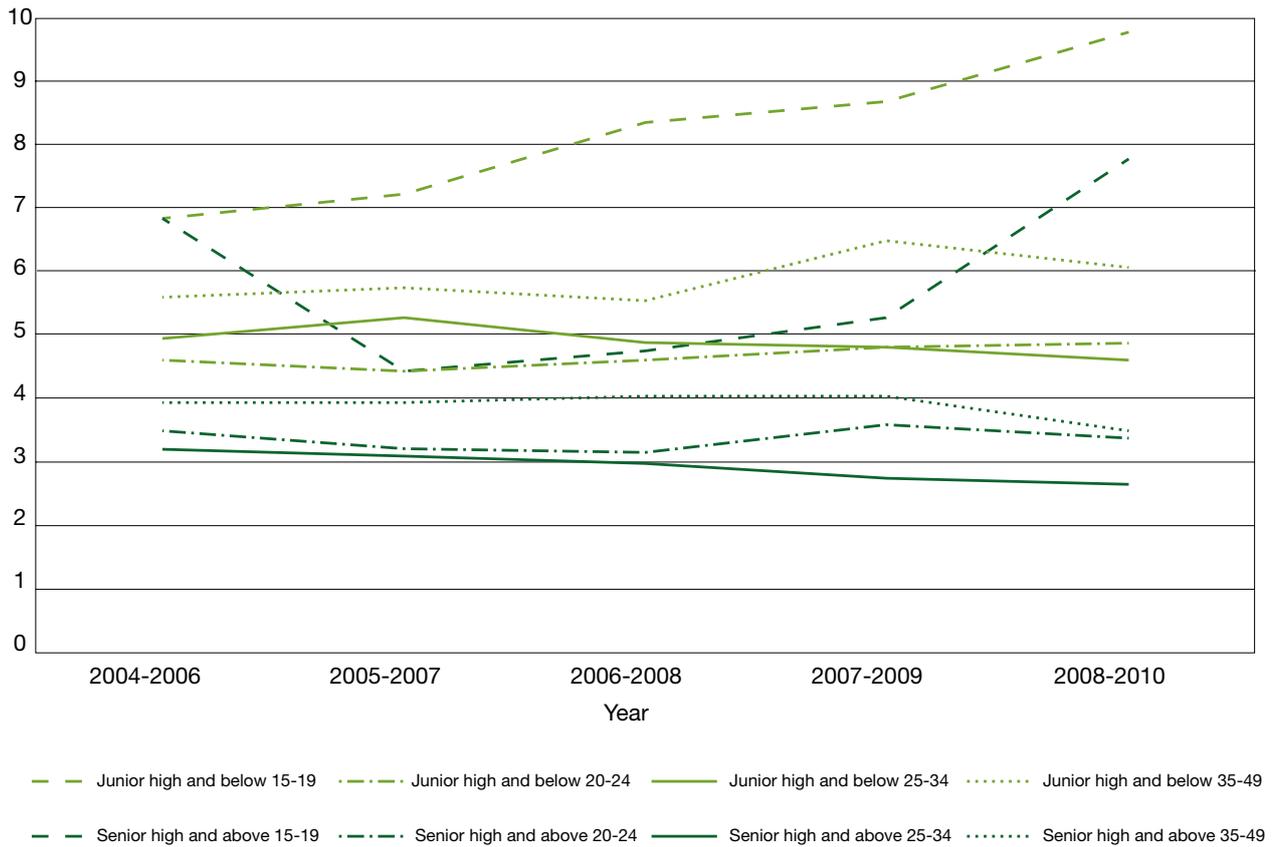
If all babies had experienced the infant mortality rates of those whose mothers were aged 25–34 and completed at least senior high school education, there would have been over 100 fewer infant deaths each year in Taiwan during the period 2004 to 2010.

### Mortality of men aged 25–64 by occupation

For men aged 25–64, there are large differences in mortality rates by occupation. If occupational groups are ordered according to their death rates (Figure 2.4), large differences are apparent. Death rates for the two groups ‘Elementary laborers’ and ‘Skilled agricultural, forestry and fishery workers’ are more than six times that of ‘Professionals’. Between these extremes, there is a graded difference in mortality levels that broadly follows the social position of occupational groups.

**Figure 2.3 Trends in infant mortality by education and mother's age, 2004–2010**

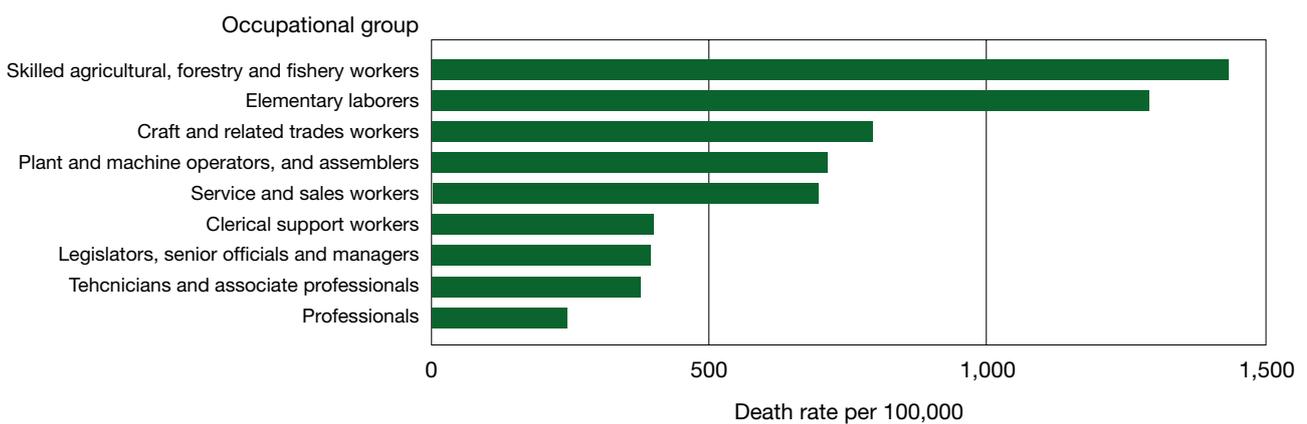
Rate per thousand live births



Sources:

1. Statistics of Fertility, Ministry of Interior, Taiwan, 2004–2010 (6).
2. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2004–2011 (10).

**Figure 2.4 Death rates of men aged 25–64 in Taiwan by occupational group, 2011–2013**



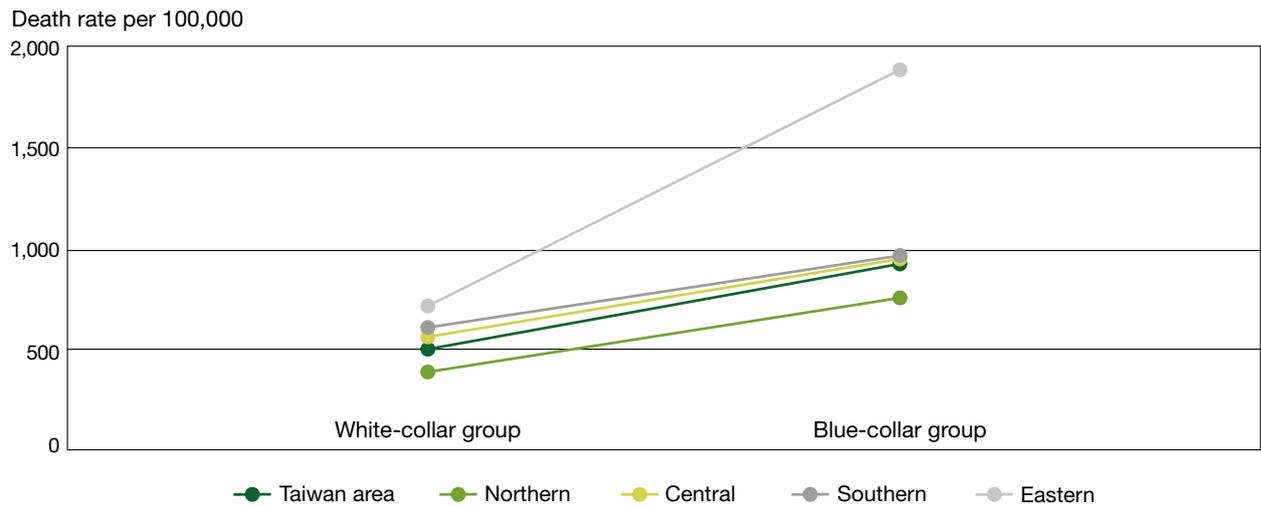
Sources:

1. Population and Housing Census, 2010 (12).
2. Death Reporting System, Ministry of Health and Welfare, 2011–2013 (10).

Notes:

- a) Occupation groups are based on the Standard Occupational Classification System of the Republic of China (Rev.6).
- b) Soldiers are included in 'Service and sales workers'.

**Figure 2.5** Death rates of men aged 25–64 in Taiwan by region and broad occupational groups, 2011–2013



Sources:

1. Population and Housing Census, 2010 (12).
2. Death Reporting System, Ministry of Health and Welfare, 2011–2013 (10).

Note:

White-collar jobs include legislators, senior officials and managers; professionals, technicians and associate professionals, craft and related trades workers, clerical support workers, service and sales workers. Blue-collar jobs include: skilled agricultural, forestry and fishery workers; plant and machine operators, and assemblers; elementary laborers.

### Variation in mortality gradients by region

Figure 2.5 shows how the occupational gradient in male mortality at ages 25–64 varied by region in 2011–13, based on a grouping of occupations into white and blue-collared jobs. The absolute difference between blue and white-collar death rates was 416 per 100,000 for Taiwan as a whole – representing an 84% higher rate. In Eastern region the absolute difference was 1,183 per 100,000 – which represented a 166% higher death rate. In other regions the absolute differences were similar (around 350 per 100,000). This accounts for much (but not all) of the excess mortality in Eastern region.

The contribution that regional variation in mortality makes to variation in life expectancy at each level of township deprivation in Figure 1.1 is summarized in Figure 2.6. This shows average life expectancy at each level of deprivation for the four regions of Taiwan. At most levels of township deprivation there was a gradient in life expectancy according to the region in which the township was located, with townships in Eastern region having the lowest life expectancy and those in the Northern region having the highest levels, at comparable levels of deprivation. However, there was a significant exception to this pattern among the more deprived townships. Townships in Northern region that were among the third most deprived in the country did not experience better life expectancy than similarly deprived townships in other regions. This reflected a steeper gradient within Northern region than in any other region, with the most deprived township in Northern region having a life expectancy of 63 years, compared with 85 years in the least deprived (a difference of 22 years). Unlike other regions, no gradient in life expectancy by township deprivation was evident with Eastern region. This was, in part, because there were too few Eastern townships to show a clear gradient – only 29 of the 358 townships in Taiwan were in

this region. However, a further factor was that 26 of these 29 were in the lower half of the national deprivation distribution and for none of these was life expectancy above 77 years. For these reasons most townships in Eastern region had a low level of life expectancy consistent with a high level of area deprivation, but there were insufficient numbers or spread of deprivation scores to show a clear gradient within the region.

There is a marked difference in life expectancy between metropolitan and non-metropolitan areas in Taiwan (Figure 2.7). During 2006–10, men in metropolitan areas could expect to live 3.3 years longer than in non-metropolitan areas and women 1.5 years longer. Despite increases in life expectancy in both metropolitan and non-metropolitan areas over the preceding decade, these differences were fairly constant.

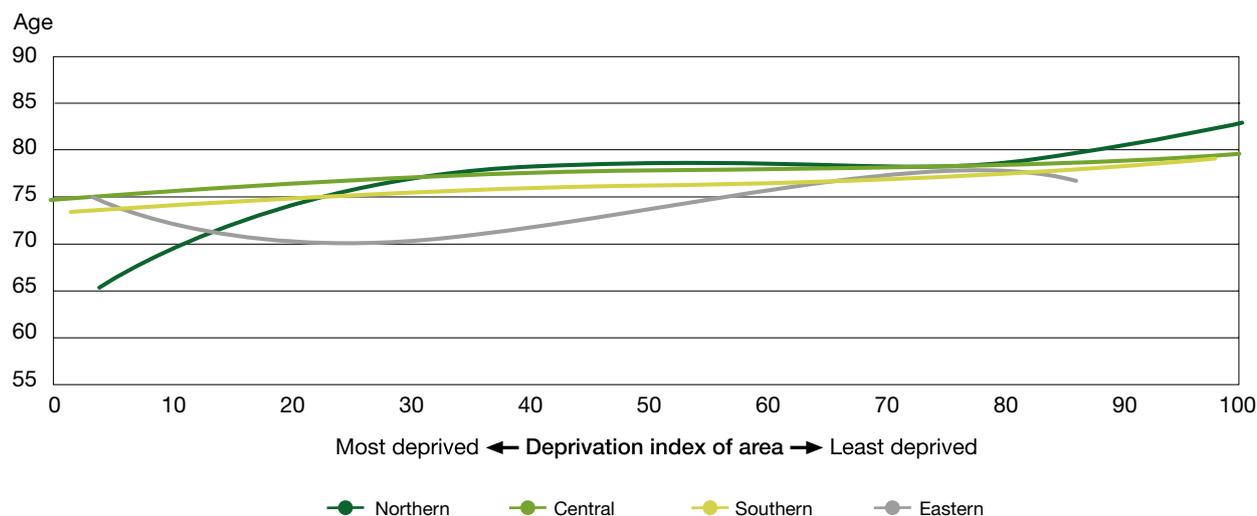
### 2.1.2 Inequalities by cause of death

Cause of death statistics provide some pointers to the main variation in health risks across townships in Taiwan. The rates of mid-life mortality (i.e. between ages 30 and 70 years) in 2010–12 from circulatory disease, cancer and suicide were considerably higher among men than women in all types of township (Figure 2.8). For all three causes, gradients by township deprivation quintile were steeper for men than women.

#### Circulatory diseases

Male mortality rates from circulatory diseases were two and a half times higher than those for women in each township quintile at ages 30 to 70. Men living in the most deprived quintile were one and a half times more likely to die at these ages than those in the least deprived quintile. For women, the risk ratio was one and three quarters.

**Figure 2.6** Life expectancy at birth, persons: regional averages at each level of township deprivation, Taiwan, 2001–2010



Sources:

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2001–2010 (10).
2. The Disabled Population for each county in Taiwan, 2001–2010 (11).

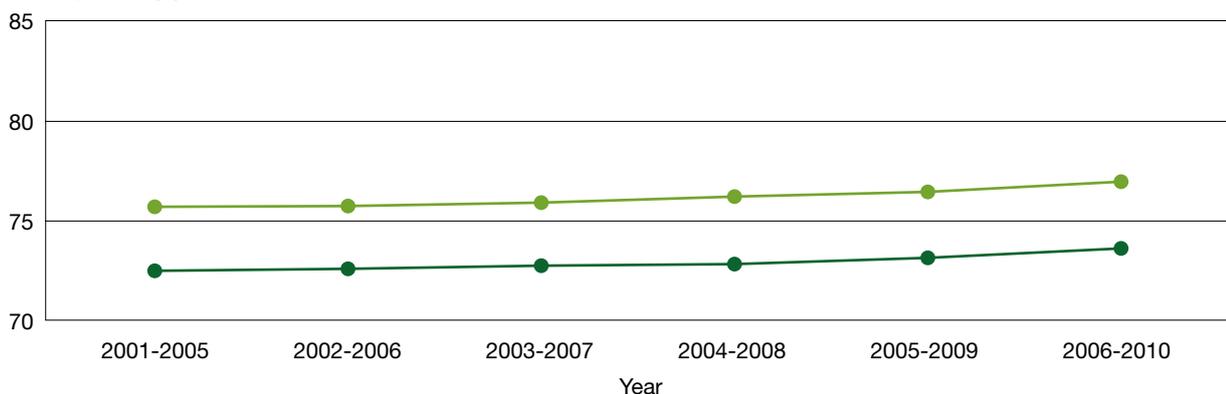
Notes:

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12).

**Figure 2.7** Life expectancy at birth in metropolitan and non-metropolitan areas, 2001–2010

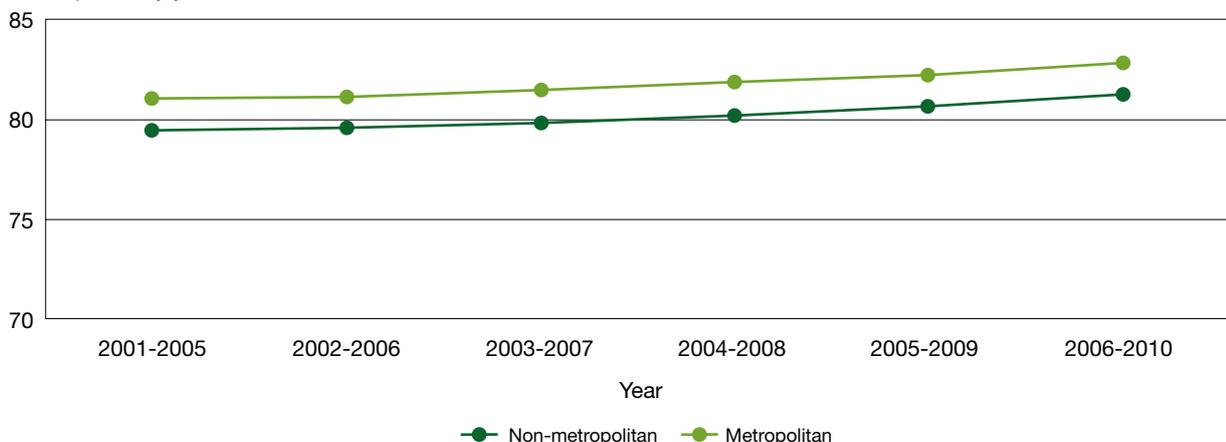
a) Males

Life expectancy years



b) Females

Life expectancy years

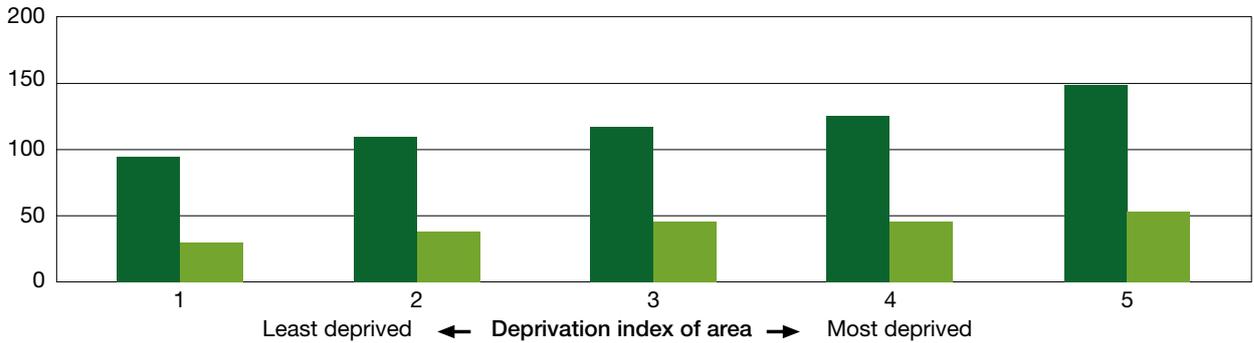


Source: Death Reporting System, Ministry of Health and Welfare, Taiwan, 2001–2010 (10).

**Figure 2.8** Age standardized death rates for ages 30–70 years, by township deprivation quintile, 2010–2012

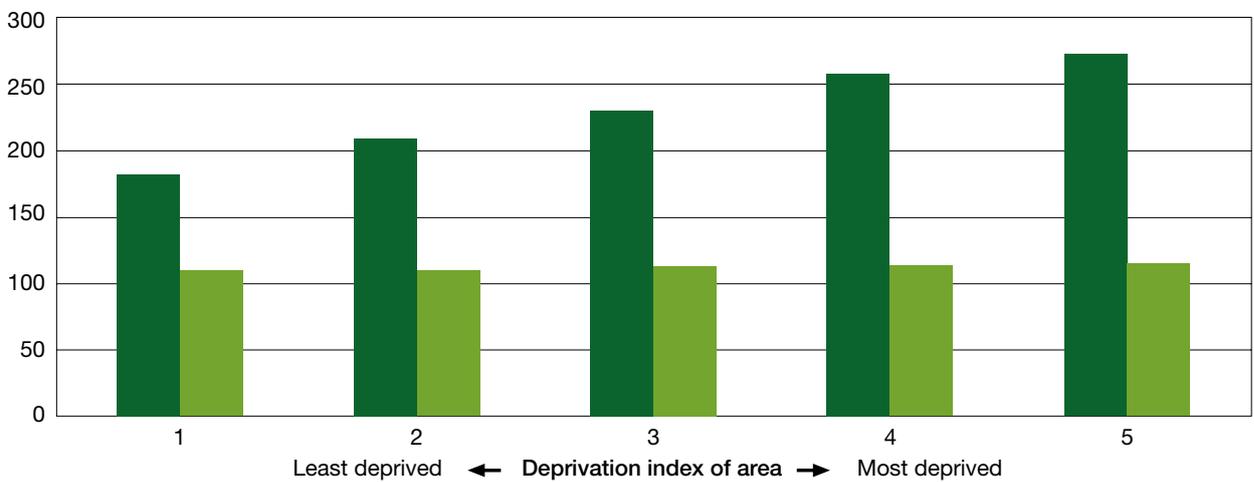
a) Circulatory disease

Rate per 100,000 population



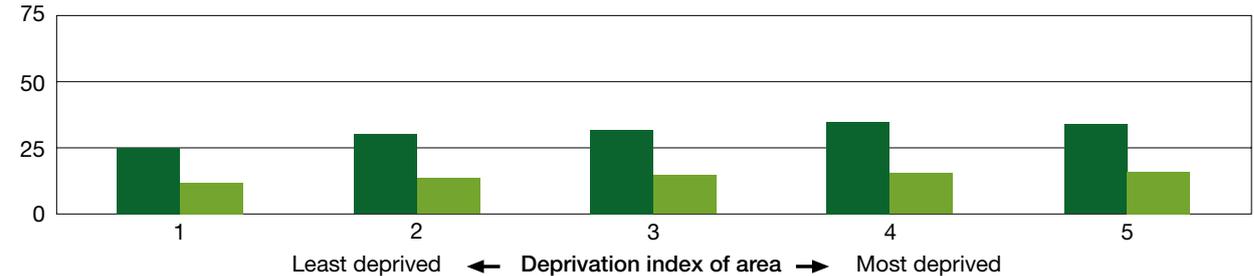
b) Cancer

Rate per 100,000 population



c) Suicide

Rate per 100,000 population



■ Male ■ Female

Source:  
Death Reporting System, Ministry of Health and Welfare, Taiwan,  
2010–2012 (10).

Notes:  
a) Townships are small areas containing around 65,000 people.  
b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12)

## Cancer

There was a clear gradient in male cancer death rates across township deprivation quintile, with those in the most deprived quintile nearly 50% more likely to die at ages 30 to 70 than those in the least deprived quintile. The gradient for women was very gentle – only a 6% difference across quintiles. As a consequence, the ratio of male to female mortality rates in the most deprived township quintile was higher than in the least deprived quintile, 2.4 compared to 1.7. These gender differences reflect the different types of cancer that predominate in men and women at these ages in Taiwan.

## Suicide

Rates of suicide at ages 30 to 70 were around twice as high among men than women across all deprivation groups. There was also a modest gradient across township deprivation quintiles for both men and women. The rate in the most deprived quintile was 1.4 times that of the least deprived for men and 1.2 for women.

### 2.1.3 Inequalities in morbidity

#### Long-term illness and education

There are significant social gradients in morbidity in Taiwan. This is illustrated by Figure 2.9, which shows limiting long-term illness rates by age and educational level attained. In every age group, for both males and females, reporting of limiting long-term illness was higher among those with

secondary school education or below than among those who had attended education for longer. This may, in part, reflect children with disabilities failing to stay on in education. College education appeared to provide no protection compared to high school for men while for women those who attended high school but not college fared slightly better than those who went on to college in each age group.

#### Disability by township deprivation

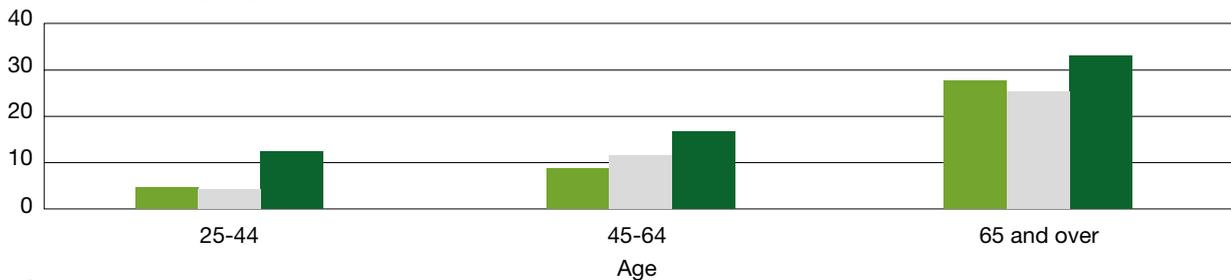
Figure 1.1 showed that the gradient in disability-free life expectancy by township deprivation largely paralleled that for life expectancy, suggesting that the number of years spent with a disability did not increase with level of area deprivation. Figure 2.10 shows that, on average, around five years were spent with a disability in Taiwan. Although this varied from three to 7.5 years across townships, unlike total life expectancy, this figure did not increase with greater levels of deprivation. Indeed both the highest and lowest levels are seen in the lowest deprivation decile. In contrast, the range in the least deprived decile was much smaller – between 3.5 and 5.2 years.

In view of this near-constant difference between disability-free figures and those for life expectancy, it is not surprising that patterns of disability-free life expectancy in each region were similar to those shown in Figure 2.6 for life expectancy. This is shown in Figure 2.11. Disability-free life expectancy ranged from 60 to 80 years among townships in Northern region and, in Eastern region, five townships (again not the most deprived) had disability-free life expectancies below 60 years.

**Figure 2.9** Percentage of population with limiting long-term illness, by age and education attendance, 2013

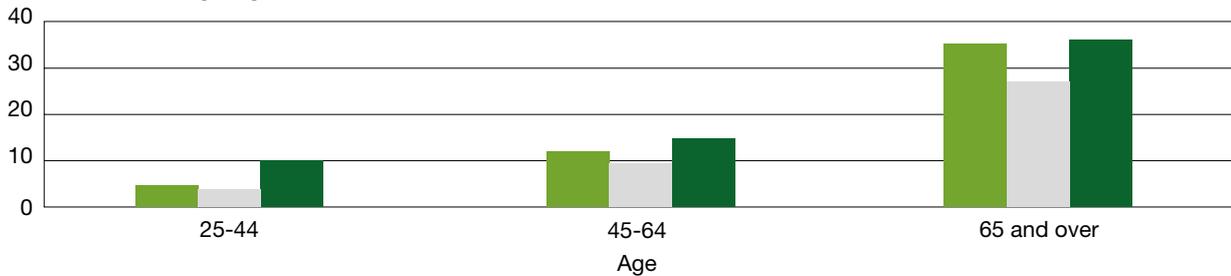
#### a) Males

Percent with limiting long-term illness



#### b) Females

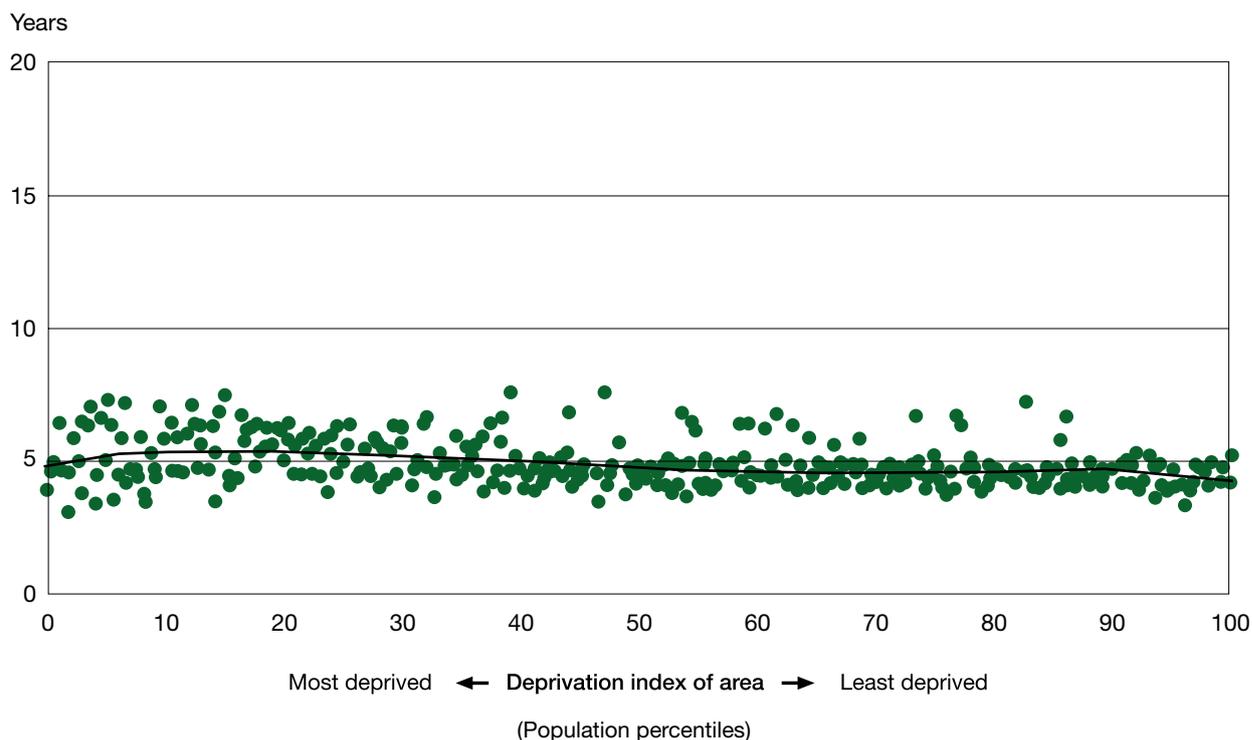
Percent with limiting long-term illness



■ College and above   ■ Senior High and vocational   ■ Junior high and below

Source: National Health Interview Survey, 2013 (34).

**Figure 2.10** Number of years from birth spent with disability, persons by deprivation index of area, Taiwan, 2001–2010



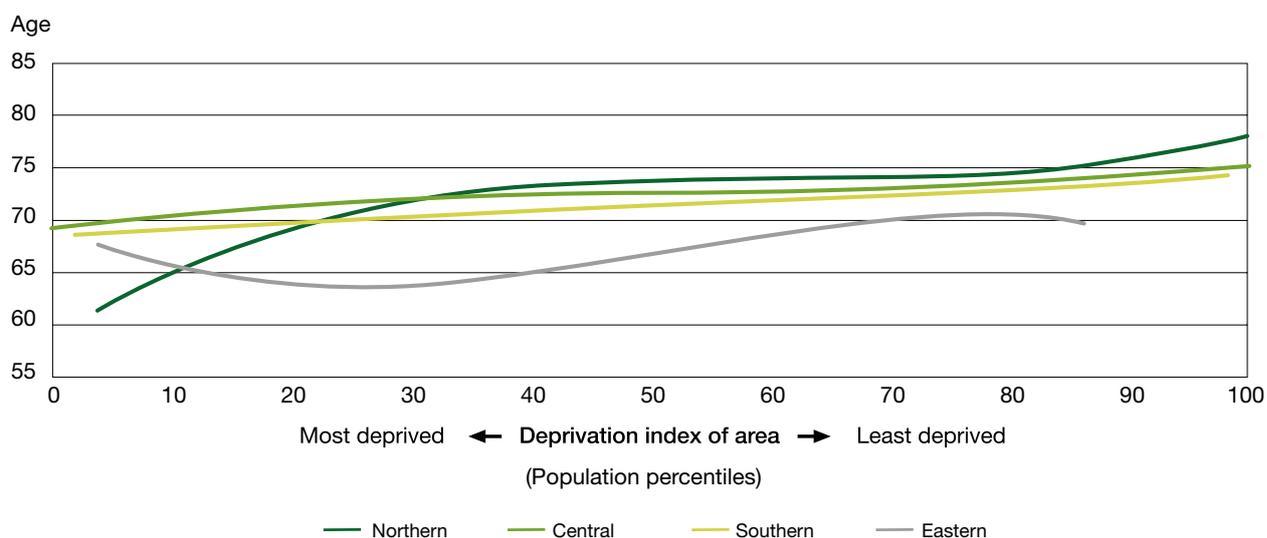
Source:

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2010–2012 (10).
2. The Disabled Population for each county in Taiwan, 2001–2010 (11).

Notes:

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12).

**Figure 2.11** Disability-free life expectancy at birth, persons: regional averages at each level of township deprivation, Taiwan, 2001–10



Sources:

1. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2010–2012 (10).
2. The Disabled Population for each county in Taiwan, 2001–2010 (11).

Notes:

- a) Townships are small areas containing around 65,000 people.
- b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12).

## Summary of health inequalities and social determinants of health in Taiwan

- Infant mortality rates are higher in the most deprived quintiles than in the least deprived, both for pre- and full-term births
- There is a clear relationship between maternal education and:
  - low birth weight
  - post-partum depression
  - reading frequently to children at age three
  - teeth brushing at age three
- There is a strong relationship between educational attainment at age eight and family income, likely to lead to poorer life chances and poorer health outcomes in later life for children of poor families
- Those in lower status occupations are more likely to become unemployed than those in higher status occupations
- There are sharp gradients in mortality by level of education for those both in and out of employment. At each level of education, mortality of those without a job is higher than for those who are employed
- People with limiting physical disabilities – hearing, vision, mobility or communication problems – are less likely to be employed than those with more general health symptoms
- The likelihood of being in employment for men with long-standing illness is strongly related to their level of education
- There are steep gradients in clinical risk factors such as hypertension, hyperlipidemia and hyperglycemia by educational level
- There are clear inequalities in both original and final income, with those in the lowest quintile of income having only a sixth of the final income of those in the highest income quintile
- There is a steep gradient in death rates on the road among children related to levels of township deprivation. This is the main avoidable cause of death for children aged one and over

## 2.2 The social determinants of health

As indicated in Chapter 1, understanding about the ‘causes of the causes’ of ill health has deepened in recent years. In this section, examples are presented to illustrate the evidence for the relationship between inequalities in health and the determinants of health. Based on the conceptual policy framework (Figure 1.2), we begin by describing inequalities in

the accumulation of health and wellbeing at each stage of the life course (as indicated in Figure 1.3). This evidence forms the basis for policy recommendations A to C in Chapter 5. We then present evidence on income and health, which informs policy recommendation D, and on communities and health (recommendation E). Inequalities in health risk factors, which inform recommendation F, are described in Section 2.3.

### 2.2.1 Early years and health status

What a child experiences during the early years lays down a foundation for the whole of their life. A child’s physical, social and cognitive development during the early years strongly influences their school-readiness and educational attainment, economic participation and subsequent health (18, 19, 32). Development begins before birth when the health of a baby is crucially affected by the health and wellbeing of their mother. Low birth weight in particular is associated with poorer long-term health and educational outcomes (35).

#### Birth outcomes

The literature on ‘fetal programming’ demonstrates that in-utero environments affect adult health (36). Barker, for example, has shown that when human fetuses have to adapt to a limited supply of nutrients, they permanently change their structure and metabolism. These ‘programmed’ changes may be the origins of a number of diseases in later life, including coronary heart disease and the related disorders of stroke, diabetes and hypertension (37). Low birth weight in particular is associated with poorer long-term health outcomes and the evidence suggests that maternal health is related to socioeconomic status. In particular, disadvantaged mothers are more likely to have babies of low birth weight (35).

Maternal health, stress, diet, drug, alcohol and tobacco use during pregnancy, all have a significant influence on fetal and early brain development. The biological effects of birth weight on brain development interact with other influences associated with social position to influence cognitive development.

Lower birth weight, earlier gestation and being small for gestational age are associated with infant mortality. In a study of all infant deaths in England and Wales (excluding multiple births), deprivation, births outside marriage, non-white ethnicity of the infant, maternal age under the age of 20 and male gender of the infant were all independently associated with an increased risk of infant mortality (38). A trend of increasing risk of death with increasing deprivation persisted after adjustment for these other factors.

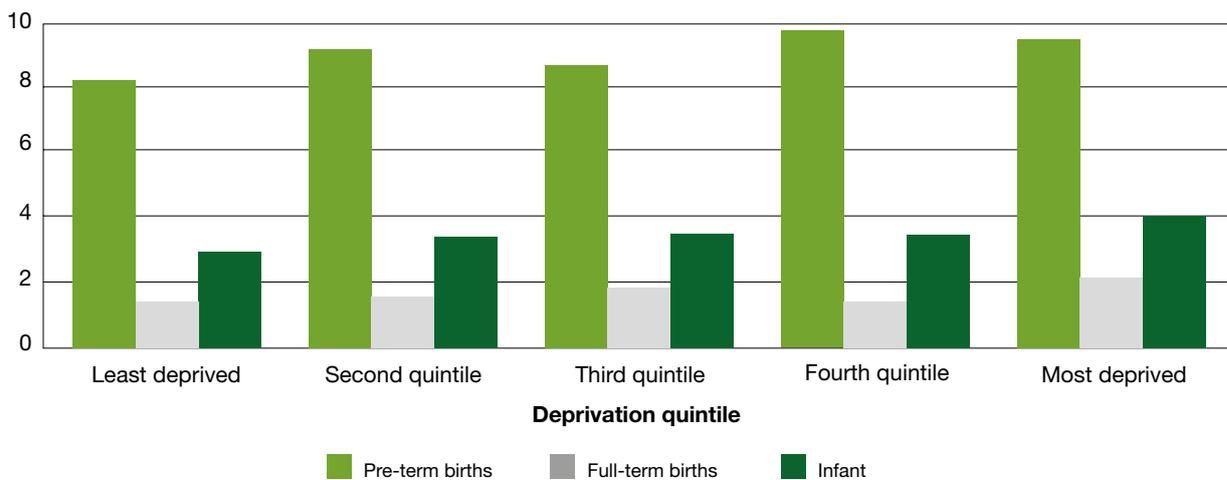
Based on this analysis, one quarter of all deaths under the age of one in England and Wales would potentially be avoided if all births had the same level of risk as for those to women with the lowest level of deprivation.

Taiwan has a low infant mortality rate – 3.7 per thousand live births in 2012 – compared with most other countries. However, rates are higher in the most deprived quintiles than in the least deprived, both for pre-term and full-term births (Figure 2.12). If all quintiles had the same death rates for pre- and full-term births as the least deprived quintile, the national infant mortality rate would fall below three deaths per thousand – closer to levels found in Japan, Singapore and the Nordic countries.

**Figure 2.12** Infant mortality by deprivation quintiles, Taiwan, 2009–10

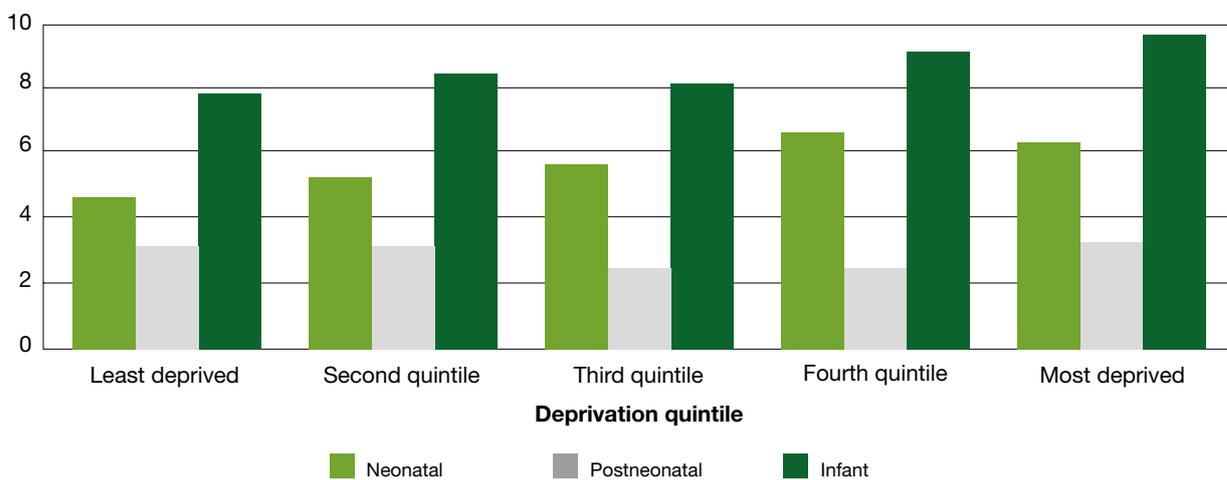
**a) Total births**

Rate per 1,000 live births



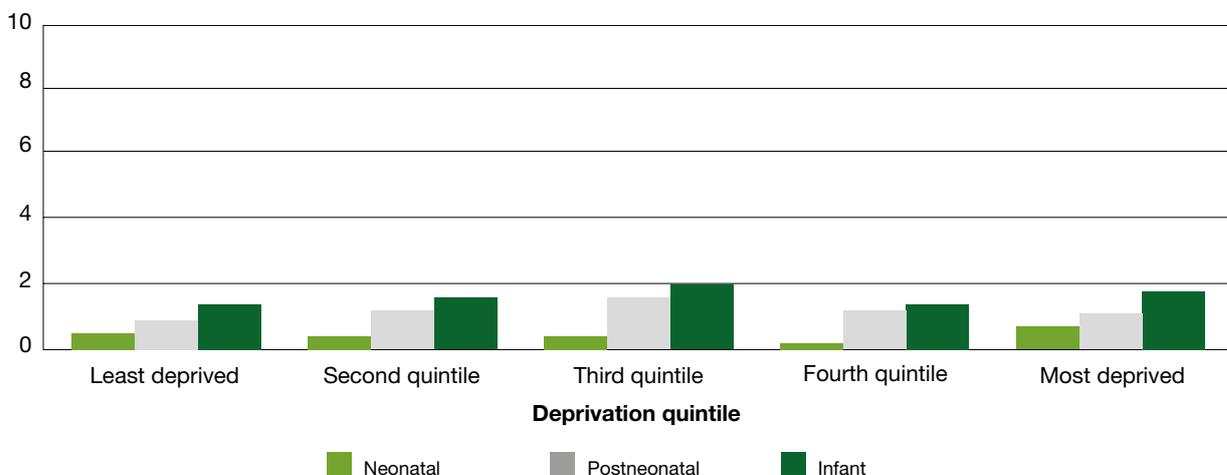
**b) Pre-term births**

Rate per 1,000 live births



**c) Full-term births**

Rate per 1,000 live births



Sources:

1. Statistics of Fertility, Ministry of Interior, Taiwan, 2009–2010 (6).
2. Death Reporting System, Ministry of Health and Welfare, Taiwan, 2009–2011 (10).

## Early childhood

Socially graded inequalities are present prenatally and increase through early childhood. The first year of life is crucial for neuro-development to provide the foundations for children's cognitive capacities (39). There is good evidence to show that if children fall behind in early cognitive development, they are more likely to fall further behind at subsequent educational stages (40). The evidence also shows that the development of early cognitive ability is strongly associated with later educational success, income and better health (24-26, 28, 41-43). The early years are also important for the development of non-cognitive skills such as application, self-regulation and empathy. These are the emotional and social capabilities that enable children to make and sustain positive relationships and succeed both at school and in later life (44).

There is an unequal distribution of resources across families in terms of wealth, living conditions, levels of education, supportive family and community networks, social capital and parenting skills. The effects of these inequalities are transferred from one generation to the next. Abundant evidence suggests that socioeconomic status is associated with a multitude of developmental outcomes for children (45-47). Furthermore, the literature suggests strongly that socioeconomic gradients in early childhood replicate themselves throughout the life course (48).

Figure 2.13 highlights some of the links between socioeconomic status and factors affecting child development in Taiwan. There is a clear relationship between maternal education and low birth weight, reflecting the earlier discussion on premature births, which contribute disproportionately to numbers of low birth weight babies. For mothers in each age group shown in Figure 2.13(b), mothers with a lower level of education were much less likely to suffer postpartum depression than those with higher levels. Differences by educational level were greatest among mothers aged 26 to 30 and least among older mothers. This principally reflected much higher rates seen in college educated mothers aged 30 and under than in those who were older. This may reflect the magnitude of the dual burden of work and childcare experienced by mothers in Taiwan with higher levels of education. Evidence shows that in many countries maternal postnatal depression is associated with a range of relatively poor outcomes for children as well as mothers (49).

There is a sharp gradient by mother's education in reading frequently to children at age three. Those with college education or above are five times as likely to read frequently than those with only elementary education, 3.4 times as likely as those with junior high education and 1.8 times as likely as those with senior high education. This is likely to be attributable, in part, to higher educated parents being more able to read to their children as well as a stronger belief in the value of stimulating an interest in stories and the written word. There is also a clear gradient in teeth brushing at age three by mother's education, with college

educated mothers twice as likely to brush their children's teeth before bed as those with only elementary education. This presumably reflects differential levels of health literacy.

The acquisition of cognitive skills is strongly associated with better outcomes across the life course over a range of domains including employment, income and health. A range of empirical studies provide evidence that cognitive ability is a powerful determinant of earnings, propensity to get involved in crime and success in many aspects of social and economic life (42, 51, 52) as well as health (53, 54) across the social gradient.

### 2.2.2 Education and health

A range of interacting factors impact on educational outcomes:

- Background socio-demographic features – income, parental education
- Proximal factors – parental support and parent-child relationships
- School-peer factors – the nature of the school and its population
- Individual child factors – individual children's ability, measured primarily in terms of prior attainment (55)

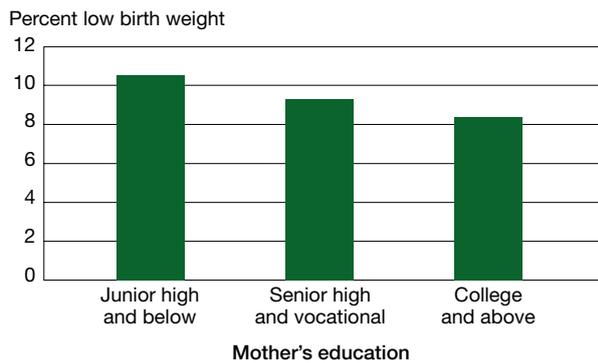
The interaction between these factors is complex and there is no linear causal relationship between any set of factors and educational outcomes (56). That said, some of the factors shown in Figure 2.13 – such as low birth weight and being read to frequently – are likely to relate to a child's chance of doing well in school. These predictors and subsequent attainment of children and young people are strongly influenced by parental income, education and socioeconomic status. The social position of parents accounts for a large proportion of the difference in educational attainment between higher and lower achievers. These differences emerge in early childhood and tend to increase as children get older (57, 58).

Children from disadvantaged backgrounds are more likely to begin primary school with lower personal, social and emotional development and communication, language and literacy skills than their peers (59).

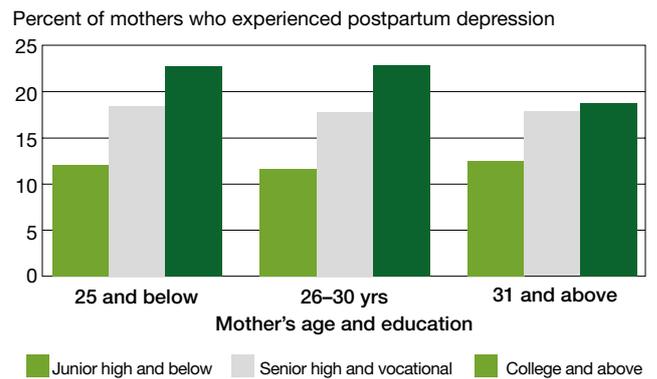
There is a strong relationship between educational attainment at age eight and family income in Taiwan, as Figure 2.14 illustrates. Children from the poorest families achieve a good level of performance by international standards (72%). However, this compares to 87% of children in the highest income families. This means that in terms of those failing to achieve a good level of performance, there is a two-fold difference (28% and 13% respectively). This is likely to lead to poorer life chances and poorer health outcomes in later life for children of poor families.

**Figure 2.13** Links between socioeconomic status and factors affecting child development

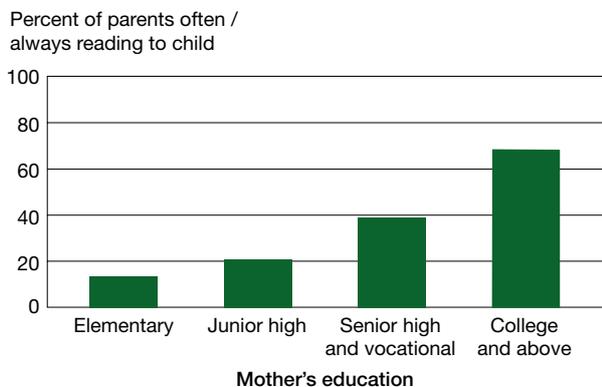
**a) Low birth weight, 2010–2011**



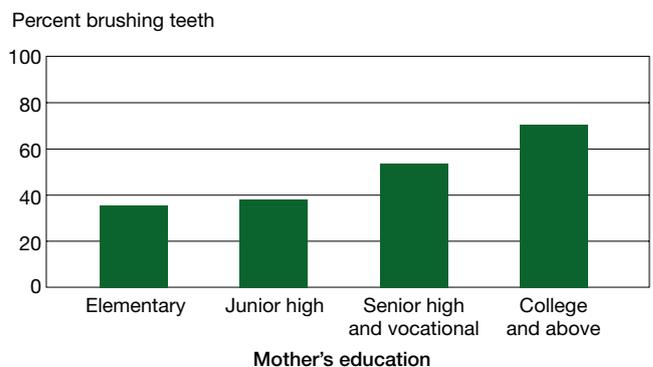
**b) Mother experienced postpartum depression, 2005–6**



**c) Reading frequency at age 3, 2008**



**d) Brushing teeth before bed at age 3, 2008**



Sources:

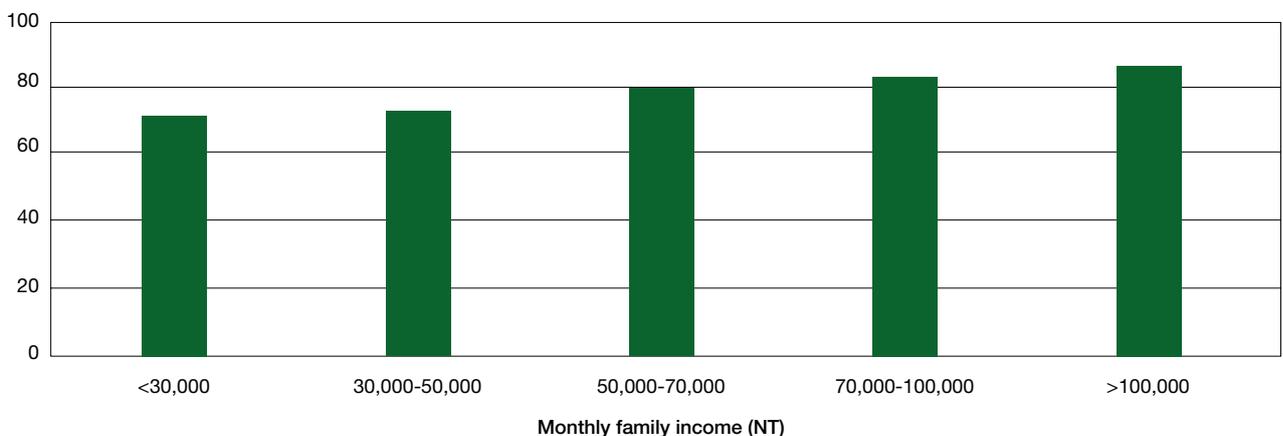
1. Statistics of Fertility, Ministry of Interior, Taiwan, 2010–2011 (Figure 2.13(a) (6)).
2. Taiwan Birth Cohort Study (TBCS) (Figures 2.13(b), (c), (d) (50)).

Notes:

- a) Low birth weight means birth weight is less than 2,500g.
- b) Mother experiencing postnatal depression is based on self-reporting in a survey when the child was aged 6 months.
- c) 'Reading frequently' at age 3 means parents always/often read to child.

**Figure 2.14** Percentage of pupils achieving a good level of performance in Chinese and mathematics, by monthly family income, 2012

Percent of students with a good level of performance in Chinese and Mathematics



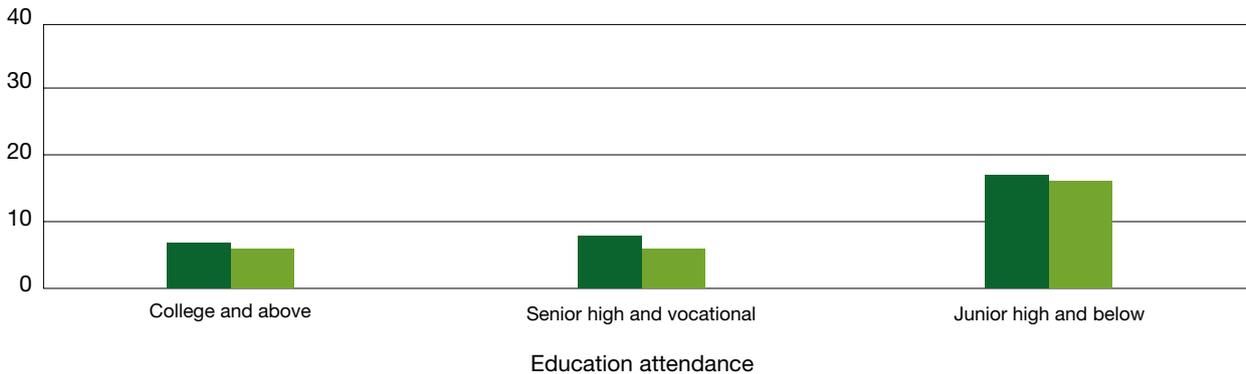
Source: Taiwan Birth Cohort Study (50).

Note: Good level of performance in Chinese and mathematics means both excellent and good learning in class judged by teacher at age eight years survey.

**Figure 2.15** Limiting illness rates by age group and educational level, 2013

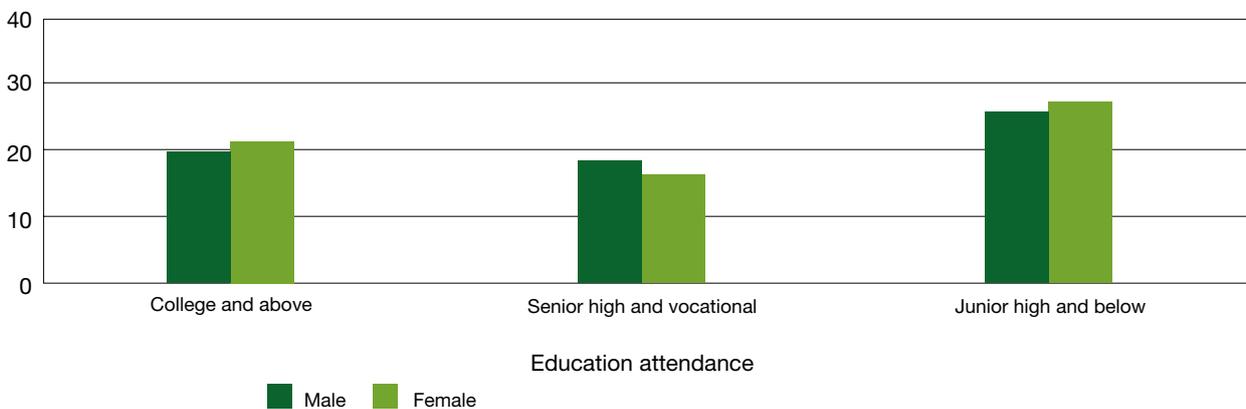
### a) Ages 25-74 years

Percent of people with limiting long-term illness



### b) Ages 55 years and over

Percent of people with limiting long-term illness



Source: National Health Interview Survey, 2013 (34).

Non-cognitive capabilities are also important predictors of outcomes across the life course. Characteristics such as perseverance, motivation, use of time, risk aversion, self-esteem, self-control and preferences for leisure have direct effects on school achievement, wages, involvement in crime and many other aspects of social and economic life, including health outcomes and behaviors such as teenage pregnancy and smoking (42, 60). These capabilities are all influenced by parents' socioeconomic position (56).

Several international studies have shown that higher cognitive scores are associated with both healthier lifestyles and better health outcomes (61). Recent UK studies found that higher cognitive function implied a reduced risk of cardiovascular disease (62, 63). There are similar findings for mental health with longitudinal studies showing that higher cognitive test scores are associated with lower rates of depression and higher intelligence in childhood linked with a decreased risk of psychological distress in adulthood (64, 65). It might be that

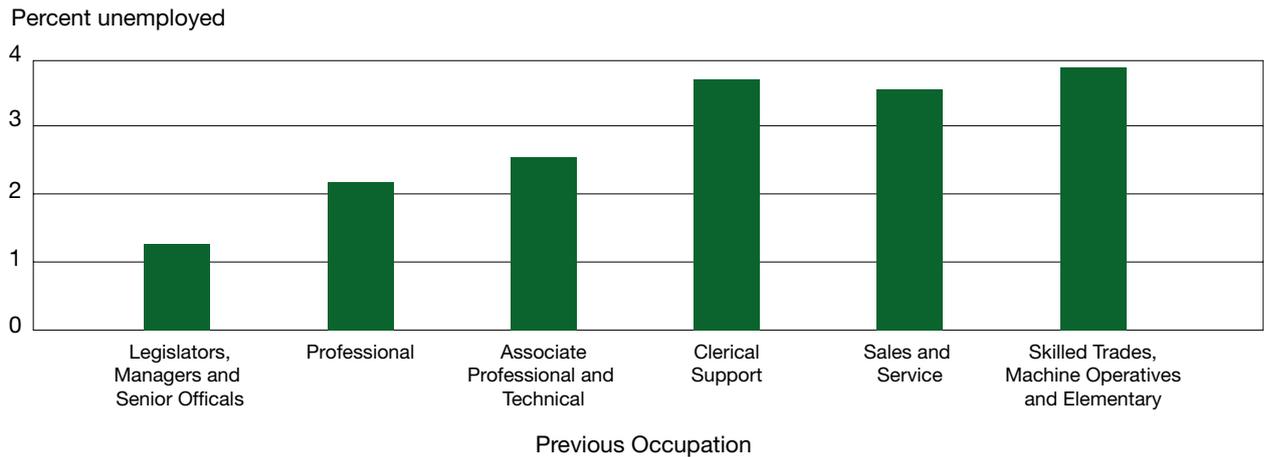
cognitive function itself is causal, or that the determinants of cognitive function are causal. Either way, it is likely that a leveling up of cognitive function across the social gradient will be linked to narrower social inequalities in health.

Figure 2.15 shows differences in limiting illness recorded in the 2013 National Health Interview Survey by recorded level of educational attainment. In particular, those with secondary school education and below had much higher limiting long-term illness rates than those who had attended education for longer.

#### 2.2.3 Work, health and wellbeing

Patterns of employment both reflect and reinforce the social gradient and inequality of access to labor market opportunities. Rates of unemployment are highest among those with no or few qualifications and skills, people with disabilities and mental ill health, those with caring responsibilities, lone

**Figure 2.16** Unemployment rates by previous occupation, for those with previous work experience, 2012



Source:  
Manpower Surveys, 2012 (67).

Notes:

- Definition of unemployment rate: (the number of unemployed persons by previous occupation/(the number of unemployed persons by previous occupation + the number of employed persons by occupation))\*100
- Occupation groups are based on the Standard Occupational Classification System of the Republic of China (Rev.6)

parents, those from some ethnic minority groups, older workers and, in particular, young people. When in work, these same groups are more likely to be in low-paid, poor quality jobs with few opportunities for advancement, often working in conditions that are harmful to health. Many are trapped in this cycle of low-paid, poor quality work alternating with unemployment, particularly if they live in deprived areas that have poor access to labor markets and have low skill levels.

Insecure and poor quality employment is associated with an increased risk of one's physical and/or mental health worsening, from conditions caused by work that in turn lead to absence due to illness, and worklessness. Principal among work-related ill health are common mental health problems and musculoskeletal disorders.

The relationship between employment and health is close, enduring and multi-dimensional. Being without work is rarely good for one's health, but while 'good work' is linked to positive health outcomes, jobs that are insecure, low-paid and that fail to protect employees from stress and danger make people ill.

### Unemployment rates

Patterns of employment both reflect and reinforce the social gradient. Unemployment is unequally distributed across society, with those in lower socioeconomic positions at higher risk, thus contributing to the social gradient in health (66).

In 2012, unemployment rates in Taiwan were lowest (below 3%) for those who had previously been senior officials, managers, professionals or in technical jobs (Figure 2.16). For other occupations, generally requiring lower levels of qualifications, rates were between 3.5 and 4%.

### Unemployment and health

Unemployed people incur a multiplicity of elevated health risks. They have increased rates of limiting long-term illness (68), mental illness (69) and cardiovascular disease (70, 71). The experience of unemployment has also been consistently associated with an increase in overall mortality, and in particular with suicide (72). The unemployed have higher use of medication (73) and much worse prognosis and recovery rates (69, 74, 75).

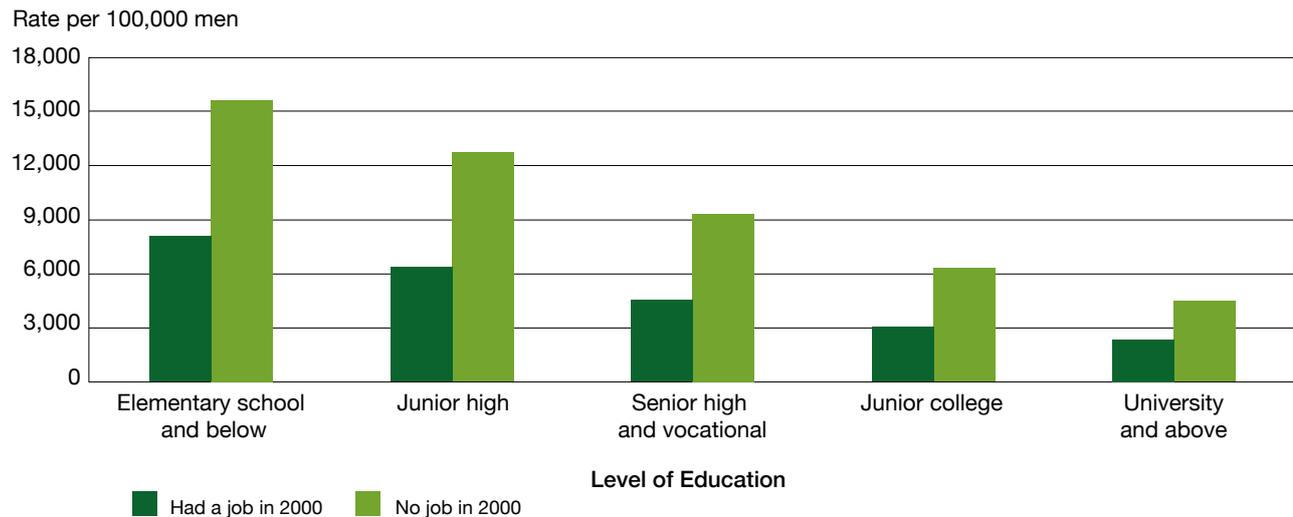
Unemployment has both short- and long-term effects on health. The immediate negative impact of being made redundant on a person's health outcomes has been frequently reported (76-78) while other studies emphasize the steady negative effects, proportional to the duration of unemployment, which progressively damage health (72, 79, 80). Therefore adverse effects on health are greatest among those who experience long-term unemployment (81-83).

There are three core ways in which unemployment affects levels of morbidity and mortality.

First, financial problems as a consequence of unemployment incur lower living standards, which may in turn reduce social integration and lower self-esteem (79).

Second, unemployment can trigger distress, anxiety and depression (72). Many psychosocial stressors contribute to poor health not only among the unemployed themselves, but also among their partners and children (84). Loss of work results in the loss of a core role that is linked with one's sense of identity, as well as the loss of rewards, social participation and support.

**Figure 2.17** Age standardized mortality rates in Taiwan, 2001–2010, by level of education and employment status for men aged 25–64 at 2000



Sources:

1. Population and Housing Census, 2000 (12).
2. Population and Housing Census, 2000 (12) and deaths in 2001–2010, by level of education (10).

Note:

Age standardization based on WHO world standard population, 2000–25.

Third, unemployment impacts on health behaviors, being associated with increased smoking and alcohol consumption and decreased physical exercise (79).

Figure 2.17 shows marked gradients in mortality in Taiwan, by level of education, in the 10 years following the 2000 Census, for men who were aged 15–64 at the time of the Census. There were steep gradients both for those with a job and those without one at Census. At each level of education, mortality of those without a job was higher than of those who were employed. Men who had attended junior college or university and were in employment at Census had particularly low levels of mortality and the excess mortality risk associated with being unemployed was over 60% for them. Among less educated men, the excess risk was between 40 and 50%.

Trends in unemployment

Recent rises in unemployment and particularly in youth unemployment may contribute to widening health inequalities. Figure 2.18 shows that there were two peaks in unemployment in the period 2000 to 2014. In the first, the overall unemployment rate increased from below 3% to 5% at the beginning of the decade and then, having fallen back to 4%, peaked at 6% in 2009, during the global recession. Rates for those aged 15 to 24 were generally two to three times those of all men throughout the period. In 2002 their rates peaked at 13% and in 2009 they reached 15%. By 2013, rates for all men had fallen back to 4% while for those aged 15 to 24 they remained at around 13%.

Employment, ill health and disability

The relationship between unemployment and ill health runs in both directions. Unemployment contributes to ill health and ill health increases the likelihood of unemployment, and the two can become mutually reinforcing (85-87). The longer a person is unemployed, the risk of subsequent illness increases greatly, and thereby further reduces the likelihood of returning to employment (88).

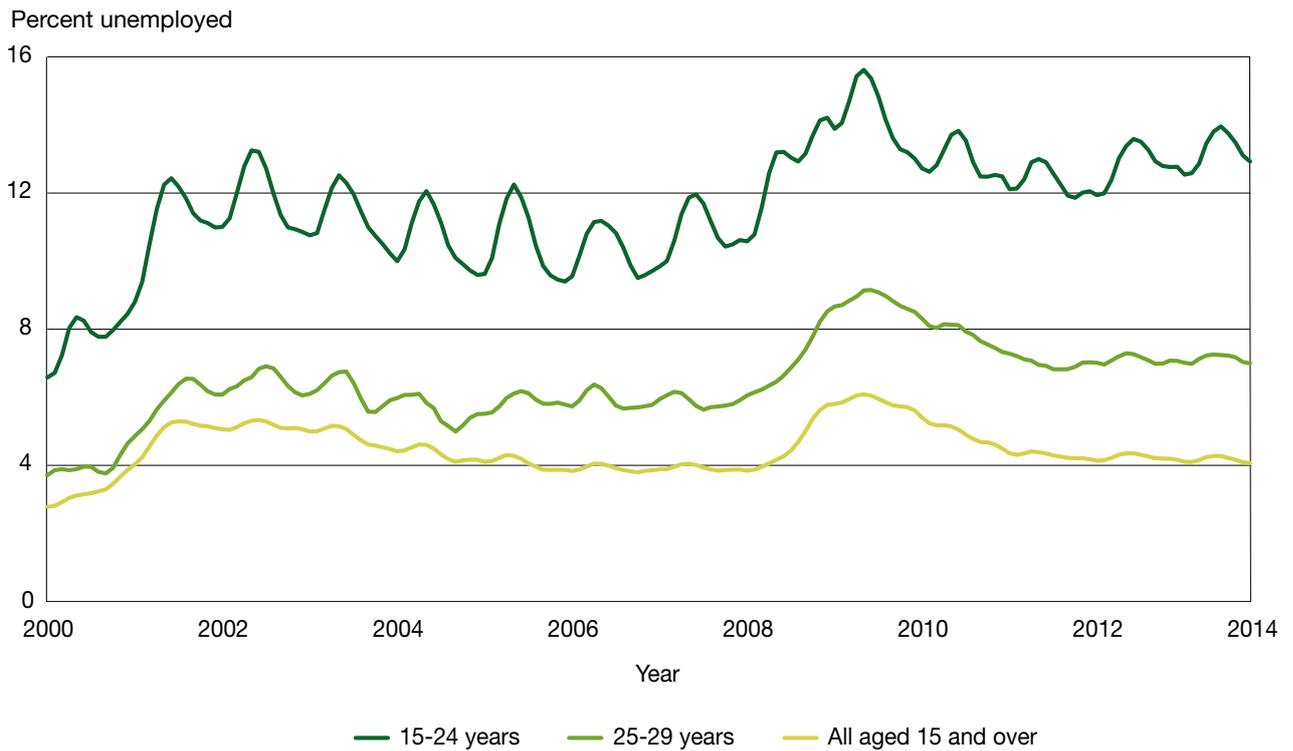
Figure 2.19 shows that people with limiting physical disabilities (hearing, vision, mobility or communication problems) were less likely to be employed (employment rates between 11 and 47%) than those with symptoms such as fatigue, anxiety, pain or depression (employment rates between 59 and 79%). This has policy implications for improving access to the workforce for people with limiting disabilities and impairments.

The extent to which limiting illness and disability act as a barrier to work is highly dependent on educational qualifications (see Figure 2.20). In 2013, 47% of men with only secondary education and a limiting longstanding illness were in employment. The comparable figure for those who had attended college was 72%.

Adverse working conditions and health

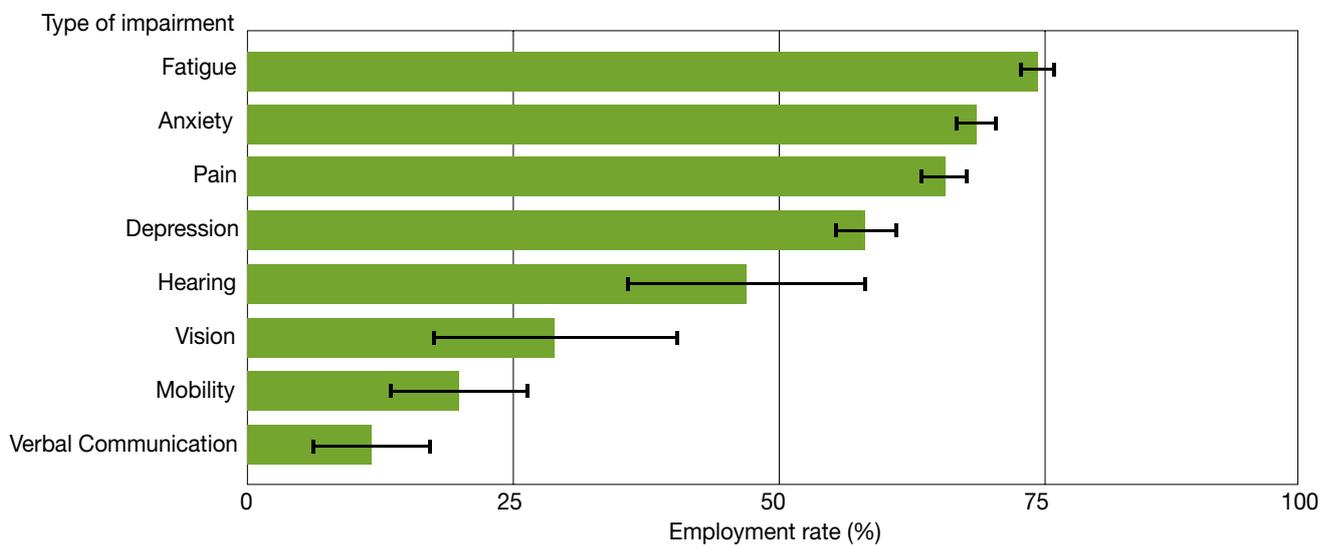
It is clear that getting people into employment is an important strategy for improving health. However, not all work is protective of health. People’s health can be damaged at work by factors including exposure to physical hazards, physically demanding or dangerous work, long or irregular working hours, shift work, health-adverse posture, repetitive injury and extended sedentary work (90, 91).

**Figure 2.18** Trends in unemployment rates by age in Taiwan, 2000–2014



Source: Manpower Surveys, 2000–2014 (67).

**Figure 2.19** Employment rates among adults aged 18–64, by type of disability, 2013

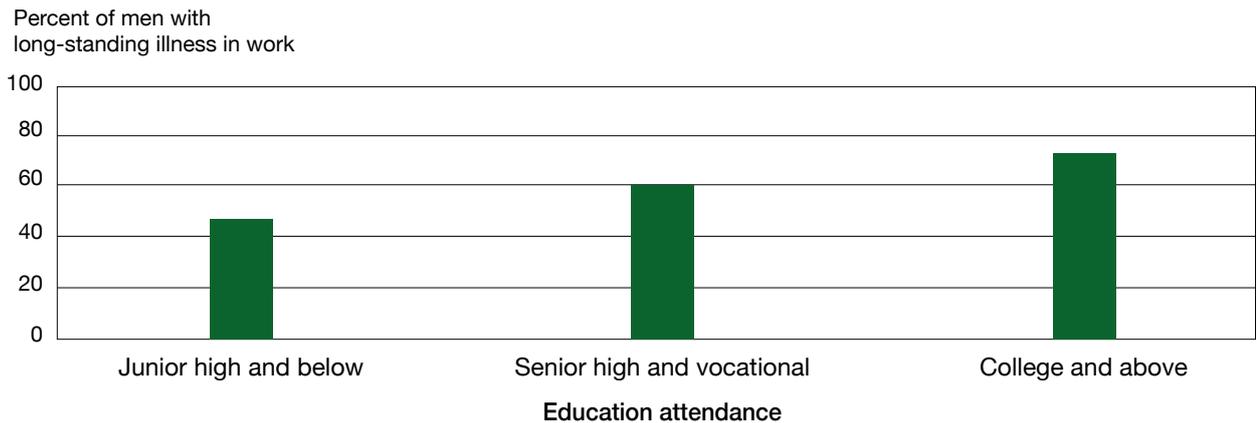


Source:  
National Health Interview Survey, 2013 (34).

Notes:

- The Washington Group Extended Set on Functioning(89) was used for measuring types of disability.
- Definition: 'Employment rate' is defined as people who are currently working at working age (18–64 years old).
- |—| Represents 95% confidence interval

**Figure 2.20** Proportion of men with limiting long-standing illness in work at ages 25–64, by level of education, 2013



Source: National Health Interview Survey, 2013 (34).

Psychosocial stress in the work place – for example an imbalance between demands made on the worker and the control they can exercise over the job, or an imbalance between the effort the worker makes and the ways in which they are rewarded – can also cause ill health. These have become more widespread as the nature of employment and work has changed worldwide. Technological advances and economic growth in the context of globalized markets have resulted in new types of tasks (for example, information processing, personal services and service centers), leading to a demand for greater flexibility of employment arrangements and contracts, often combined with less job stability and security, more intensive work and longer hours (92). Related adversities include conflicts within workplace hierarchies, restricted participation of employees in decision-making, and covert or overt discriminatory practices. ‘Toxic’ combinations of these factors are frequent in the current labor market, yet unequally distributed between occupations.

These factors are most prevalent among the most deprived workers, specifically those in ‘precarious’ jobs that are defined by a lack of safety at work, by exposure to multiple stressors including strenuous tasks over which the worker has little control, low wages and high job instability (93, 94). There is ample evidence on the adverse effects on health and wellbeing produced by these conditions. A range of research relates issues such as having or taking up an insecure job (95-98), job satisfaction (99, 100) and supervisor and peer support (101-103) to various psychological and physical health impacts, such as general ill health, depression, cardiovascular disease, coronary heart disease and musculoskeletal disorders (92-94).

Figure 2.21 provides indirect evidence of these risks – through the unequal distribution of clinical risk factors such as hypertension, hyperlipidemia and hyperglycemia by educational level. There are gradients in all three risk factors – with those having only a primary school or lower education having over three times the rate of hypertension than those with college or higher education, 2.5 times the rate of hyperlipidemia and over five times the rate of hyperglycemia.

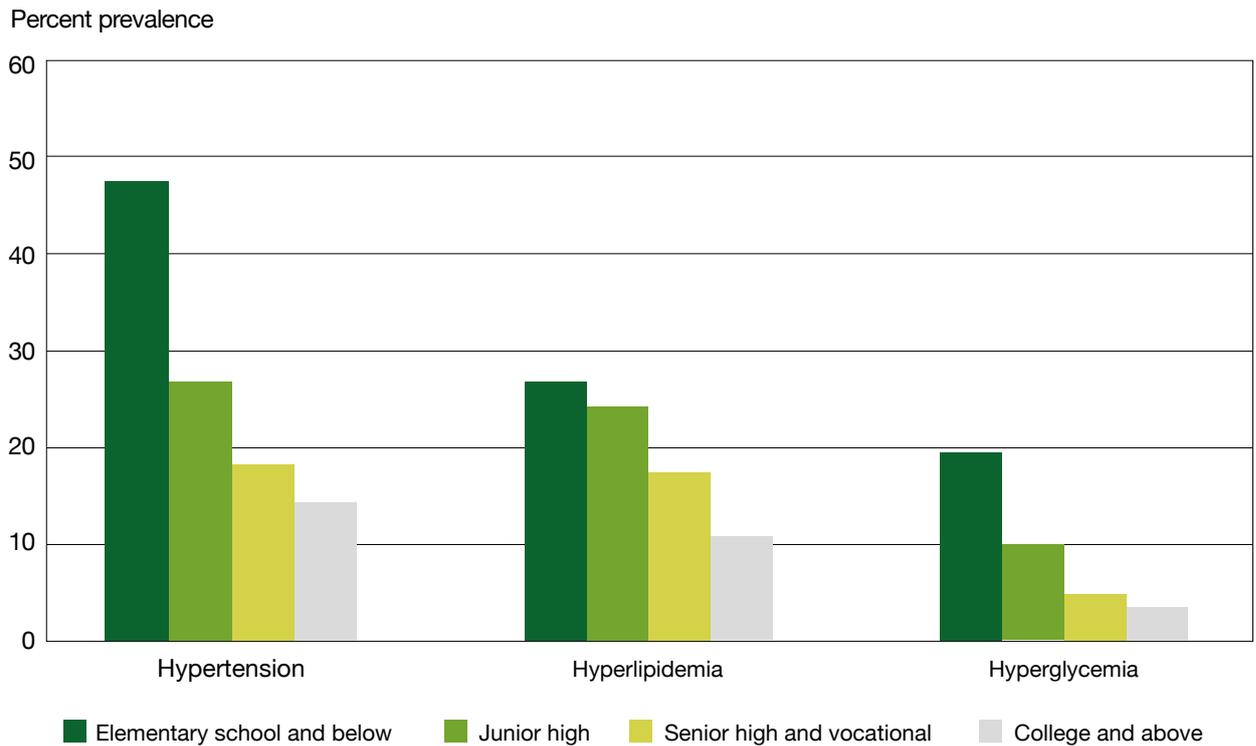
### 2.2.4 Income and health

The relationship between low income and poor health is well established. It operates in several ways. People with low incomes refrain from purchasing goods and services that maintain or improve health or are forced to purchase cheaper goods and services that may increase health risks. Having a low income also prevents people from participating in a social life and can leave them feeling they are less worthy or have a lower status in society than the better-off (105, 106). The relationship can operate in both directions: low income can lead to poor health (for example through its adverse impact on the conditions of daily living) and ill health can result in a lower earning capacity.

Figure 2.22 indicates the effect that systematic variation in sources of income and non-consumption expenditure has on the income gradient in Taiwan.

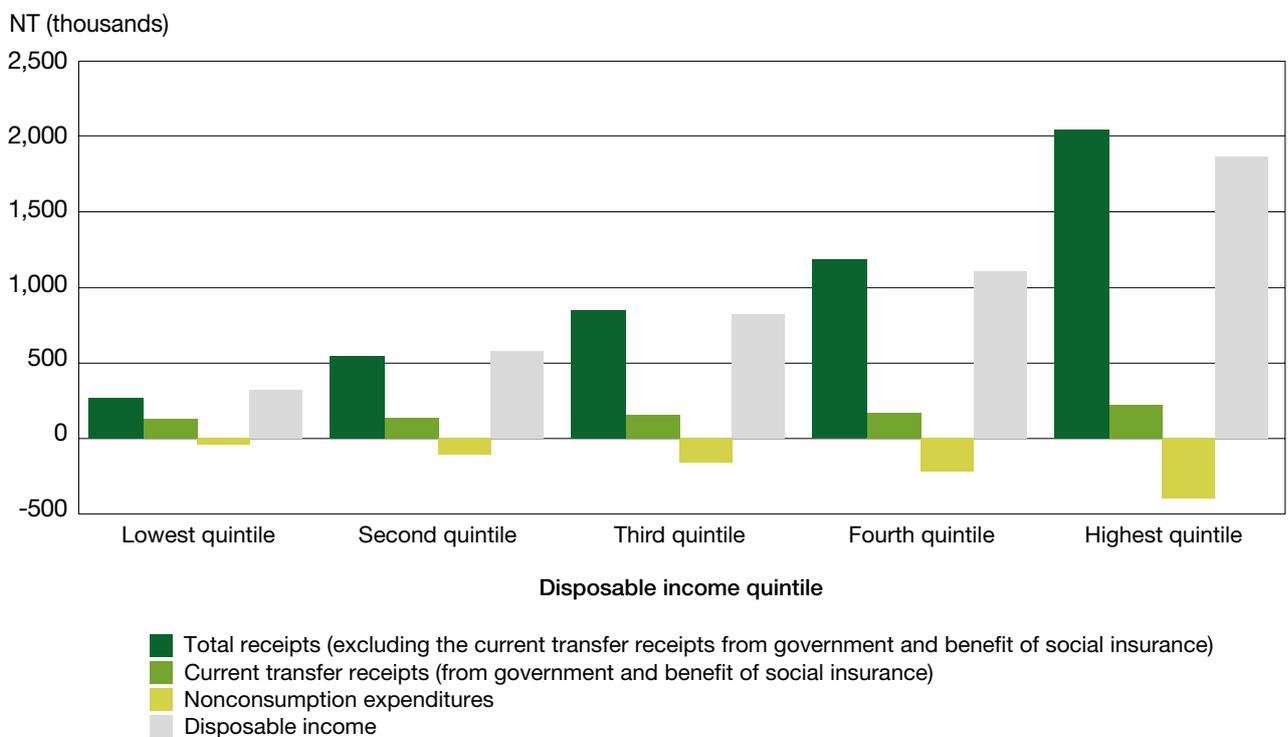
Original household income (from employment, entrepreneurial activity, property-related income and private current transfers) is strongly differentiated, with a ratio of 8 to 1 between the top and bottom fifths of the distribution. Current cash transfers from government and contributory sources (such as pensions, subsidies, allowances, lottery prizes and social insurance benefits) are less differentiated – with the top income quintile receiving slightly under twice as much cash in transfers than the bottom quintile – but this extra cash makes only a 10% difference to their larger incomes whereas it provides a substantial (45%) boost to the lowest income quintile. In addition, non-consumption expenditure claws back much more from the top income quintile than the lowest (over six times as much). This expenditure comprises payment of taxes, fees and fines to government, social insurance premiums, interest payments, payments abroad and gifts of money, charity donations and membership fees. As a result of current cash transfers and non-consumption expenditure, the differential in the disposable income of households is reduced to 6 to 1.

**Figure 2.21** Prevalence of hypertension, hyperlipidemia, hyperglycemia by level of education, Taiwan, 2007



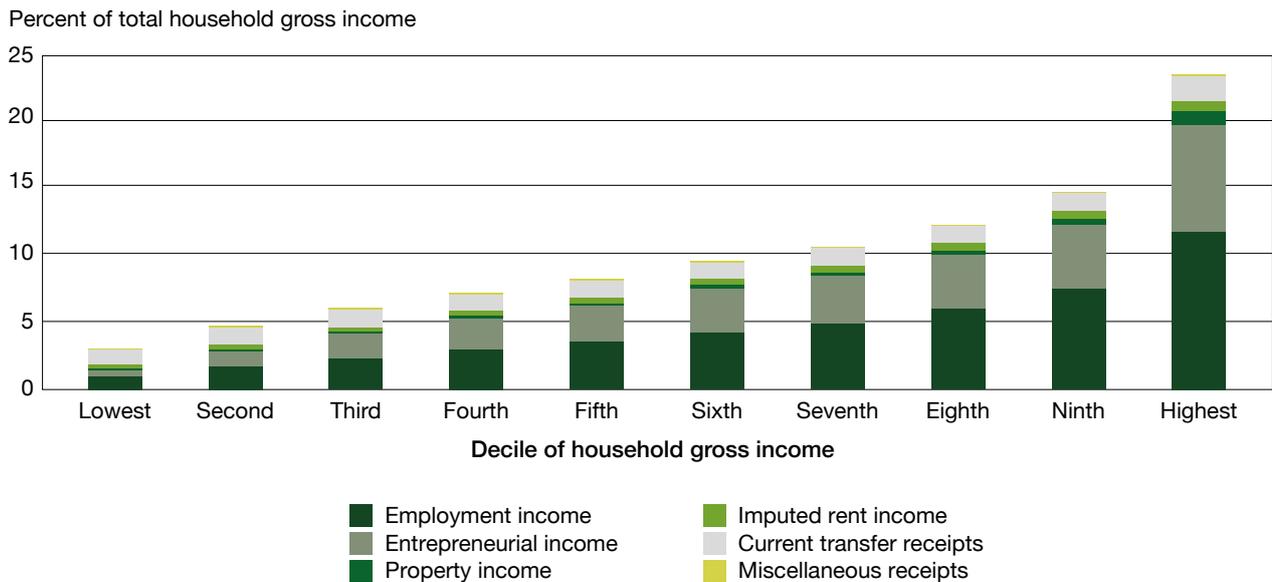
Source: Taiwanese Survey on Prevalence of Hypertension, Hyperglycemia and Hyperlipidemia, 2007 (104).

**Figure 2.22** Contribution of original income, current transfer receipts and non-consumption expenditures to disposable income, by quintile, Taiwan, 2012



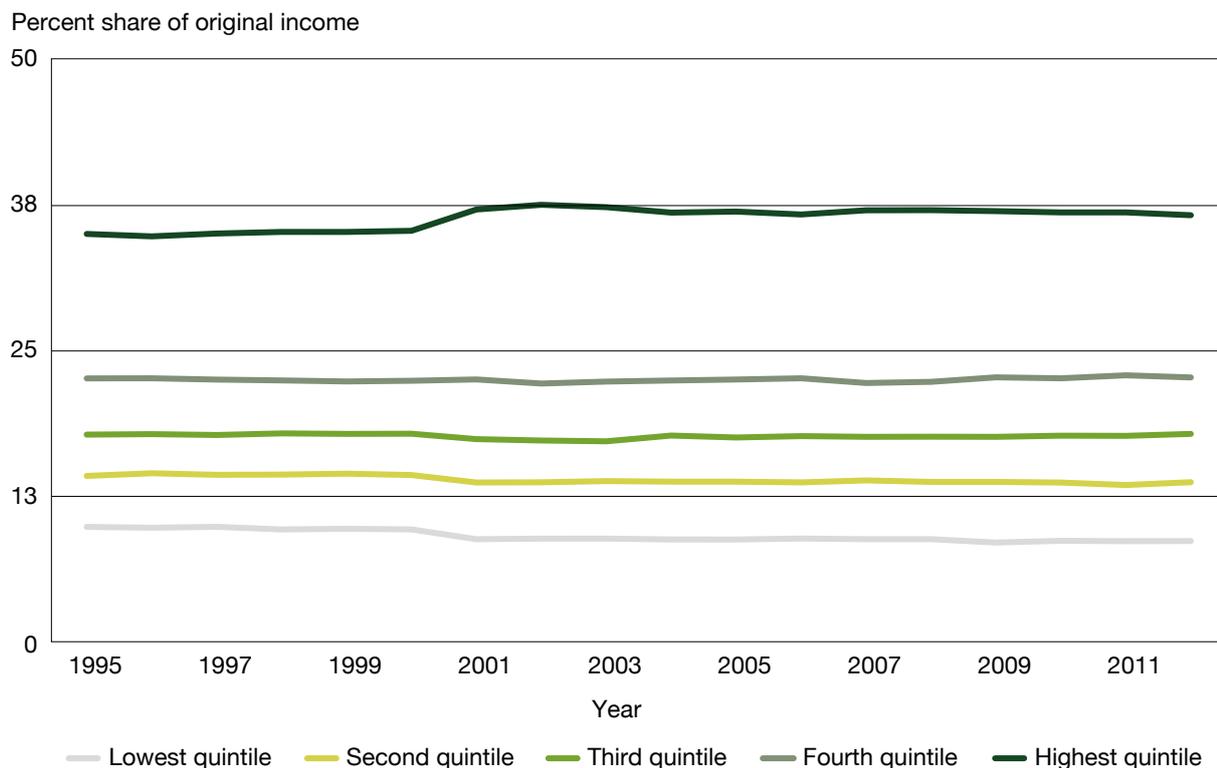
Source: The Survey of Family Income and Expenditure (107).

**Figure 2.23** Percentage distribution of total household gross income by component for each decile of household gross income, 2012



Source: The Survey of Family Income and Expenditure (107).

**Figure 2.24** Percentage share of original income, by quintile groups for all households, 1995–2012



Source: The Survey of Family Income and Expenditure, 2012 (107).

Note: The original income per household is adjusted for the equivalent number of adults in the household defined as the square root of [number of adult + 0.5 \* (number of children)].

Households in the highest decile receive a larger percentage of every type of income, including current transfer receipts, than any other type of household (Figure 2.23). As a result, they receive 24% of all household gross income. By contrast, the bottom decile receives a lower percentage of every category of gross income than any other type of household. As a result they receive just 3% of all household gross income.

Figure 2.24 shows the trend in the share of equivalized original income per adult household member over time. In 2001, the share taken by the top quintile increased from 35 to 37%, at the expense of the bottom 60% of households. This resulted in an increase in the ratio of top to bottom quintiles from 3.6 to 4.2. This ratio and the overall distribution have remained at around the 2001 level ever since.

The relationship between income inequality and health outcomes is described by Wilkinson and Pickett (108). The adverse effects on health caused by having a low income have been shown in several studies (109). The gradient is important to address, as it is not always those on the lowest incomes who find it most difficult to make ends meet. Figure 2.25 shows the gradient in income according to the type of occupation in which people are employed.

### 2.2.5 Communities and health

#### Sustainable communities

Climate change will amplify existing risks and create new risks for natural and human systems, according to the fifth assessment report of the Intergovernmental Panel on Climate Change (IPCC) (110).

The IPCC indicates that the risks are unevenly distributed and are generally greater for disadvantaged people and communities in countries at all levels of development. Risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems, including their ability to adapt. Rising rates and magnitudes of warming and other changes in the climate system, accompanied by ocean acidification, will increase the risk of severe, pervasive and in some cases irreversible detrimental impacts. Coastal systems and low-lying areas are at risk from sea level rise, which will continue for centuries even if the global mean temperature is stabilized. Climate change is projected to undermine food security.

Projected climate change by the mid-21st century and beyond will challenge the sustained provision of fisheries productivity and other ecosystem services. For wheat, rice and maize in tropical and temperate regions if climate change leads to increases in local temperatures of 2°C or more, this is projected to negatively impact on production.

Until the middle of this century, projected climate change will impact human health mainly by exacerbating health problems that already exist. By 2100, the combination of high temperature and humidity in some areas for parts of the year is expected to compromise common human activities, including growing food and working outdoors. In urban areas climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges. These risks will be greater for those lacking essential infrastructure and services or living in exposed areas.

#### The social gradient in places and communities

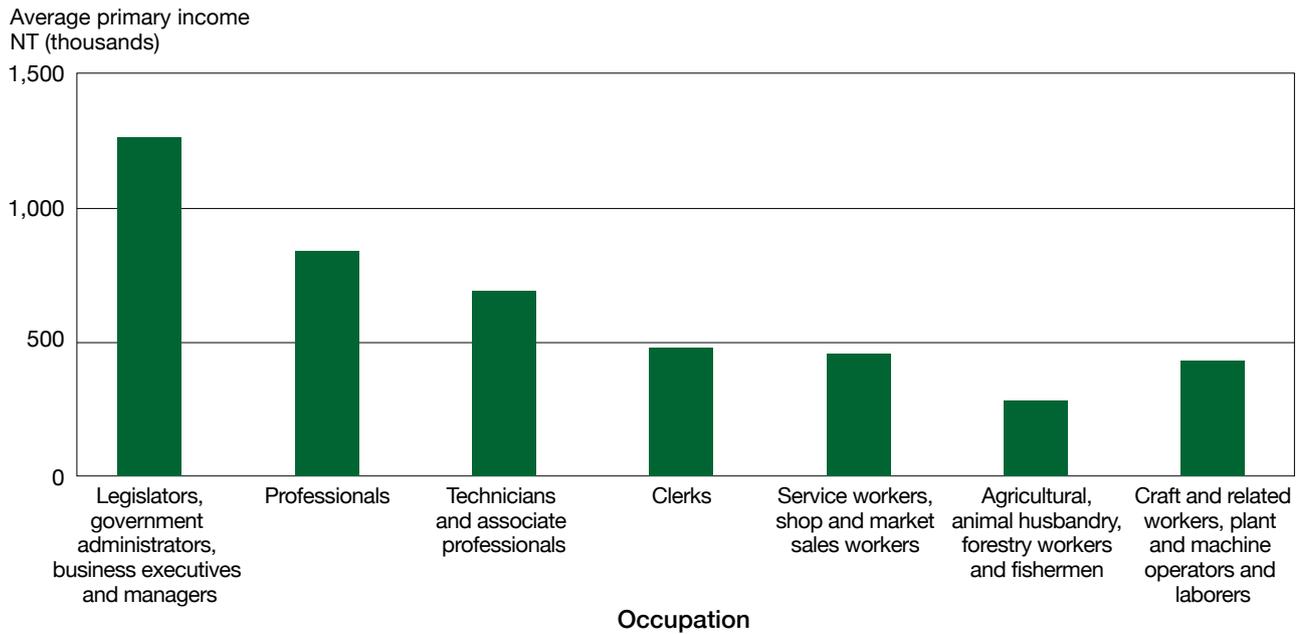
There is substantial evidence of a social gradient in the quality of neighborhoods (Figure 2.26). Poorer people are more likely to live in more deprived neighborhoods. Figure 2.26 shows that people in the most deprived neighborhoods are more likely to express dissatisfaction with their lives (16%) compared to those in the least deprived (13%).

#### Transport and health inequalities

Car usage increases with income level, while those with little or no income are more likely than others to use walking or cycling as their means of transport than those with higher income levels (Figure 2.27). In the intermediate income band (between 10,000 and 50,000 NT), motorbikes were the most common mode of transport. In this way, those who are better off have larger carbon footprints than those who are less well off.

The impact of transport on health inequalities is most significant when looking at deaths from road traffic injuries. The single major avoidable cause of death in childhood in Taiwan is unintentional injury, with road traffic accidents the most common cause in children aged one and over (113). Road deaths by township deprivation quintiles are shown in Figure 2.28. There is a steep gradient for both deaths of car occupants and pedestrians and cyclists.

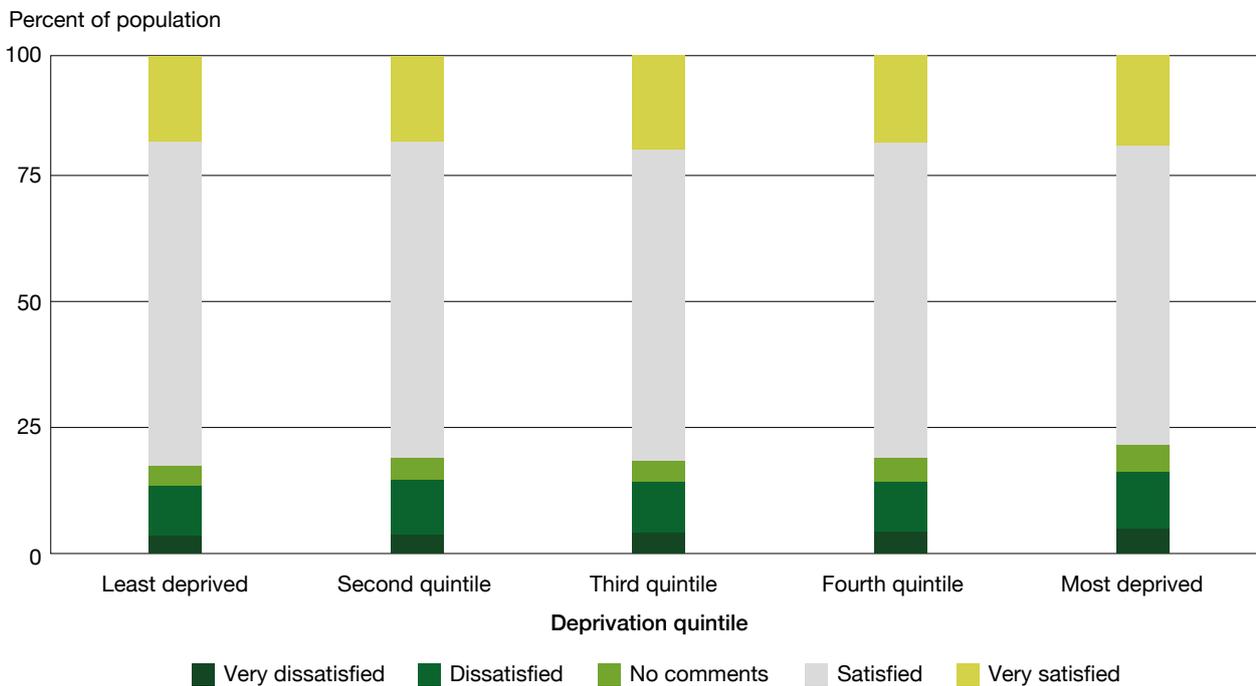
**Figure 2.25 Average primary income per employed person by type of occupation, 2012**



Source:  
The Survey of Family Income and Expenditure, 2012 (107).

Notes:  
a) Occupation groups are based on the Standard Occupational Classification System of the Republic of China (Rev.6)  
b) Soldiers are included in 'Technicians and Associate Professionals'.

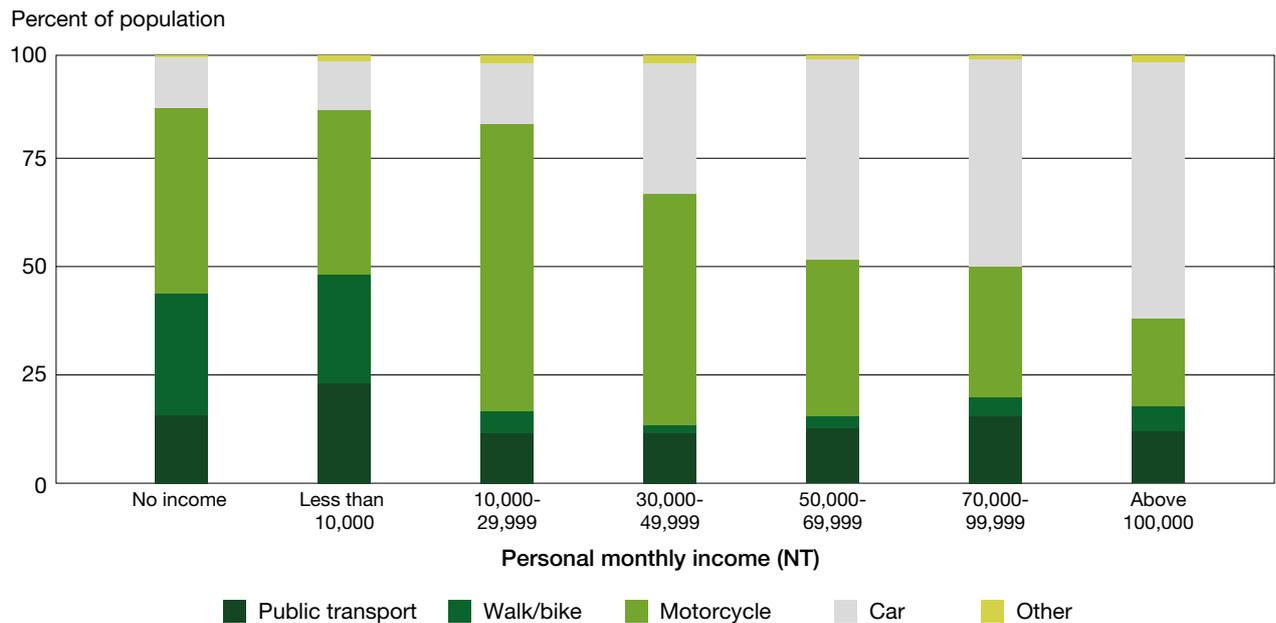
**Figure 2.26 Life satisfaction, by township deprivation quintiles, 2013**



Source:  
The Behavioral Risk Factor Surveillance System, 2013 (111).

Notes:  
a) Townships are small areas containing around 65,000 people.  
b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12).

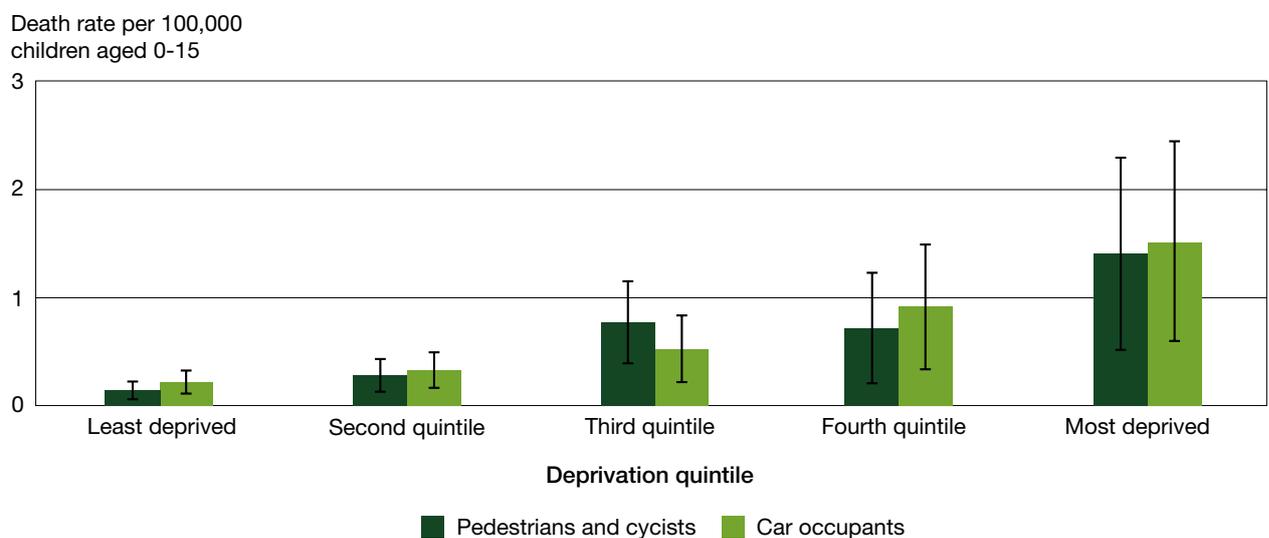
**Figure 2.27** The most commonly used modes of transport at ages 15 and over by personal monthly income and mode, 2013



Source: The Public Transit Survey of Ministry of Transportation and Communications, 2012 (112).

Note: Sample size: 38,266, respondents aged 15 and over.

**Figure 2.28** Child road traffic death rates by deprivation quintiles of Taiwan townships, 2008–2011



Source: Death Reporting System, Ministry of Health and Welfare, Taiwan, 2008–2011 (10).

Notes:  
 a) Townships are small areas containing around 65,000 people.  
 b) The deprivation index of areas was developed using the proportion of agricultural laborers and the proportion with no schooling among 18–21 year olds from the Population and Housing Census, 2010 (12).  
 — represents a 95% confidence interval.

## Summary of the analysis of health risks in Taiwan

- Dissatisfaction with life was higher in the most deprived deprivation quintile than in the least deprived
- Smoking rates among men born after 1955 are high with a steep gradient by educational level, although rates are decreasing over time for all educational groups
- There were steep gradients in alcohol attributable hospital admissions by level of education for both men and women
- While overweight and obesity levels are generally low compared with other countries:
  - rates for men are increasing for some educational groups
  - rates for women are lower than for men but are more strongly graded by level of education
- There is a steep gradient, by level of income, in rates of problematic drug use

## 2.3 Inequalities in risk factors

Inequalities in some of the main behavioral risk factors for ill health are described below. In Chapter 5, particular approaches and interventions are proposed to reduce these risk factors proportionately across the social gradient (policy recommendation F).

### 2.3.1 Dissatisfaction with life

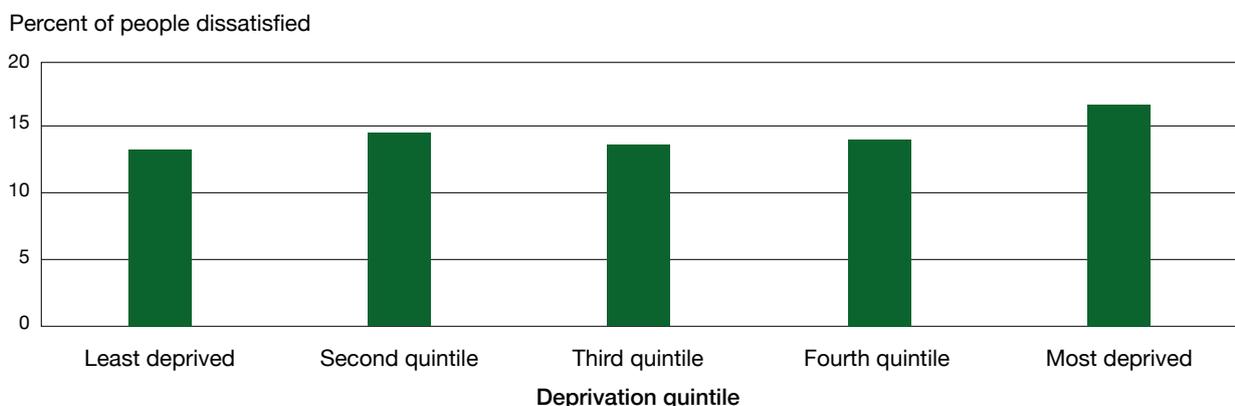
A number of surveys in Taiwan include questions on wider health and behaviors. Figure 2.29 shows how answers to one of these, life satisfaction, were related to deprivation in 2013. This figure shows that dissatisfaction was 20% higher in the most deprived quintile than in the least deprived. In the intermediate quintiles percentages were 6–9% higher than in the least deprived – but with no clear gradient.

### 2.3.2 Smoking

In 2013, the smoking rates of males and females aged 18 and over in Taiwan were 32.5% and 3.3% respectively, with significant inequalities in rates (114). Compared to current international levels, a large percentage of men in Taiwan who were born after 1955 smoke (Figure 2.30). In 2012, rates varied from 23.5% for those with a university education to 52.2% for those with junior high or less education. For all levels of education attainment, there was a higher rate of smoking in each of the years 2004 to 2012 among those born after 1955 compared with those born before 1955, although rates decreased for all educational groups in both cohorts over the period.

Among men born before 1955, those who ceased education after high or vocational schools had similar smoking levels to those who left after junior high or earlier. In both cases, these levels were higher than for those who attended university – although the size of the difference fluctuated markedly from year to year.

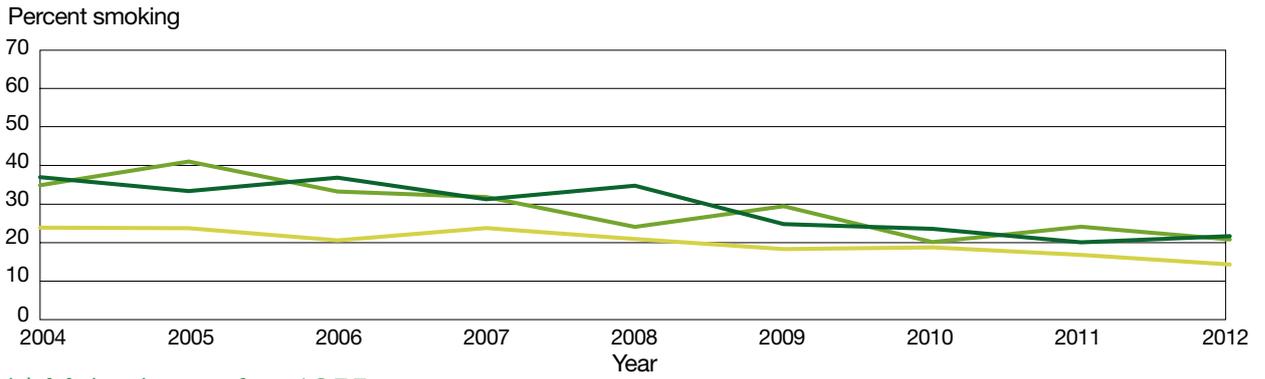
**Figure 2.29** Percentage of people dissatisfied or very dissatisfied with life by deprivation quintiles, ages 15 and over, 2013



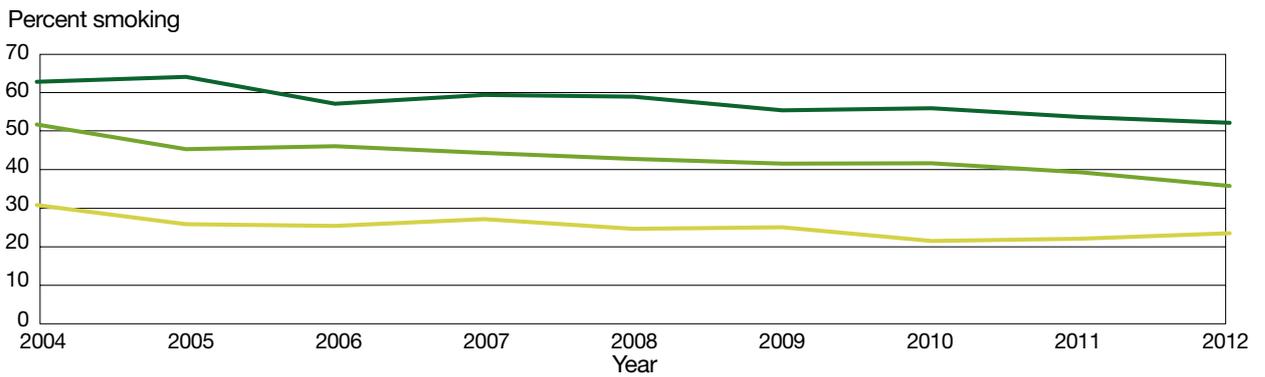
Source: The Behavioral Risk Factor Surveillance System, 2013 (111).

**Figure 2.30** Percentage of people smoking, by education and year of birth, 2004–12

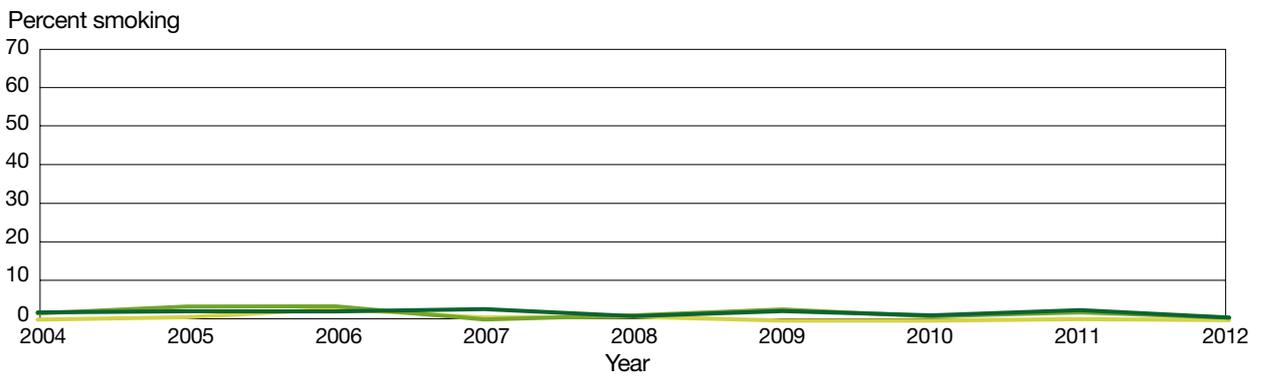
a) Males born before 1955



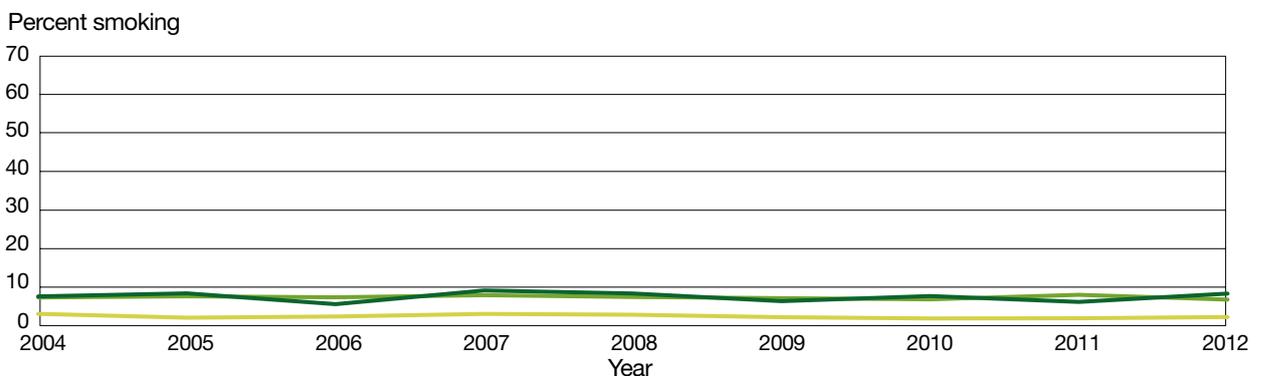
b) Males born after 1955



c) Females born before 1955



d) Females born after 1955



— Junior high and below      — Senior high and vocational      — College and above

Source: Taiwan Adult Smoking Behavior Survey (2004–2012) by Health Promotion Administration, Ministry of Health and Welfare (115).

Note: Definition of smoker: someone who has smoked more than 100 cigarettes (five packs) during their lifetime and smoked within the past 30 days.

For men born after 1955, a steep gradient based on education levels persisted throughout the period with those leaving after junior high school being more than twice as likely to smoke as those with a university or higher qualification. This difference was widest in 2010, but has narrowed slightly as smoking rates increased slightly in 2011 and 2012 among those with a university education.

Rates of smoking among women in this period were much lower than those for men and for women in many other countries. In all education categories, women born before 1955 had smoking rates below 4% and those born after 1955 below 8%. Unlike male smoking rates, there was no consistent decrease in female smoking rates over the period 2004 to 2012 – although the relatively small numbers were subject to year on year fluctuations. As was the case for men, among those born before 1955, smoking rates for those leaving after high school and after junior school did not differ in any consistent way but both were higher than those with a university education. For those born after 1955, those leaving after high or vocational school had the highest rates – between 6 and 8%. For those leaving school earlier, rates were around 4–5% and for those going to university they fluctuated around 2%.

### 2.3.3 Alcohol

There were steep gradients in alcohol-attributable hospital admissions by level of education for both men and women (Figure 2.31). For all levels of education, men had

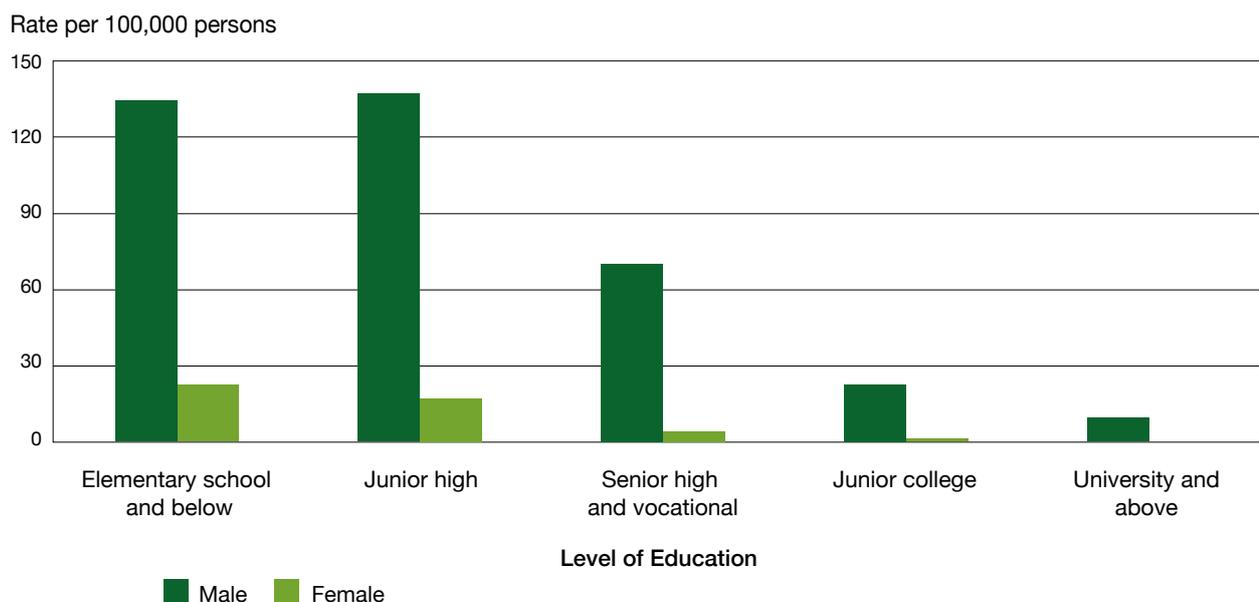
considerably higher rates than women (between 5.9 times higher for those with elementary and lower education and 15.6 times higher for those with senior high education). Among men, rates for those who left school after elementary or junior high school were both nearly 14 times higher than those who attended university. For women, the rates for these two groups were 28 and 21 times higher than for those who attended university.

### 2.3.4 Obesity

The prevalence of overweight or obesity in men increased in Taiwan from 2008–10 and 2011–13 for most levels of education (see Figure 2.32). While there was a small difference dependent on educational level at the start of this period (from 46% among those with more than graduate schooling to 52% for those with junior schooling or less), sharp increases among those whose education extended beyond graduate school and those who attended ‘five year colleges’ resulted in these two groups overtaking groups with lower levels of education than themselves.

Levels of overweight and obesity remain fairly low by international standards. Women had lower rates of obesity and overweight than men, with the rates for more highly educated groups among men being higher than that for the lowest educated group of women. Nonetheless, inequalities in rates of overweight and obesity among women were substantial throughout the time period. Women with less than junior school education had a far higher rate than the other groups

**Figure 2.31** Age standardized alcohol-attributable hospital admission rates at ages 18 and over by level of education in Taiwan, 2011–12



Source: National Health Insurance Research Database, 2011–2012 (116).

(about 47% in 2011–13 compared to a rate of 14% for those educated beyond graduate school). While overweight and obesity rates did not increase for these two groups over the period, it did increase by between 3 and 5 percentage points in the other, intermediate educational groups.

Among children aged under 12, those whose mother had attended senior high school or above were less likely to be overweight or obese in 2009 than those with less educated mothers (25% compared to 31%) – see Figure 2.33. Within these two broad groups, children in the most deprived quintiles were also more likely to be overweight or obese than those in the least deprived quintile. However, patterns were less clear in intermediate quintiles. The overall difference in

rates of overweight or obesity by father’s education was less than that based on the mother (28% compared to 26%). Mother’s education also had a larger impact than father’s education on children’s overweight and obesity in the most and least deprived group, although patterns were again mixed in intermediate deprivation quintiles.

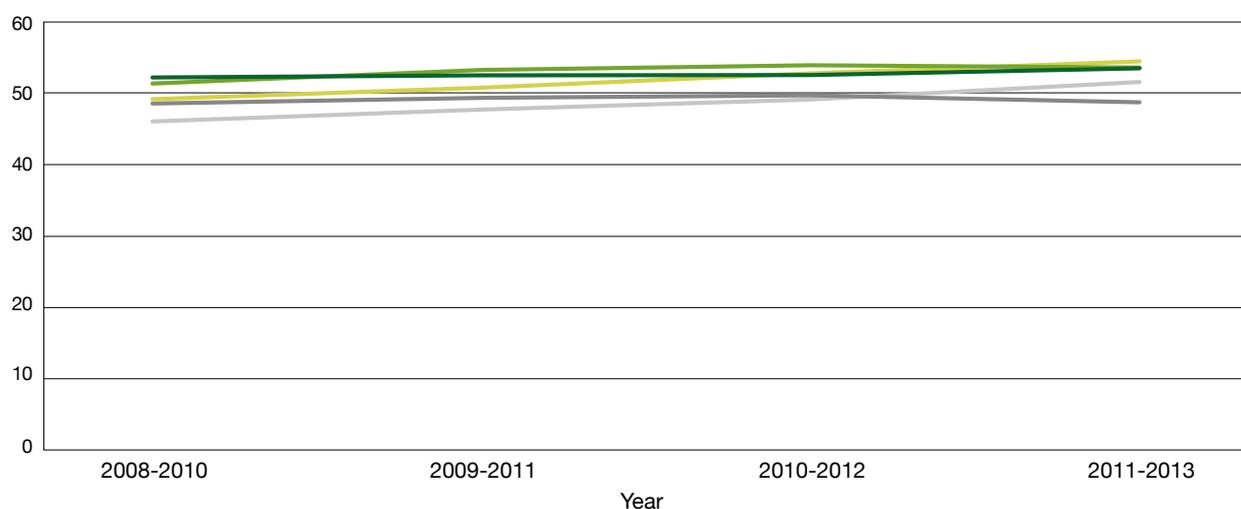
### 2.3.5 Drug use

There was a steep gradient in the rate of problematic drug use by level of income in 2009, although there was a considerable amount of random variation in the data (Figure 2.34). This may be affected by factors such as gender, marital status, education and employment status.

**Figure 2.32** Prevalence of overweight or obesity at age 25-plus by education, 2008–2013

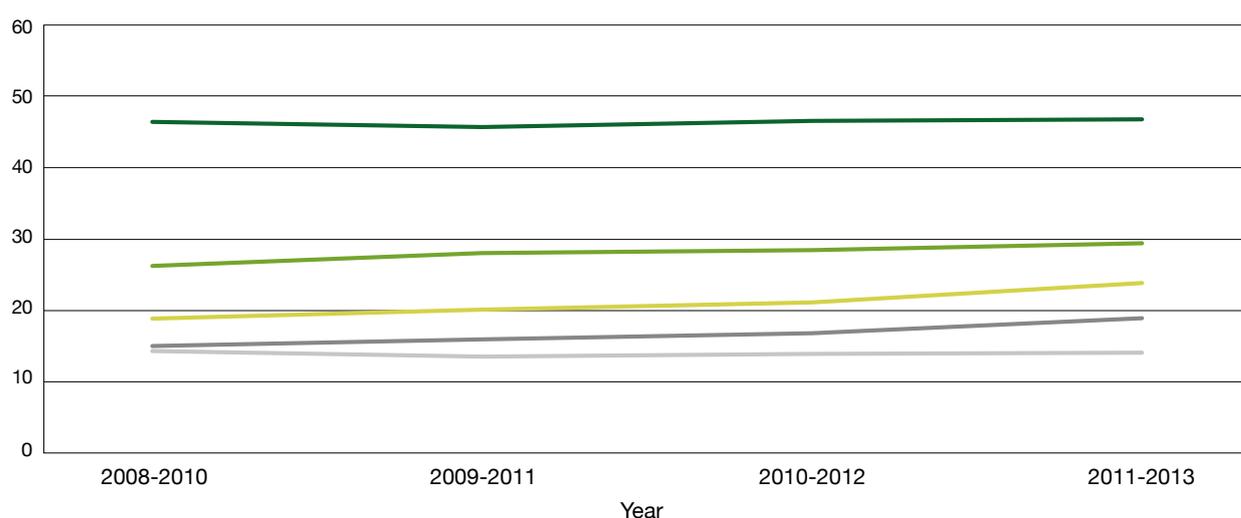
#### a) Males

Percent BMI ≥ 24



#### b) Females

Percent BMI ≥ 24



— Junior high and below — Senior high and vocational — Five-year college — University — Graduate school and above

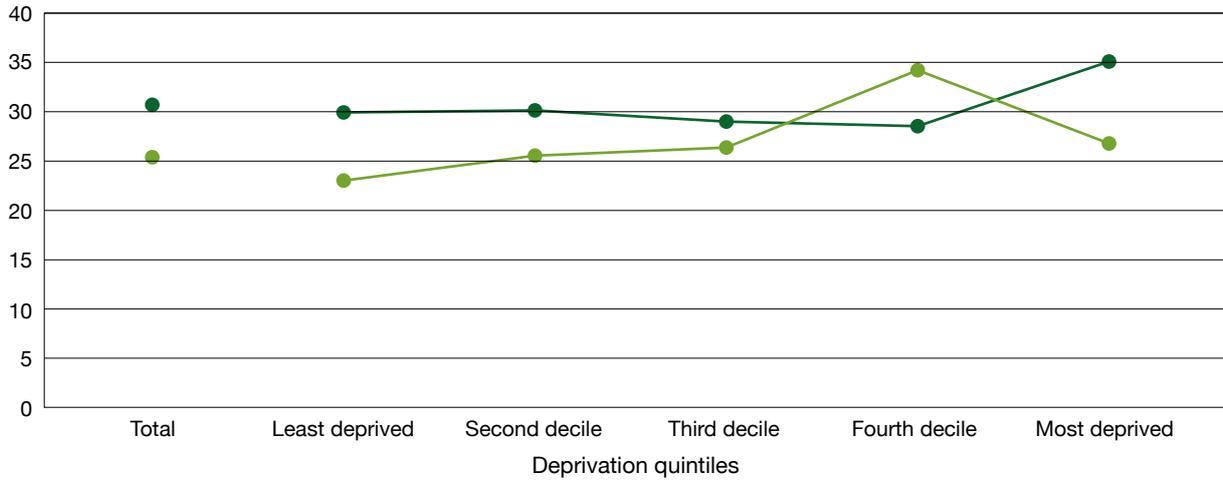
Source: Behavioral Risk Factor Surveillance System (111).

Notes: Definition of overweight or obesity: body mass index (BMI) greater than or equal to 24.

**Figure 2.33** Percent overweight or obese by parent's education and deprivation quintile for children aged under 12 years, 2009

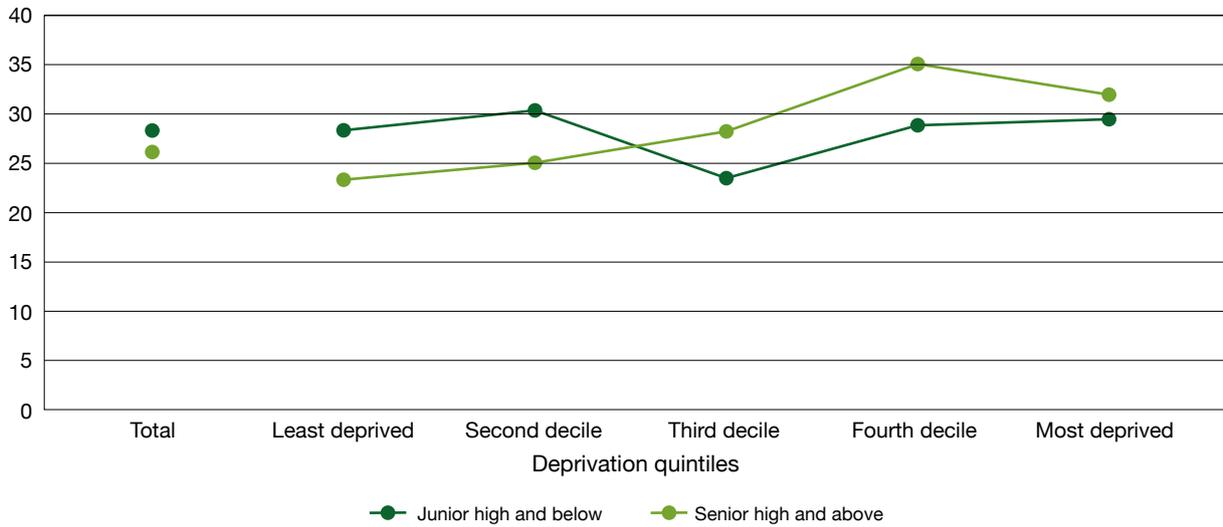
a) Mother's education

Percent overweight or obese



b) Father's education

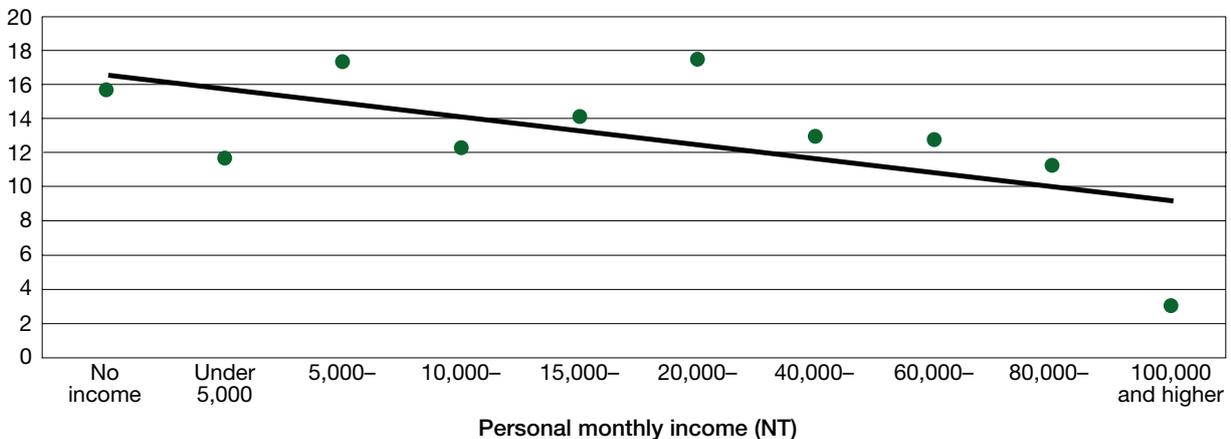
Percent overweight or obese



Source: National Health Interview Survey (2009) (34).

**Figure 2.34** Prevalence of problematic drug users aged 18–64 years by income level, 2009

Rate per thousand



Source: National Health Interview Survey (2009) (34).

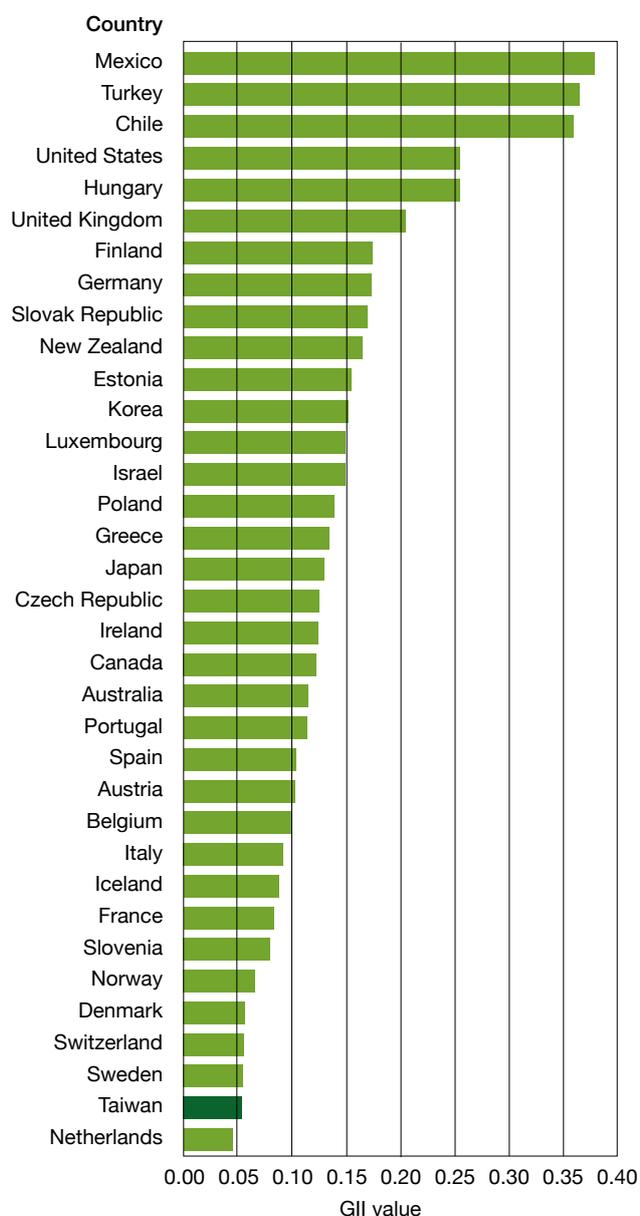
## 2.4 Comparisons with inequalities in OECD countries

### 2.4.1 Gender

As indicated in Chapter 1, lower values of the Gender Inequality Index indicate higher levels of gender equity based on reproductive health, empowerment and economic status. Losses due to gender inequality vary across countries from 4.5% in the Netherlands to 74.7% in Yemen. As Figure 2.35 shows, Taiwan has a very low score of 5.3%, the lowest of all OECD countries after the Netherlands, reflecting a very high achievement of gender equity.

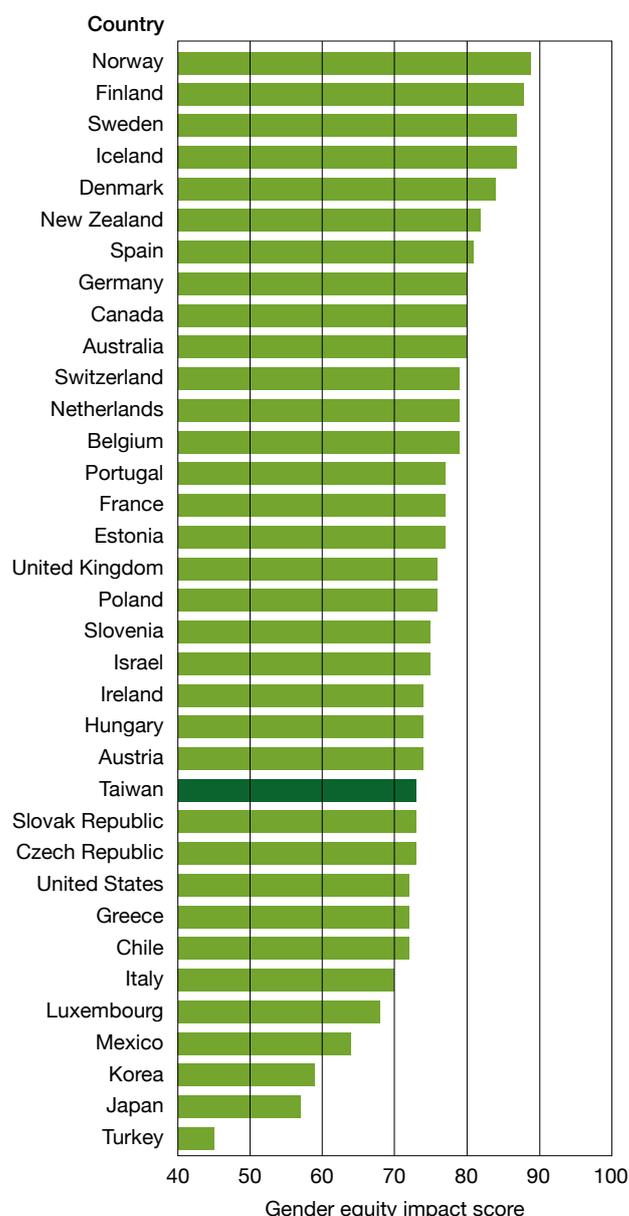
The Gender Equity Index is a different measure, that takes into account education, empowerment and economic activity. As indicated in Chapter 1, a higher value for this Index indicates a greater level of gender equity. As shown in Figure 2.36, the Gender Equity Index value for Taiwan is 73. This is better than the global average of 56, though slightly lower than the OECD average of 75. For the countries shown in Figure 2.36, values range from 45 for Turkey to 89 for Norway.

**Figure 2.35** Gender Inequality Index (GII), value, 2012



Sources: Stats Asia-Pacific Economic Cooperation (1) and United Nations Development Program dataset (117).

**Figure 2.36** Gender Equity Index, 2012



Source: Social Watch (118).

## 2.4.2 Academic performance

Taiwan achieves high levels of academic performance. Compared to the 34 OECD countries, Taiwan has the highest score in mathematics performance, the fourth highest reading score and eighth highest science score, as shown in Figures 2.37. It can be seen that 37% of students in Taiwan were top performers in mathematics (level 5 or 6), compared with an OECD average of 13%. Furthermore, Taiwan was the third highest region of top mathematics performers of all countries measured in PISA.

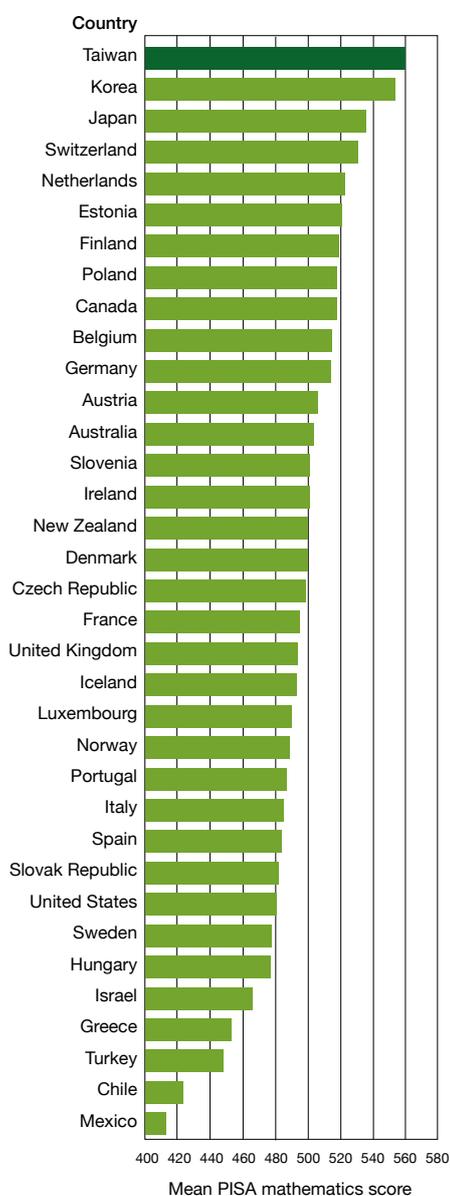
## 2.4.3 Education inequalities

There are high levels of socioeconomic inequalities in academic performance in Taiwan. There is a strong relationship between mathematics performance and the PISA index of economic, social and cultural status: it explains 17.9% of variance in Taiwan, compared with the OECD average of 14.8% (Figure 2.38).

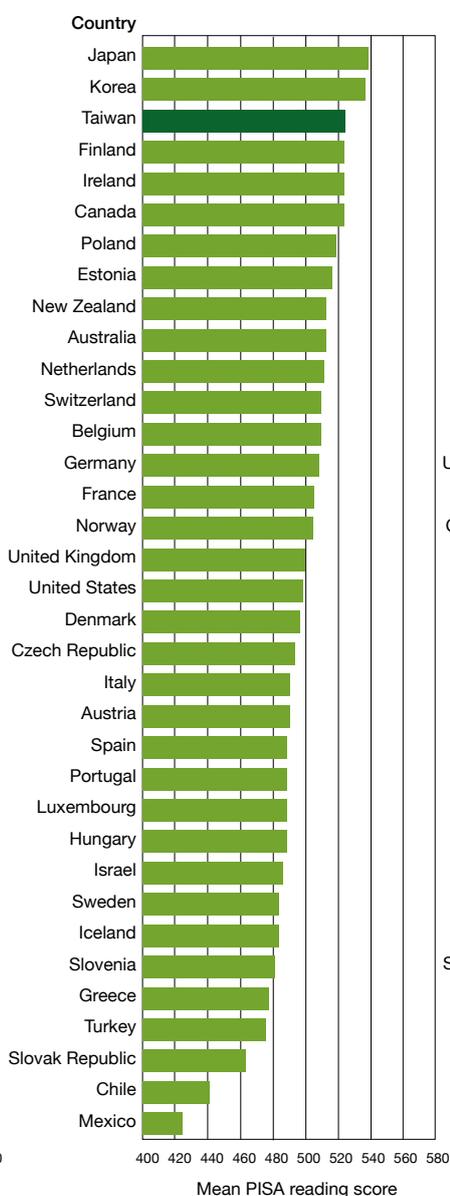
There is a 58 score-point difference in mathematics associated with a one-unit increase in the PISA index of economic, social and cultural status, a greater score-point difference than any OECD country (Figure 2.39).

**Figure 2.37** Mean PISA scores for OECD countries and Taiwan, 2012

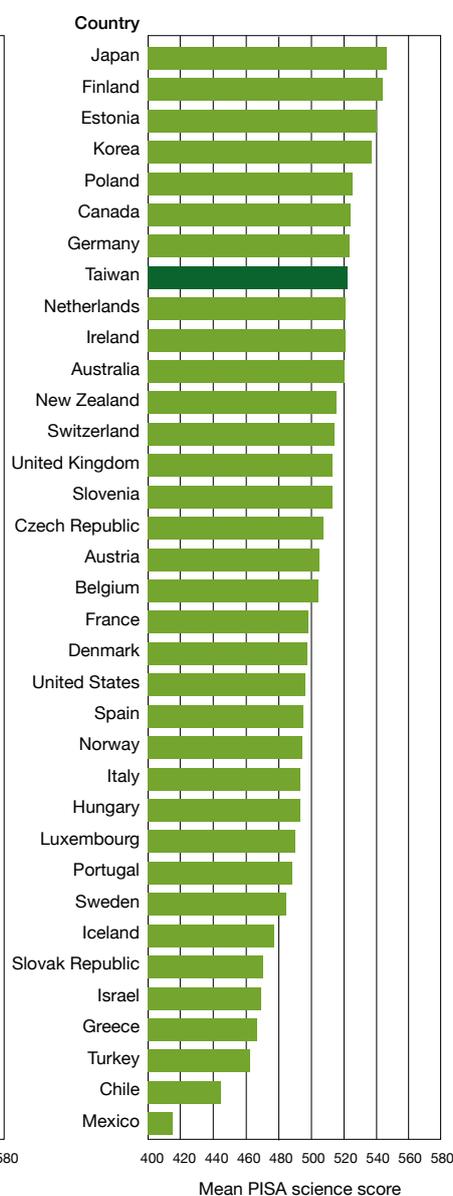
### (a) Mathematics



### (b) Reading



### (c) Science



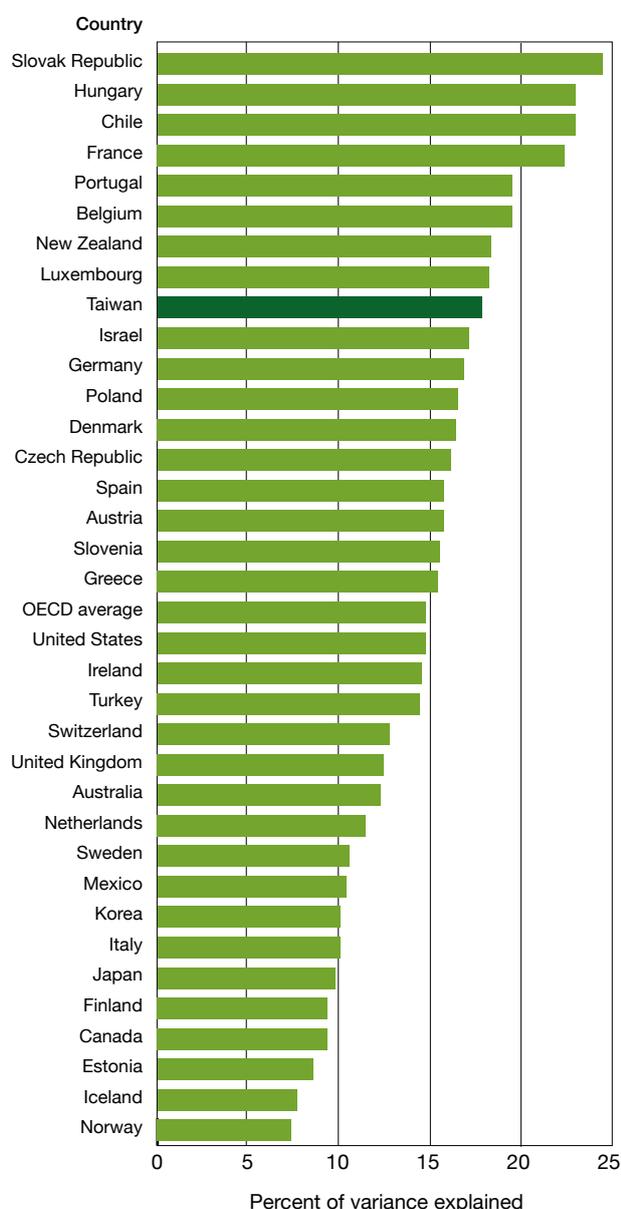
Source: Programme for International Student Assessment (119).

PISA data showed that it is possible to secure strong and equitable learning outcomes at the same times as achieving rapid improvements. Of the 13 countries/economies that significantly improved their mathematics performance between 2003 and 2012, three also showed improvements in equity in education during the same period, and another nine improved their performance while maintaining an already high level of equity – proving that countries do not have to sacrifice high performance to achieve equity in education opportunities.

#### 2.4.4 Maths performance and attendance at pre-primary school

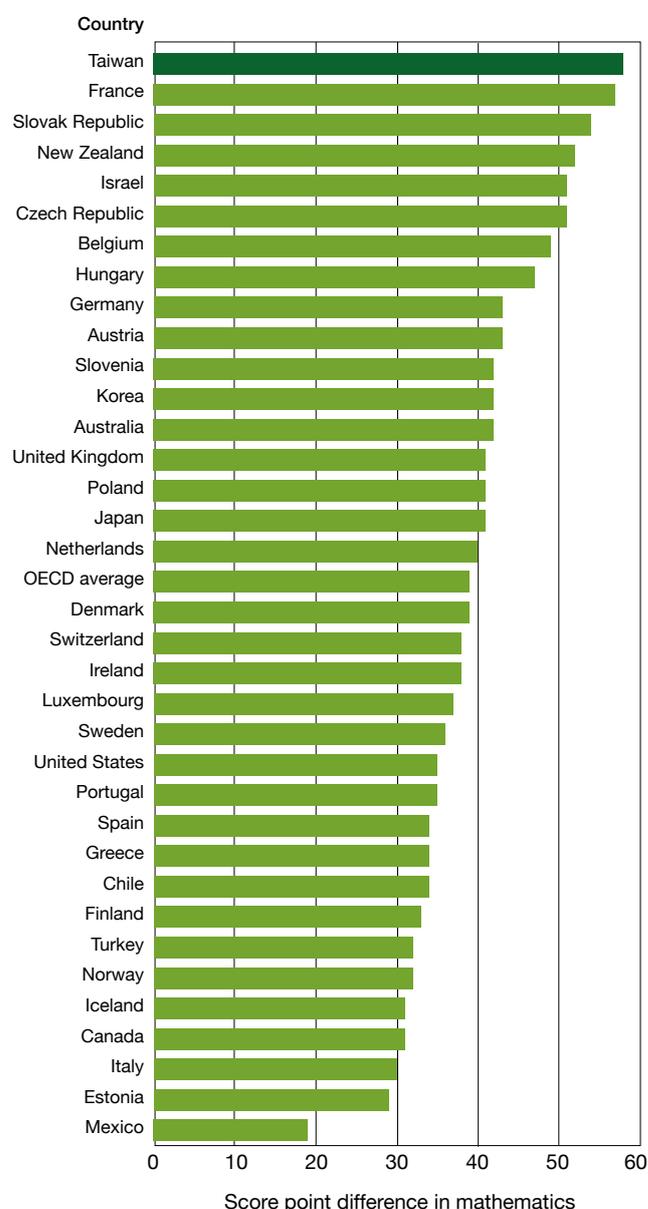
Figure 2.40 shows that, for most countries measured, those who had attended at least one year of pre-primary school had a higher average maths score than those who did not. It accounted for a bigger difference in Taiwan than the OECD average. Those with pre-primary education in Taiwan had, on average, approximately a 58 point higher score in maths, or a 36 point higher score after accounting for

**Figure 2.38** Strength of the relationship between mathematics performance and the PISA index of economic, social and cultural status: percentage of explained variance in mathematics, 2012



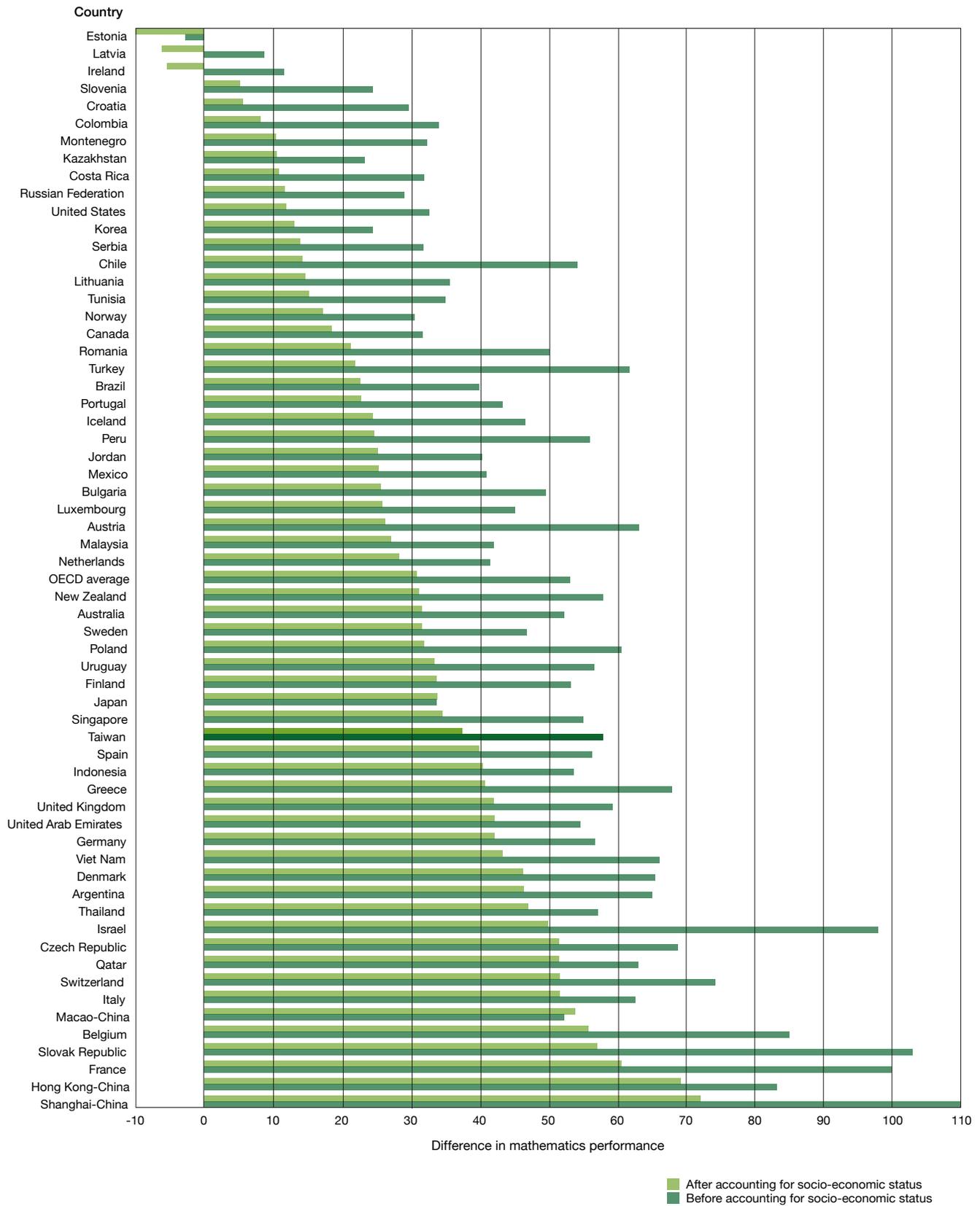
Source: Programme for International Student Assessment (119).

**Figure 2.39** Performance score-point differences in mathematics associated with a one-unit increase in the PISA index of economic, social and cultural status, 2012



Source: Programme for International Student Assessment (119).

**Figure 2.40** Differences in mathematics performance, by attendance at pre-primary school, 2012



Source: Programme for International Student Assessment (119).

socioeconomic status. Pre-primary education may be more of a predictor of later performance for a number of reasons – perhaps because it is good quality pre-primary education that sets up children to do well in later education, or perhaps because post-primary education is not as good so will fail to balance the differences. A greater understanding is needed. Further, this difference for most countries including Taiwan was greater before accounting for socioeconomic status, which shows that this is an intervening factor, likely to be because those of higher socioeconomic status are more likely to attend pre-primary school.

## **2.5 Conclusions – key challenges and opportunities suggested by the data analysis**

All the inequalities described in this chapter have persistent and complex causes and relationships that are multi-faceted, involving early years, education, employment, living environment, income and health. A person's physical and mental health is profoundly shaped by their experiences in all these areas and multiple disadvantages compound to produce significantly worse physical and mental health and wellbeing. In the next chapter we describe lessons learnt from recent policies and interventions to reduce health inequalities, and in Chapter 5 we propose policies for which there is good evidence of success in reducing or ameliorating inequalities in health.



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# Chapter 3

## Framework for action

### Summary of key actions

#### 1) Take action at every stage of life

— Advantage and disadvantage accumulate across the life course – beginning before birth and continuing into old age. This requires:

- at the start of life, addressing the transfer of disadvantage in social determinants and ill health between generations
- in the early years, supporting families and good parenting
- reducing educational inequalities by developing the skills and capacities of all young people
- improving opportunities for good quality work for all, to address inequalities in unemployment and adverse work conditions
- supporting older people’s social participation, health and wellbeing

#### 2) Develop good examples of action in Taiwan

— Promising examples must be scaled up and intensified, so that issues of inequity are addressed across the whole of society but with a response that is proportionate to the inequality experienced by each group or sector. For example:

- addressing key gaps in gender equity - such as work/family balance, education and access to amenities - can contribute to greater health and socioeconomic equity

- reducing inequalities in the quality of environments, housing, transport and green spaces will improve health equity
- enhancing healthy aging initiatives to address the challenges of the impending ‘demographic time-bomb’

#### 3) Ensure effective social protection systems that reduce inequalities in health

— Social protection systems must be sufficient to enable recipients to live a healthy life and provide a safety net against adversity (for example ill health, disability, redundancy from employment)

#### 4) Tackle the drivers of exclusion and vulnerability

— Several groups in Taiwan are particularly vulnerable to processes that lead to disadvantage and exclusion, impacting on their right to health. These include:

- foreign-born wives
- vulnerable migrants
- disadvantaged indigenous groups
- some fishing and farming communities

### 3.1 Principles for action

The previous chapters describe persistent and widespread health inequalities in Taiwan and showed that significant health outcomes are distributed along a social gradient. Everyone below the very top is likely to experience less good health and shorter lives than those at the very top. Action must be taken to lift and level these gradients, and strategies should be universal yet proportionate to need. The social

gradient in health and related health behaviors is important. There is a spectrum of health and health behaviors related to socioeconomic status, disadvantaged communities, levels of education, occupation and gender. In order to influence and change damaging health behaviors, the drivers of those health behaviors – the social determinants – need to be tackled.

This chapter sets out priorities for action in Taiwan, aligned to the conceptual framework in Chapter 1.

## Key issues in understanding and promoting health equity

It is essential to address the social determinants of health – the conditions in which people are born, grow, live, work and age – key determinants of health equity. These conditions of daily life are, in turn, influenced by structural drivers: economic arrangements, distribution of power, gender equity, policy frameworks and the values of society.

There is a social gradient in health – health is progressively better the higher the socioeconomic position of people and communities. It is important to design policies that act across the whole gradient and to address the people at the bottom of the social gradient and the people who are most vulnerable. To achieve both of these objectives, policies are needed that are universal but are implemented at a level and intensity of action that is proportionate to need – proportionate universalism.

Advantage and disadvantage arising from the social determinants of health accumulate across the life course. Action must be taken at every stage of life, starting in pregnancy and reflecting the transmission of inequity across generations.

In relation to the most excluded people, it is important to address the processes of exclusion rather than focusing simply on addressing particular characteristics of excluded groups.

There is a need to build on assets – the resilience, capabilities and strength of individuals and communities – and address the hazards and risks to which they are subject.

Gender equity is important – all the social determinants of health may affect genders differently. In addition to biological sex differences, there are fundamental social differences in how women and men are treated and the assets and resilience they have. These gender relations affect health in all societies to varying degrees and should shape actions taken to reduce inequities.

Much focus has been, and will continue to be, on equity within generations. The perspectives of sustainable development and the importance of social inequity affecting future generations mean that intergenerational equity must be emphasized, and the impact of action and policies for inequities on future generations must be assessed and risks mitigated.

## 3.2 Taking a life-course approach to health equity

There is an accumulation of advantage and disadvantage across the life course. This approach begins with the important early stages of life – pregnancy and early child development – and continues with school, the transition to working life, employment and working conditions and circumstances affecting older people. Action must be taken at every one of these stages of life.

### A GIVE EVERY CHILD THE BEST START IN LIFE

#### 3.2.1 Early years

Deprivation in early life is also associated with other health problems, poor diet and deficits in physical, social, emotional, cognitive and language domains of development. These have lifelong effects on life chances and subsequent health.

Action to promote the physical, cognitive, social and emotional development of children is crucial for all children, starting from the earliest years and reinforced throughout childhood and adolescence. Children who experience a positive start are likely to do well at school, attain better paid employment and enjoy better physical and mental health in adulthood.

A good start is characterized by the following: a mother who is in a position to make reproductive choices, is healthy during pregnancy, gives birth to a baby of healthy weight, the baby experiences warm and responsive relationships in infancy, the baby has access to high-quality child care and early education and lives in a stimulating environment that allow safe access to outdoor play. Evidence shows that high-quality early years services, with effects on parenting, can compensate for the effects of social disadvantage on early child development. Given the nature of early childhood, the services that support this stage of life are intergenerational and multiprofessional, including health, education and social welfare, and are aimed at parents as well as children.

The systems that encourage such a good start in life include policies characterized by excellent health care before and after birth, an employment and social protection system that recognizes the risks posed by poverty and stress in early childhood, good parental leave arrangements, support for parenting and high-quality early education and care.

#### 3.2.2 Perpetuation of health risks from one generation to the next

Disadvantage and advantage in social determinants and health outcomes transfer between generations. Children's early development, life chances and ultimately, health inequalities are strongly influenced by the social and economic background of their parents and grandparents; location, culture and tradition; education and employment; income and wealth; lifestyle and behavior; and genetic disposition. Further, conditions such as obesity and hypertension, and behaviour that puts health at risk, such as smoking, recur in successive generations.

Achieving a sustainable reduction in health inequalities requires action to prevent the relative and absolute disadvantage of parents from blighting the lives of their children, their grandchildren and subsequent generations. The strongest instruments to break such vicious circles of disadvantage lie at the start of life. The review recommendations address key factors that contribute to perpetuating health inequalities.

The interaction between gender inequities and other social determinants increases women's vulnerability and exposure to the risk of negative sexual and reproductive health outcomes. Poor maternal health, inadequate access to contraception and gender-based violence are indicators of these inequities.

### 3.2.3 Family and parenting

Reinforcing a good start throughout childhood and adolescence requires focusing on parenting skills, the employment and social protection of parents, balancing work and the family life of women and men, equitable education and social support for boys and girls throughout childhood and good systems for developing life and work skills for young people, both during adolescence and early adulthood.

## B ENABLE ALL CHILDREN, YOUNG PEOPLE AND ADULTS TO MAXIMIZE THEIR CAPABILITIES AND HAVE CONTROL OVER THEIR LIVES

### 3.2.4 Young people – education

To achieve equity from the start investment in the early years is crucial, as indicated in Section 3.2.1. To maintain any reduction in inequalities across the social gradient that is achieved in the early years requires a sustained commitment to children and young people throughout the years of education. Interventions are required that are proportionate to the needs of disadvantaged groups. Central to these efforts is the acquisition of cognitive and non-cognitive skills, which are strongly associated with both educational achievement and a whole range of other outcomes including better employment, income and physical and mental health (19).

Schools alone cannot address educational inequalities – evidence on the most important factors influencing educational attainment suggests that it is families rather than schools that have the most influence. Nonetheless schools clearly do play an important role in the lives of children and young people. Education is not just about attainment: it should also extend to a wider range of skills. Schools need to link with families and communities in promoting the development of children – physically, socially and emotionally as well as cognitively. Services based in schools that extend into the community have a positive impact both on pupil attainment and on family stability. By working together, schools, families and communities can enable children to develop their

personalities, talents and abilities, build resilience, self-esteem and, as a result, live a full, satisfying and healthy life. Children who fail to acquire basic skills during their years in junior school are likely to fall further behind and have more limited life chances (19).

Learning does not just happen in schools and it does not stop when children leave school. To enable people to fulfil their potential, opportunities for lifelong learning and skills development need to be promoted, not only in formal educational settings, but also in the workplace and in communities.

## C CREATE FAIR EMPLOYMENT AND GOOD WORK FOR ALL

### 3.2.5 Employment and unemployment

Employment and high-quality work are critically important for population health and health inequalities in several interrelated ways:

- Participation in or exclusion from the labor market determines a wide range of life chances, mainly through regular wages and salaries and social status.
- Material deprivation, resulting from unemployment or low-paid work and feelings of unfair pay – such as high levels of wage disparities within organizations – contributes to physical and mental ill health.
- Occupational position is important for people's social status and social identity, and threats to social status from job instability or job loss affect health and wellbeing.
- An adverse psychosocial work environment defined by high demand and low control, or an imbalance between efforts spent and rewards received, is associated with an increase in stress-related conditions; such exposure follows a social gradient.
- Experiences of discrimination, harassment and injustice aggravate stress and conflict at work, especially in times of high competition and increasing job insecurity.
- Exposure to physical, ergonomic and chemical hazards in the workplace, physically demanding or dangerous work, long or irregular work hours, temporary, contract and shift work and prolonged sedentary work can all adversely affect the health of working people.

There is comprehensive scientific evidence on increased health risks resulting from precarious employment, which carries a heightened risk of becoming unemployed, and from unemployment itself – particularly from long-term unemployment.

## Case Study: Employment promotion measures for people with disabilities

In all countries, there is a cycle that connects people with disabilities with poverty (120). The English review, Fair Society, Healthy Lives found that people with disabilities are among those with the highest unemployment rates and when in work, they are more likely to be in low-paid, poor quality jobs (19). Good employment is a way to reduce the economic inequities between people with disabilities and able-bodied people, as well as reducing stigma and discrimination and promoting inclusion (120).

People with disabilities make up 4.9% of Taiwan's population, of which 58.3% are of working age between 15 to 65 years (121). The overall unemployment rate in Taiwan was 3.9% in 2014 but the unemployment rate among people with disabilities was 2.8 times higher, at 11%, in 2014 (122). At that time, around 85,000 people with disabilities indicated that they were actively seeking employment or would have liked to do so (122). As a step towards reducing inequalities between people with disabilities and others, labor employment regulations have been introduced. The regulations and results are outlined in Table 3.1.

Furthermore, additional services are provided to people with disabilities, and employers, to try and increase labor participation among people with disabilities. These include occupational training, supportive employment services, sheltered workshop services, occupation redesign, entrepreneur guidance and occupational guidance assessment. Financial incentives have also been put in place to aid labor participation as a result of the Employment Service Act (paragraph 1.3), which lists disabled people as one of the target groups to promote their employment and provide job seeking and other subsidies to employment. Financial incentives include: recruitment incentive, living allowance during vocational training, temporary job allowances, employment seeking transportation allowance and workplace learning and re-adaptation allowance.

These are all positive steps to try to increase labor participation among people with disabilities and reduce inequalities between people with disabilities and others by enhancing economic empowerment and reducing stigma and discrimination.

**Table 3.1** Employment Quota Policy for people with disabilities

Regulation	Result
People with Disabilities Rights Protection Act Article 38 Paragraph 1: Any government department (agency or organization) of individual levels, public school, or public business agency, organization or institution whose total number of employees is no less than 34 shall employ people with disabilities with capability to work and the number of employees with disabilities shall be no less than 3% of the total number of the employees.	By December 2014, there were 16,401 organizations nationwide (4,366 public organizations and 12,035 private ones) that met the Disability Rights Protection Act criteria. Of these, 1,567 did not recruit enough disabled employees (107 public organizations and 1,460 private ones). The deficiency in numbers recruited was 2,312 (57 in public organizations and 2,255 in private ones).
People with Disabilities Rights Protection Act Article 38 Paragraph 2: Any given private school, association, or private business agency, organization or institution whose total number of employees is no less than 67 shall employ people with disabilities with capability to work and the number of employees with disabilities shall be no less than 1% of the total number of the employees, and no less than one person.	In December 2014, the number of people that relevant organizations should have recruited under statute was 54,039 (21,400 in public organizations and 32,693 in private ones). The actual numbers of people recruited were 74,411 (25,963 in public organizations and 48,448 in private ones).
People with Disabilities Rights Protection Act Article 38-1: If an enterprise establishes a subsidiary enterprise in accordance with the Company Act, when the number of employees with disabilities has reached over 20% of the total employees, it is allowed to calculate the fixed employee number mentioned in the paragraph above.	By July 2015, five special subsidiary enterprises were established.

### Case Study: Employment promotion measures for the long-term unemployed

Being in good work has a positive influence on health and conversely, unemployment can have negative effects on health (19, 66, 69-77, 84). Similar to other countries around the world, unemployment in Taiwan has been shown to have negative impacts on health including poorer mental health and an increased risk of suicide (123).

In 2014, there were 75,000 long-term unemployed people, which made up 16.4% of the total number of unemployed people in Taiwan. The majority of these were male (78.3% in 2014), aged between 25 to 44 years (68.5%) and over half had a college education. The average duration of long-term unemployment was 26.2 weeks.

In 2009, the Employment Service Act was amended to add the long-term unemployed as target groups to increase employment rates. Strategies to promote employment for the long-term unemployed include: free vocational training and living allowance, skills test subsidies, opportunities for experience in the workplace, recruitment incentive measures, job seeker transportation subsidies, temporary job allowances, employment subsidies for labor shortage industries and employment allowances such as transportation, removal and rental subsidies.

The results of these strategies to increase employment among the long-term unemployed appear to be mixed. The duration of long-term unemployment was 0.8 weeks shorter in 2014 than in 2013. However, long-term unemployed as a percentage of all unemployed has remained fairly consistent (between 14.6% and 18.1%) since 2008. Further interventions will be required to reduce this percentage and associated inequalities.

This requires effective social protection systems that reduce inequalities in health. Social protection systems must be sufficient to enable recipients to live a healthy life and provide a safety net against adversity (for example, ill health, disability and redundancy from employment).

The less people achieve in terms of individual resources, the more important it is that they be able to draw on collective resources; welfare policies that provide more generous transfers and better-quality services are likely to improve public health and reduce health inequalities. It is not only low income associated with unemployment that causes ill-health but also employment that pays too little to allow people to lead a healthy life.

In Europe there is evidence that people with low levels of education tend to benefit more from higher levels of social transfers than those with secondary and tertiary education. In both absolute and relative terms, educational inequities in health decrease as social spending increases. Furthermore, the effect that increased spending has on these inequities is greater for women than for men.

#### 3.3.1 People in vulnerable situations

The drivers of exclusion and vulnerability must be tackled. Several groups in Taiwan are particularly vulnerable to processes that lead to disadvantage and exclusion, impacting on their right to health. For example, foreign-born wives, vulnerable migrants, disadvantaged indigenous groups and some fishing and farming communities.

As an indicator of lack of participation in societal opportunities, unemployment rates are higher among migrants in many countries. Irregular migrants who are particularly exposed to additional exclusionary processes face the greatest problems – for example, those who need health care, unaccompanied minors, irregular female domestic workers and victims of trafficking – mostly women being exploited in the sex trade. Migration issues and the living conditions of regular and irregular migrants need to be addressed .

## D ENSURE A HEALTHY STANDARD OF LIVING FOR ALL

### 3.3 Income and social protection

Social protection policies can create a buffer against income loss and can redistribute income both over the life course and between individuals. Individuals and families can also draw on the collective resources provided by welfare state institutions. Both are important for health and wellbeing. For this reason, the welfare resources necessary to have an acceptable quality of life – including economic resources, working conditions, housing conditions, education and knowledge – constitute key social determinants of health.

## Case Study: Foreign wives' status and the role of immigration centers

Immigration status can have a significant impact on health and the social determinants of health due to the vulnerable position that this can place on immigrants. This is particularly evident among foreign-born wives in Taiwan who experience higher rates of emotional, physical and financial abuse than their Taiwanese counterparts. They also are disadvantaged due to often marrying into lower socioeconomic households, the language barrier they experience and a lack of knowledge surrounding the Taiwanese systems. The role that immigration centers play in ameliorating inequalities, based on gender and ethnicity, among foreign-born wives is significant.

The number of foreign spouses in Taiwan reached 487,000 persons at the end of 2013 of whom 93% are female. Figure 3.1 shows that the three most common countries of birth were China, Hong Kong, and Macau (68%), Vietnam (20%), and Indonesia (6%).

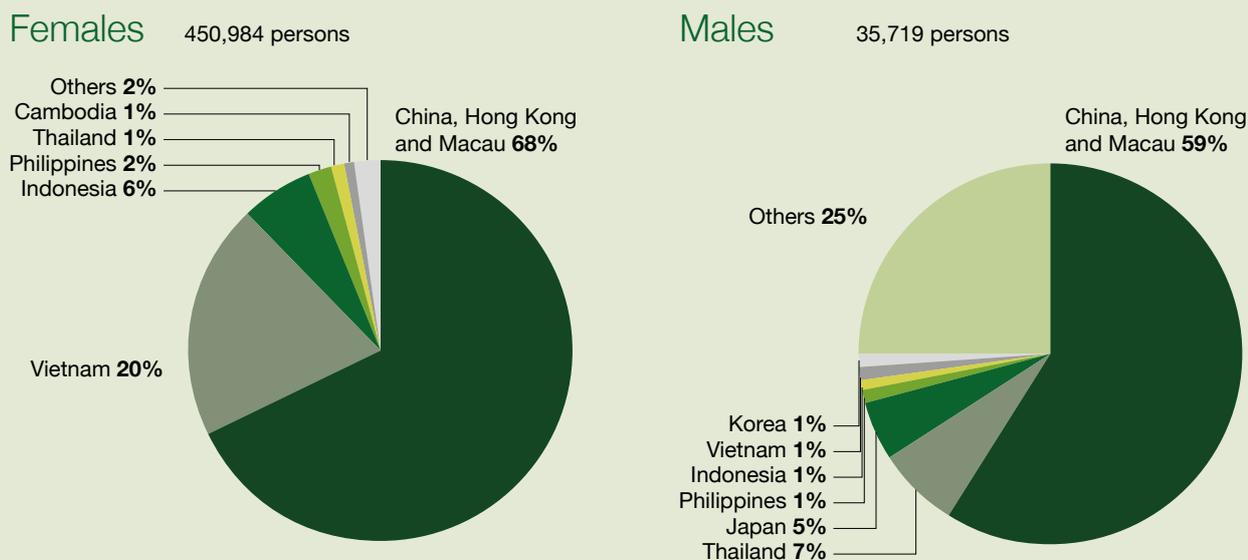
### Immigration status and vulnerable positions for foreign-born wives

The immigration status of foreign-born wives is dependent on their marriage status as they do not have an independent right to remain in Taiwan for the first three years of their marriage (125). This situation is disempowering and can place them in particularly vulnerable positions until they obtain citizenship. Although restrictions for obtaining citizenship are now less strict than in the past, only 21.8%

of all spouses have become citizens of Taiwan (124) and there are many rights from which they are excluded. As a result, they are at a higher risk of physical, emotional and financial abuse from both their husbands and in-laws, although there is now a lower minimum requirement than in the past. Divorce, or the event of a husband's death, leads to a residency permit being revoked (126). There are some exceptions to this including: 1) physical or mental abuse from her husband and has been issued with a court protection order; 2) upon a divorce the wife has won custody of the children; 3) the divorce is due to domestic violence and the children have obtained household registration status or 4) the wife's departure will have 'grave and irreversible' damage for the children (126). However, custody of children is often granted to the Taiwanese father and it is often very difficult for foreign-born wives to take their children to their country of origin (125). Requirements to obtain citizenship include proving financial adequacy, which is often dependent on their husband or in-laws although there is now a lower minimum requirement than in the past (126). Finally, naturalization in Taiwan requires single loyalty to Taiwan and therefore forces foreign-born wives to relinquish their native citizenship and therefore potentially experience further isolation (126). Of course, once a woman becomes a citizen, their rights (e.g. to work) are the same as any other.

Foreign-born spouses are often at a distinct disadvantage due to being isolated from all but their immediate social

**Figure 3.1** Original nationalities of immigrant spouses in Taiwan, end 2013



Source: Directorate-General of Budget, Accounting and Statistics (124).

network. They often do not have a good knowledge of the services available to them. Those from South East Asia are particularly vulnerable, as many of them do not speak Mandarin (in contrast to those from mainland China). Efforts are being made to address this. The National Immigration Agency encourages foreign-born wives to form associations to strengthen their social networking and connections to the community.

### **Impact on the health of foreign-born wives and their children**

#### **Foreign-born wives**

The health of foreign-born wives is affected in a number of ways. First, there is a direct effect through domestic violence. It is difficult to provide the exact numbers because it is likely that domestic violence is under-reported. What is known, however, is that one third of abused women interviewed in a women's refuge were foreign-born spouses (127).

The health of foreign-born wives is also affected as a result of experiencing adverse social conditions. Foreign-born wives generally marry into lower socioeconomic positions because men from the higher socioeconomic positions generally marry Taiwanese women (125). As a result their health can be negatively affected by their experiences of unemployment, poor housing and limited access to services (125). Their situations may be further compounded by the language barrier and a perception from many Taiwanese that creates discrimination within communities. Furthermore, they experience higher rates of abuse within their homes by their husbands and in-laws than their Taiwanese counterparts, including emotional, physical and financial abuse. While these women have a greater need to access services, they often experience greater barriers. These include language barriers, discriminatory attitudes and knowledge in regard to accessing the various systems within Taiwan.

#### **Children**

Children born to foreign-born mothers accounted for 7% of the births in Taiwan in 2014. The children born to foreign women have been found to have a higher birth weight, with less pre-term births than children of Taiwanese mothers. However, by age three, children born into homes with cross-border parents performed more poorly in developmental assessments of fine-motor, language and socio-emotional competence (128). Disadvantage is reinforced once the child goes to school in particular because they are often encouraged both by the state and their in-laws to speak Mandarin exclusively (126). During these years, the pressure to assimilate can hinder mother-child intimacy and negatively impact on the child's development.

### **Role of immigration centers**

Immigration centers can have a large influence on empowering foreign-born wives and decreasing their vulnerability.

#### **Action on broader social determinants of health**

In many local authorities, multicultural or migrant centers have been set up which provide services to foreign-born spouses, including information in various languages regarding access to services, Mandarin classes, child rearing classes, counseling and legal aid (126, 129). The immigration centers also provide spaces for foreign-born wives to feel safe and to make friends.

#### **Action on healthcare determinants**

Some immigration centers, in conjunction with the Health Promotion Administration, have provided services to foreign-born mothers including provision of interpreters, ensuring immigrant spouses and their children have specially designed reproductive health care cards and subsidies for prenatal care examinations that are not covered by health insurance (130).

#### **Further action which could be taken**

While some immigration centers have improved services to foreign-born wives, these improvements could be extended to all immigration centers to ensure all foreign-born wives benefit. Immigration centers have the potential to challenge discriminatory attitudes in the community. A media campaign could contribute to changing the derogatory views held by many Taiwanese regarding foreign-born spouses. Finally, further review of the immigration laws could be undertaken, especially those which are inherently patriarchal.

## Case Study: Improving the economic position of indigenous women in Eastern Region

The health outcomes of indigenous people in Taiwan have improved over the past 30 years but the health gap between the indigenous and general population remains (131). In 1998–2000, the gap in life expectancy at birth between the indigenous and non-indigenous population was 13.5 years for males and 8.4 years for females. In this context, it is important to note that living standards and economic positions are lower among indigenous people than the general population (132).

A number of interventions have been introduced to try to improve the economic position of indigenous women and one of these is run by non-governmental organization Taiwan IndigenWomen Style (133). This is a foundation that runs a social entrepreneurship project that aims to equip women who have craft skills with “foreign trade and mass production ability provide innovative employment model and broaden various domestic channels”. The broader aim is to increase employment and provide indigenous women with means to a better standard of living for them and their families. Another aim is to enable indigenous women to remain in their communities rather than having to migrate to find work, thus enabling them to continue with family life and improve their own health and that of their families. The crafts that are produced also promote cultural heritage, increasing gender equity and community empowerment – all of which are good for health.

This project aims to address many of the social determinants of health for indigenous women such as gender empowerment, economic empowerment, family cohesion and job skill provision. This provides a good example of an intervention acting to improve the ‘upstream’ determinants of health, in this case, among indigenous people.

## E CREATE AND DEVELOP HEALTHY AND SUSTAINABLE PLACES AND COMMUNITIES

### 3.4 Social participation

#### 3.4.1 Older people’s participation, health and wellbeing

Understanding the underlying determinants of health and inequalities among older people is an important priority. Effective strategies are required to promote healthy, active and independent lives in old age through early preventive action to delay the onset of age-related mental and physical disabilities. Proportionally more attention needs to be paid to older adults with lower incomes in designing these preventive programs. In addition, policies aimed at tackling social and economic inequities in general, such as those focused on tackling financial barriers in access to care, should all be designed to reduce inequalities among the older population.

How people experience social relationships influences health inequalities. Critical factors include how much control people have over resources and decision-making and how much access they have to social resources, including social networks, and communal capabilities and resilience. Social capital has been identified as a catalyst for coordination and cooperation, serving as an essential means to achieve better social and economic outcomes.

#### 3.4.2 Gender equity

The social and economic roles performed by men and women significantly affect the health risks to which they are exposed over the life course. A specific source of psychosocial stress for women is balancing the burdens of caregiving to different generations with paid work and housekeeping.

Men’s health is more frequently affected by work conditions. Risk-taking and other behavior among men, such as violence, are encouraged by gender norms and endanger the health and wellbeing of both men and women.

Societal and economic changes affect gender roles, but societal norms and values may limit the extent to which the people affected adapt. The combined effect of these is to alter health outcomes and the extent of the gender gap. The appropriate response is to adopt a gender equity approach in tackling social and economic inequities. Addressing key gaps in gender equity – such as work/family balance, education and access to amenities – can contribute to greater health and socioeconomic equity.

## Case Study: Age Friendly Cities - Chiayi City Pilot city

Taiwan has an aging population with a life expectancy of 83.3 years for females in 2013 and 76.7 years for males (6, 113). The proportion of those aged 65 or over in Taiwan rose from 7% in 1993 to 12% in 2014, and is expected to reach 14% in 2018 and 20% in 2025 (6). Older people require age-appropriate services and interventions to maintain and maximize their health and wellbeing. Faced with this, Taiwan has placed healthy and active aging as a national priority issuing The White Paper on National Population Policy in 2008 and renewing it in 2013. The social determinants and drivers of these needs to be improved in Taiwan to ensure older people are not disadvantaged. Recognizing this need, Taiwan adopted an age-friendly cities project in 2010 based on the WHO guidelines (134).

In Chiayi City the population aged 55 years and over made up 25% of the city's total population in 2013 and this is projected to exceed 30% in 2021 (135). The first Age-friendly City Initiative in Taiwan was launched in 2010, with Chiayi City (135) as the pilot city. By 2013, the Dublin Declaration on Age-friendly cities had been signed and the initiative had been adopted by all the 22 cities/counties – making Taiwan the first country to implement the Age-Friendly City initiative across all their cities. In Chiayi City, interventions were chosen across eight domains – three of which include age-friendly outdoor spaces and public buildings, transportation and housing. These were chosen for their likely impact on older people's mobility, injury prevention, security and safety as well as impacting on their social health behaviors and social participation. Based on a needs assessment, several priorities were noted (see Table 3.2).

Changes made to outdoor spaces and buildings are likely to enable older people to remain safe, have increased access to the city facilities and improve social participation (including social, cultural, spiritual and recreational activities). Adequate transport for the elderly is a key determinant of health. Without transport, access to urban facilities is restricted and social connection and participation is impaired. Similarly, improving housing can increase independence and safety in the home and reduce reliance on community support (134). To address these determinants of health and wellbeing interventions have been conducted over the past three years. The interventions are shown in Table 3.3.

While many of these initiatives have a broad focus of improving the quality of life of older people, Chiayi City's interventions at the level of the physical environment have the potential to improve population health and reduce health inequalities among older people.

**Table 3.2 Local issues requiring age-friendly interventions**

Domain	Key Local Issues
Outdoor spaces and public buildings	<ol style="list-style-type: none"> <li>1. Urban outdoor spaces are not friendly to older people</li> <li>2. Most public spaces are suitable for younger users and seldom consider older people's needs, such as stairs, lighting and size of signage, etc.</li> <li>3. Bad walking environment</li> <li>4. Public facilities below expectations</li> </ol>
Transportation	<ol style="list-style-type: none"> <li>1. Lack reliable public transportation service in rural areas</li> <li>2. Poor service in city areas</li> <li>3. Very high dependency on private vehicle and scooters</li> <li>4. Lack of various choices of transportation</li> </ol>
Housing	<ol style="list-style-type: none"> <li>1. Affordability issues</li> <li>2. Lack of choices: most of older citizens stay with families</li> <li>3. Lack of supportive facilities: handrail, safety facilities, elevators</li> </ol>

Source: Chiayi City Government (135).

**Table 3.3 Age-friendly interventions**

Domain	Intervention
Outdoor spaces and public buildings	<ul style="list-style-type: none"> <li>• Promoted 24 age-friendly shops, 12 age-friendly restaurants, 5 age-friendly hospitals, and 65 age-friendly pharmacies.</li> <li>• Used the concept of Universal Design: promoting overhang and road leveling projects, expanding the Chiayi City Forest Park, building the Eastern District Sports Center, and promoting the renovation of community environments and old buildings.</li> <li>• Adjusted the traffic signal at 20 spots by considering traffic flow.</li> <li>• Installing emergency life-saving AEDs in the entire city.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Promoted an Elderly Month.</li> <li>• Issuing the Elderly Easy Card and Love Card and providing senior and handicap transportation discounts.</li> <li>• Providing BRT low-floor buses and 'rehabuses' (paratransit service for people with disabilities).</li> </ul>
Housing	<ul style="list-style-type: none"> <li>• Providing seniors with affordable houses in Evergreen Park.</li> <li>• Setting up 138 Healthy Stations, where the elderly can get their blood pressure and waistlines checked.</li> <li>• Installing fire alarms and enforcing building fire safety inspections.</li> </ul>

Source: Chiayi City Government (135).

CEDAW is an international treaty that aims to address discrimination against women. It was adopted by the United Nations General Assembly in 1979 and voluntarily signed by Taiwan in 2007 (136). Building on previous women's rights initiatives in Taiwan, CEDAW implementation has increased the legal regulations and policy decision-making mechanisms aimed at improving women's lives. Gender inequities negatively affect the health of women and girls in many ways - through violence against women, lack of resources and limitations on their right to make health-related decisions (18). These are influenced by gender biases in norms, values, power and resources (18). This highlights the benefit of cross-department enforcement of CEDAW. This case study provides examples that effect the social determinants of women's health, for each of the seven CEDAW legislation sections under the key gender equality policy guidelines (137).

### **1. Equal rights, decision-making and influence**

#### **Equality of power: Reduce gender differences in job positions**

The ability of women to earn as much as men significantly influences the economic empowerment of women and their position in society. While female labor market participation increased to 43.8% of the labor market by 2012, women comprised 23.1% of elected representatives and those in managerial roles (138). Overall, women remain a minority in higher status jobs, but the trend is improving (138). Further improvements would increase women's empowerment and status and health.

### **2. Employment, economics and welfare**

#### **Promote a work/ family balance and reduce discrimination in the workplace**

The Gender Equality in Employment Act (139) states that "no employee's marriage, pregnancy or child-raising shall be used as a reason for dismissal, nor shall it impact any performance benefit". As a result, women are entitled to leave for family care, maternity, menstruation and feeding time. In addition, there is also paternity and parental leave. This is a positive step to ensuring that women can remain in the labor force for longer while maintaining an appropriate work and family balance. The Act also prohibits discrimination on the basis of sex, strives for prevention and correction of sexual harassment, and enforces measures for promoting equality in employment. These measures will benefit the health of women and their dependents.

### **3. Demography, marriage and family**

Promote fairly-priced, good-quality and easily-accessible childcare service and build a comprehensive child care service system

Quality childcare enables mothers to remain in employment, and pursue other activities. Good quality early years provision also benefits children by reducing inequalities in their capabilities and life chances. In this way, there are benefits to the health of both mothers and their children.

Break down gender discrimination and promote equal gender rights under the marriage system

There have been a number of Acts to promote equality within marriage since 1998, and in 2007, couples were allowed to agree on the family name of their children, breaking the paternal tradition (138). These measures have empowered women within marriage, increasing their decision-making power over their lives, their health and that of their children.

### **4. Education, culture and media**

Actively implement gender equity education and planning of gender equality education white paper

Implementing gender equality promotion in all domains (family, school and workplace) is a positive step towards ensuring the gender biases are reduced and girls and women's education levels are improved. Education of an individual and having an educated mother are strong social determinants of health.

### **5. Safety and justice**

Eliminate acts of violence and discrimination against women

Intimate partner violence is to be tackled utilizing a variety of school, community and private organizations and enterprises to create a social norm that makes domestic violence unacceptable. Following the government's no tolerance policy, there was an increase in the reporting of domestic violence cases between 2009 and 2012 (138).

### **6. Health and healthcare**

Reinforce policies with gender awareness and health fairness

By ensuring that gender statistics are recorded and disseminated, health professionals can be made accountable for efforts to improve women's health. The gender equality policy guidelines (137) suggest action be taken to periodically review health education material and media so as to reduce gender stereotypes and blindness.

### **7. Environment, energy and technology**

Meet the basic requirements of different genders and disadvantaged groups

Ensuring that women, older people, children, disabled and other vulnerable groups are not disadvantaged in terms of access to adequate amenities in public spaces and public transport increases their inclusion and participation in society. This includes roads, sidewalks, breast-feeding spaces and public toilets. This is likely to have a positive impact on both their mental and physical health.

## Case Study: Sex ratios at birth

The sex ratio at birth (SRB) is the ratio of males to females at birth, expressed as a percentage. If the SRB is significantly different from 100, this suggests a strong societal preference for one sex over another and is indicative of gender inequity in the society. Current male-biased SRBs in Taiwan are largely achieved through the use of sex selection technologies provided by the health care sector. This enables expectant parents to target female fetuses for abortion. Addressing this issue requires acting on the gender inequities that shape the desire to choose males over females.

The standard biological ratio varies between ethnicities and countries but it is estimated that, without sex selection interventions, the global ratio would be between 103 and 106, as it was until the 1980s (140) – that is, slightly more males born for every 100 females births. In 2004, Taiwan had the fourth highest sex ratio imbalance in the world, with a ratio of 109.6. By 2012 this had decreased to 107.4 and Taiwan's ranking improved to 15th place globally. Gender ratios for first and second births in 2013 were 106.8 and 107.1 respectively. These are marginally higher than the global normal range. However as Figure 3.2 shows, the ratio for the third, or subsequent births, was particularly high, peaking at 125.8 in 2003 and decreasing to 111.1 in 2013 – almost back to the 1987 level.

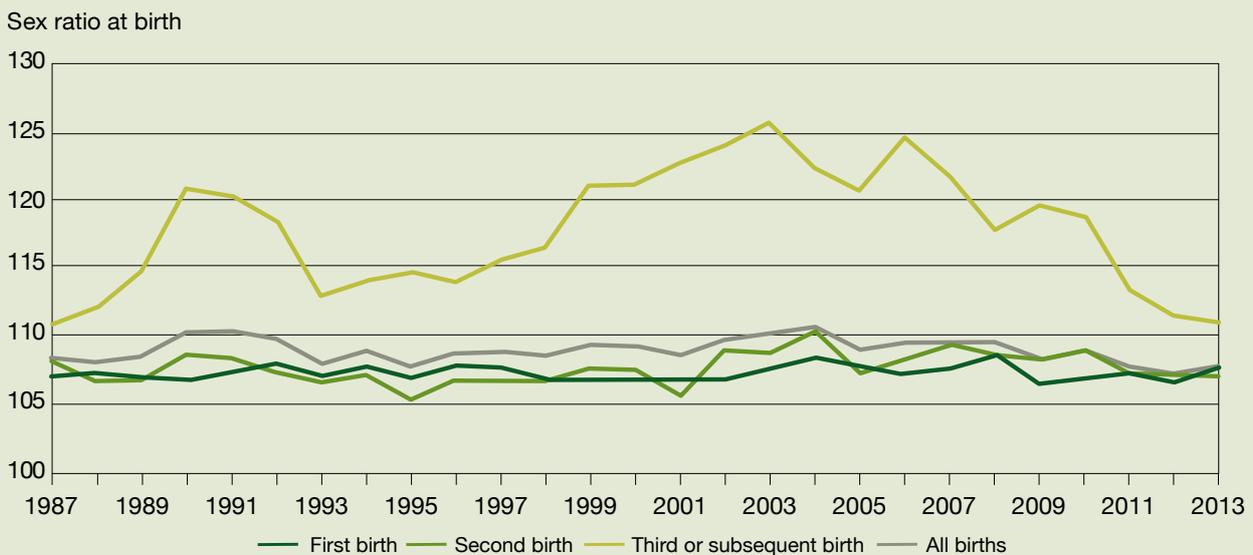
### Reasons for male-biased SRBs in Taiwan

Three factors have contributed to the SRBs seen in Taiwan in recent years: preference for a son, the use of sex selection technology and a low fertility rate (141).

**Preference for a son:** The underlying reasons for preferring to have a son are extremely complex and stem from gender inequities that undermine the value of females. This includes patrilocal household structures (a custom whereby married couples settle with or close to the husband's family); men continuing the family line; men being preferred recipients of inheritance; and gender inequity in earning potential (since men are believed to be able to provide more for the family over the course of their lives, especially in agrarian economies) (142).

**Sex selection technology:** Sex selection technology and laws governing its use have had a clear relationship with the SRB seen in Taiwan. Sex selection can be performed at various stages. Firstly, at pre-conception by sperm sorting and at pre-implantation with the use of assistant reproduction (pre-implantation genetic diagnosis of embryos and then selective implantation). Secondly, during pregnancy, the sex of the fetus can be determined using amniocentesis, polymerase chain reaction (PCR) or

**Figure 3.2** Gender ratios at birth, by birth order 1987-2013



Source: Directorate-General of Budget, Accounting and Statistics (124).

ultrasound, which together with the sex selective abortions, were associated with increases in the male-biased SRB in Taiwan. Stopping or reducing the availability of sex selection technologies has been shown to reduce SRB bias in Taiwan. However, the most determined can, of course, continue to influence ratios after birth through neglect or even infanticide of female babies. This emphasizes the importance of combining action on technologies with changing underlying attitudes.

Low fertility rate: Taiwan has one of the lowest fertility rates in the world - 1.1 in 2013 (6). A low fertility rate is presumed to increase SRB because it increases the demand for use of sex selection technology among parents who only wish to have a small family and are concerned that it includes a son (141).

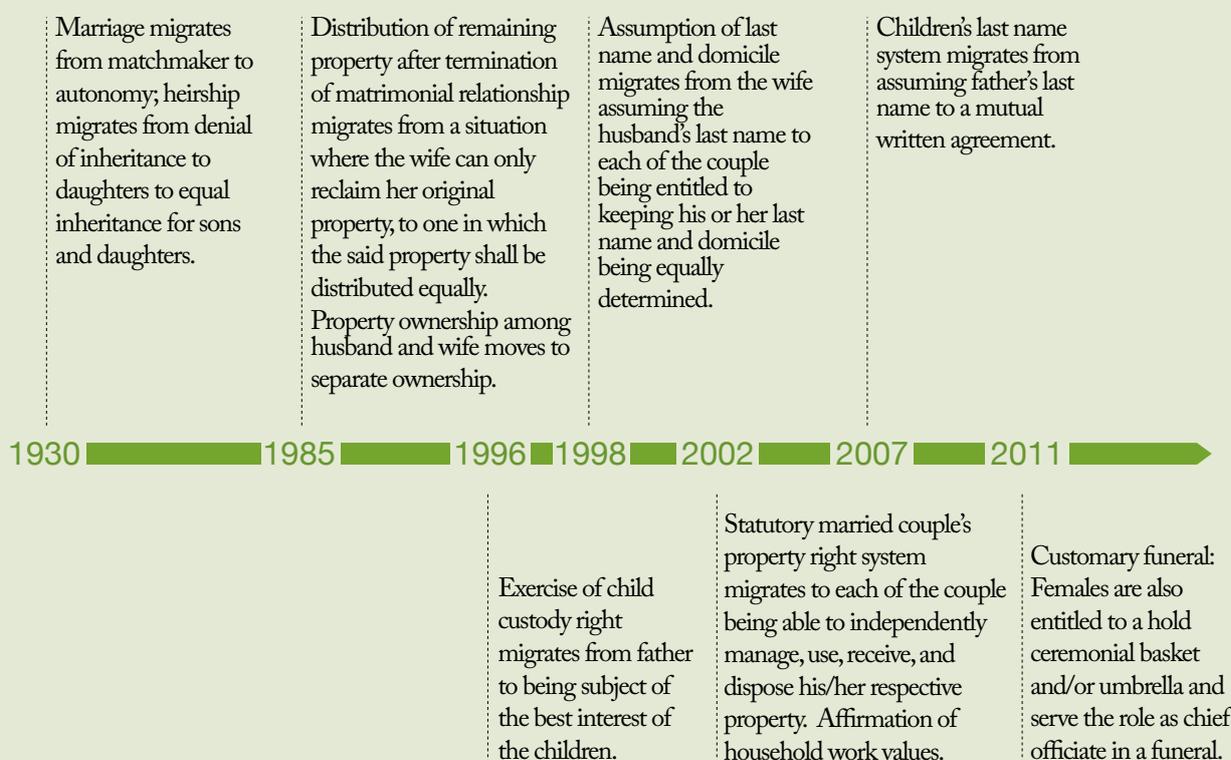
### Interventions

After the peak of the gender imbalance in third, or subsequent, born children, the government introduced legislation and policy changes to improve gender equity, as shown in Figure 3.3, so as to discourage further selection of boys over girls.

Other interventions introduced by the government include advocacy for gender equity and awareness-raising. This includes measures targeting the population promoting gender equality as well as targeting health professionals such as restricting advertising for fetus sex testing.

There was regional variation in the SRB in Taiwan in 2012, from 103.7 in Hsinchu county to 118.7 in Penghu county - as shown in Figure 3.4. This indicates that preferences for males varies across Taiwan. By comparing 2012 figures with those for 2004, it also appears that the success of interventions varied across the country. Reductions in the SRB of more than five percentage points occurred in Chiayi, Miaoli, Hsinchu and Taipei and increases of more than five percentage points occurred on the archipelagos covered by Lianjiang, Penghu and Kinmen counties. In order to address inequities, interventions particularly need to focus on rural and remote areas, families with low socioeconomic status and older generations.

**Figure 3.3** Legislation and policy: changing female status in households, legal and cultural aspects

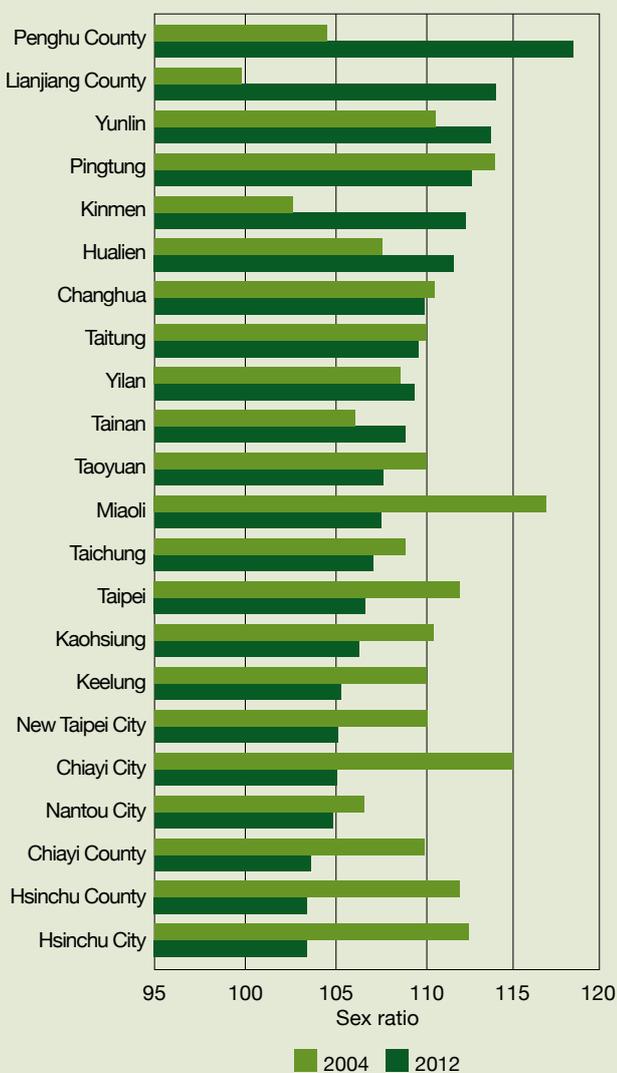


## Case Study: Sex ratios at birth (continued)

### Impact on health and the social determinants of health

Imbalanced sex ratios can lead to many negative consequences, primarily for women but also for men. In addition to destruction in utero, gender inequities can be extended through childhood with girls receiving less favorable treatment in terms of nutrition, healthcare and education. An imbalanced higher proportion of men can also lead to increased levels of crime and violence among men (142) and an increase in trafficking of women as wives and as part of the sex industry. All of these negatively impact on health and wellbeing within societies.

Figure 3.4. Regional values of SRB in Taiwan in 2004 and 2012, ranked by SRB in 2012



Source: Birth Reporting Database, Ministry of Health and Welfare (143).

## 3.4.3 Local communities

### Environment, housing, transport, green space

Communities are influenced and shaped by the complex interrelationships between the natural, built and social environments. The lower people are on the socioeconomic gradient, the more likely they are to live in areas where the built environment is of poorer quality and is less conducive to positive health behavior and outcomes and where exposure to environmental factors that are detrimental to health is more likely (144).

People who live in areas of higher deprivation are more likely to be affected by tobacco smoke, biological and chemical contamination, hazardous waste sites, air pollution, flooding, sanitation and water scarcity, noise pollution and road traffic (144). At the same time, they are less likely to live in decent housing and in sociable and congenial places of high social capital that feel safe from crime and disorder, provide access to green spaces and have adequate transport options and opportunities for healthy living.

People on low incomes are less likely to have the means and resources to mitigate the risks and effects of environmental hazards and to overcome the obstacles posed by environmental disadvantages to securing less hazardous conditions and access to opportunities. Reducing inequalities in the quality of environments, housing, transport and green spaces will improve health equity.

As the IPCC has commented (see Chapter 2), the risks from climate change are unevenly distributed and are generally greater for disadvantaged people and communities. The interaction of climate-related hazards and human vulnerability will particularly affect fishermen, farmers, those living in low-lying coastal and inland areas, those living in urban areas that lack essential infrastructure and services, and others living in exposed areas. Sustainability and climate change mitigation are essential to reduce inequalities in health in the future.

## F STRENGTHEN THE ROLE AND IMPACT OF ILL-HEALTH PREVENTION

### 3.5 Prevention and treatment

Public health and health care systems should be enhanced by placing a greater emphasis on social determinants. This includes addressing the causes of inequalities in risk factors for the major causes of morbidity and deaths. This requires action on pathways to obesity, Type 2 diabetes, TB, cancer and mental health. It is a priority to create the conditions that enable people to take up lifestyles and behaviors that are pro-health and refrain from those that are harmful, such as smoking.

## Case Study: Tuberculosis initiatives

Incidence rates of tuberculosis (TB) in Taiwan decreased between 2002 and 2008 from 74.6 to 62.0 per 100,000 and the mortality rate decreased from 5.7 to 3.3 per 100,000 for the years 2002–2008 (145). The incidence distributions vary by ethnicity, gender and age but the largest difference was between regions, with the Eastern Region experiencing the highest incidence rate of 116 per 100,000. In comparison, the corresponding rates were 83 in Southern Taiwan, 68 in Central Taiwan, and 57 in Northern Taiwan (146). Much has been done to target the disease including the ‘National Mobilization Plan to Halve TB in 10 years’, which was initiated in 2006 (147). These initiatives mostly include a range of diagnostic and treatment interventions with ongoing positive outcomes, with a decrease of 4–5% per year in the number of reported cases of TB in the years 2006 to 2013 (148).

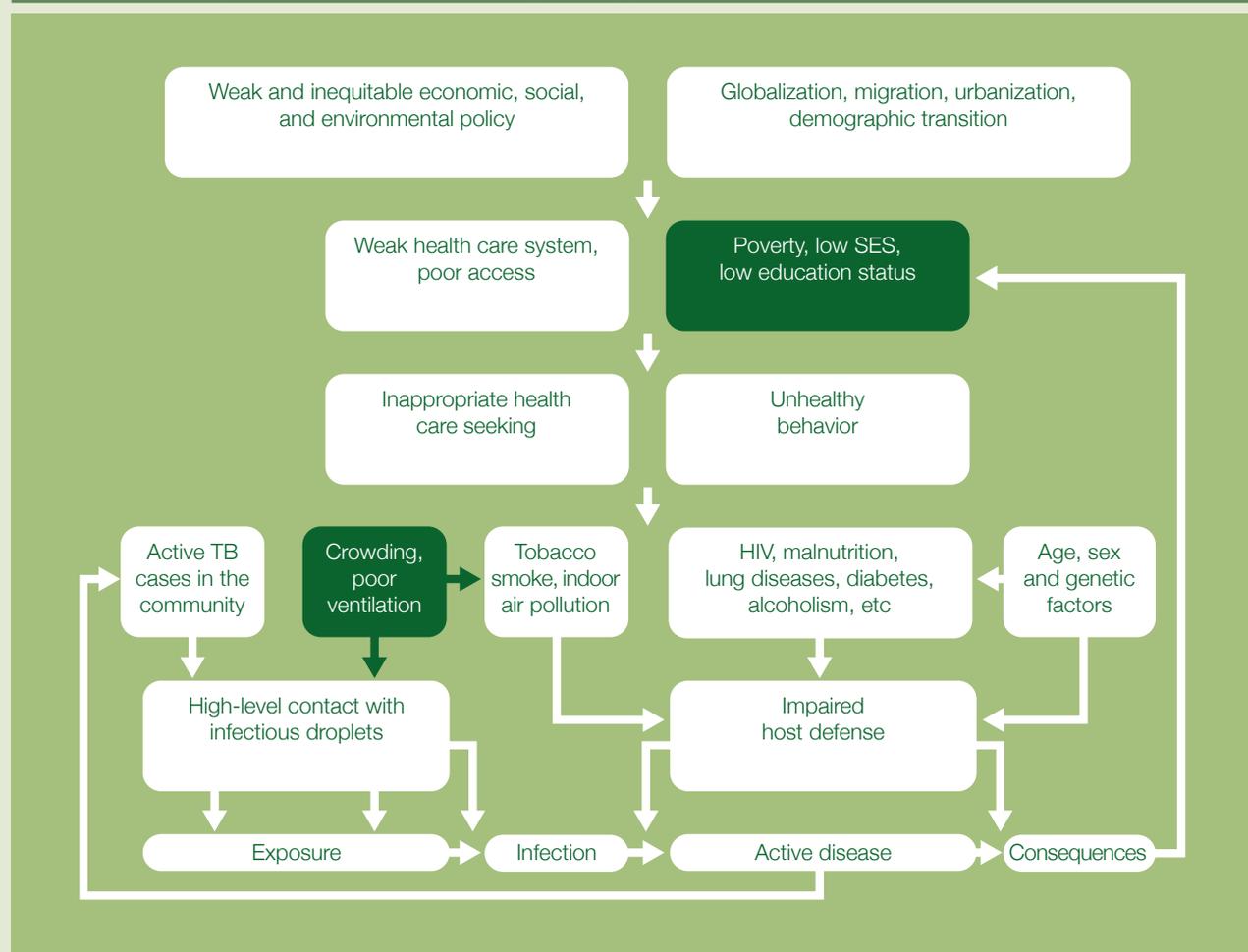
As the incidence of TB has a significant regional variation, the drivers of these differences need to be assessed.

TB is significantly affected by social determinants of health related to poverty, such as “food insecurity and malnutrition, poor housing and environmental conditions, and financial, geographic, and cultural barriers to health care access” (149). Hargreaves et al (149) provide recommendations for ways to tackle TB by focusing on the determinants, as shown in Figure 3.5.

Strategies in Taiwan are based on:

- 1) Comprehensive treatment, free of charge, under the National Health Insurance scheme.
- 2) Eligibility of all patients for DOTS.
- 3) Active TB screening program for the economically disadvantaged.
- 4) Innovative TB Control Strategies to Reach the Goal of TB Elimination by 2035 in line with the global strategy and targets.

**Figure 3.5** Conceptual framework and strategic entry points for intervention outside the health care sector



Source: Hargreaves et al 2011 (149).

Note: SES = socioeconomic status; TB = tuberculosis. Green boxes indicate entry points for intervention.

## Case Study: National Program on Cancer Prevention and Treatment Control

Cancer has been the leading cause of death in Taiwan since 1982 (113) and the National Program on Cancer Prevention and Treatment Control was introduced to address this. Following the previous two phases of the Program, the Third Phase is being implemented between 2014 and 2018 (113). The first two phases focused on treatment and early detection and this has now shifted to prevention interventions that focus on lifestyle behaviors, including several which are socially graded - such as smoking and betel quid chewing. Betel quid chewing is a primary cause of oral cancer in Taiwan with 88% of oral cancer patients found to have been betel quid chewers (113). There is a marked social variation in cancers related to smoking and betel quid chewing in Taiwan, in keeping with a clear social gradient among betel quid chewers. There are much higher rates among people with lower education levels than those with higher education levels (34), as well as regional differences (113). For this reason the interventions aimed at reducing betel quid chewing are positive steps in reducing health inequalities. The interventions targeting smoking reductions are discussed in the smoking case study.

Further preventive interventions will be undertaken in the third phase including tackling obesity, poor diet and insufficient exercise. This should also have the effect of reducing diet-related cancers but interventions that tackle the root causes of cancers would further reduce prevalence and unequal distributions.

## Case Study: Cervical cancer screening initiatives

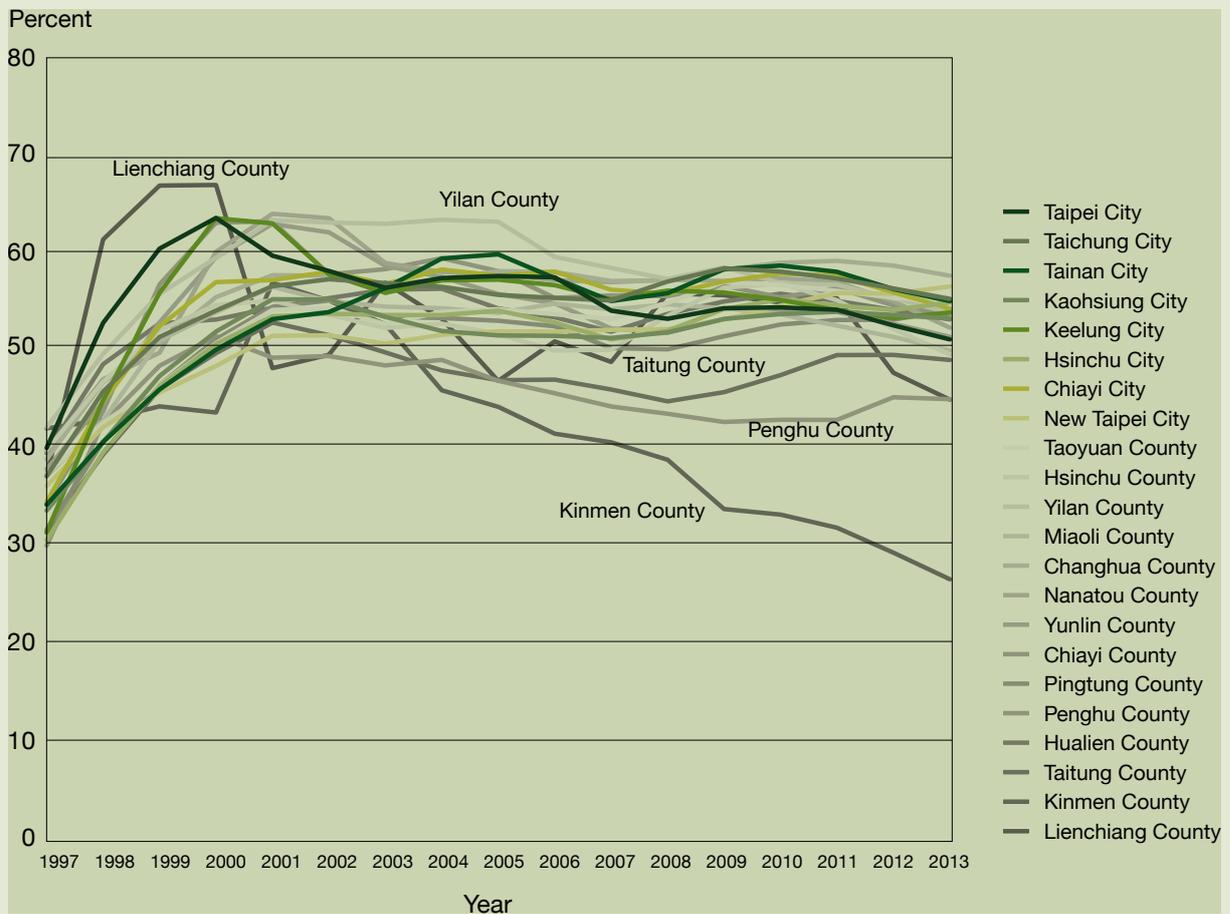
In order to reduce cervical cancer mortality rates, the Taiwanese government has undertaken a number of initiatives including vaccinations and screening for human papilloma virus (HPV), which can lead to cervical cancer (113). In 1995 the Department of Health introduced the initiative to provide women over 30 years old with annual 'Pap smears'. By 2013, 75.9% of women aged 30–69 had been screened for cervical cancer in the previous three years (113). Between 1995 and 2012, the mortality rate fell 64% from 11 to 4.0 people per 100,000 (113). The mortality rate for all ages, except 80–84 years, was lower between 1996 and 2010 than the respective rates between 1981–1995 (150). Furthermore, the incidence rate also decreased by 57% from 25 to 10.8 per 100,000 between 1995 and 2010 (113). These are positive results in an effort to improve women's health overall.

While this universal program has been effective in increasing screening rates and reducing mortality and incidence rates, specific attention needs to be placed on reducing inequalities. There are variations in prevalence of screening rates based on income, education level and place of residence (151). Substantial efforts have been made to increase screening rates and in particular, there have been regional gains made for reducing inequalities, such as in the Yilan, Eastern region (152). Figure 3.5 shows the screening rate by city/county with rates increasing in most areas between 1997 and 2001, with an especially large increase in Lienchiang County. The screening rates in the counties and cities then remained stable, with the exceptions of Kinmen County, Penghu County and Taitung County which all decreased.

There are also inequalities in screening rates by income and education level, are shown in Figure 3.6 (151). While there have been some reductions inequalities between 2001 and 2009 based on education and urbanization levels, the inequality related to income increased. Ongoing efforts to reduce inequalities need to be continued in order for a reduction in inequalities to be sustained (152).

The main risk factors for HPV infection in Taiwan include multiple sexual partners, infrequent condom use, early coitarche, past history of sexually transmitted disease and two or more vaginal births (155). For this reason while the initiatives noted above have reduced mortality and incidence rates, as downstream interventions, they have not addressed the main causal factors for HPV infection. It is essential to ensure that upstream interventions are acted upon too, such as female education and greater gender equity.

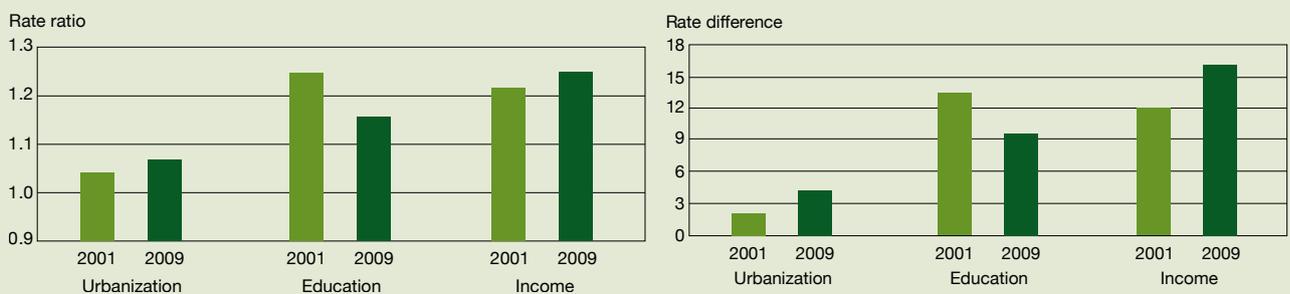
**Figure 3.6** Cervical cancer screening rates in Taiwan, by city/county, 1997–2013



Source: Cancer Screening Database, Ministry of Health and Welfare (153).

Note: Cervical cancer screening rate is the percent of women aged 30 or over reporting a pap smear in the past 3 years.

**Figure 3.7** Relative and absolute differences in the uptake of Pap smears by level of urbanization, education and income, 2001 and 2009



Source: Chiou et al (151) based on Taiwan National Interview Survey (154).

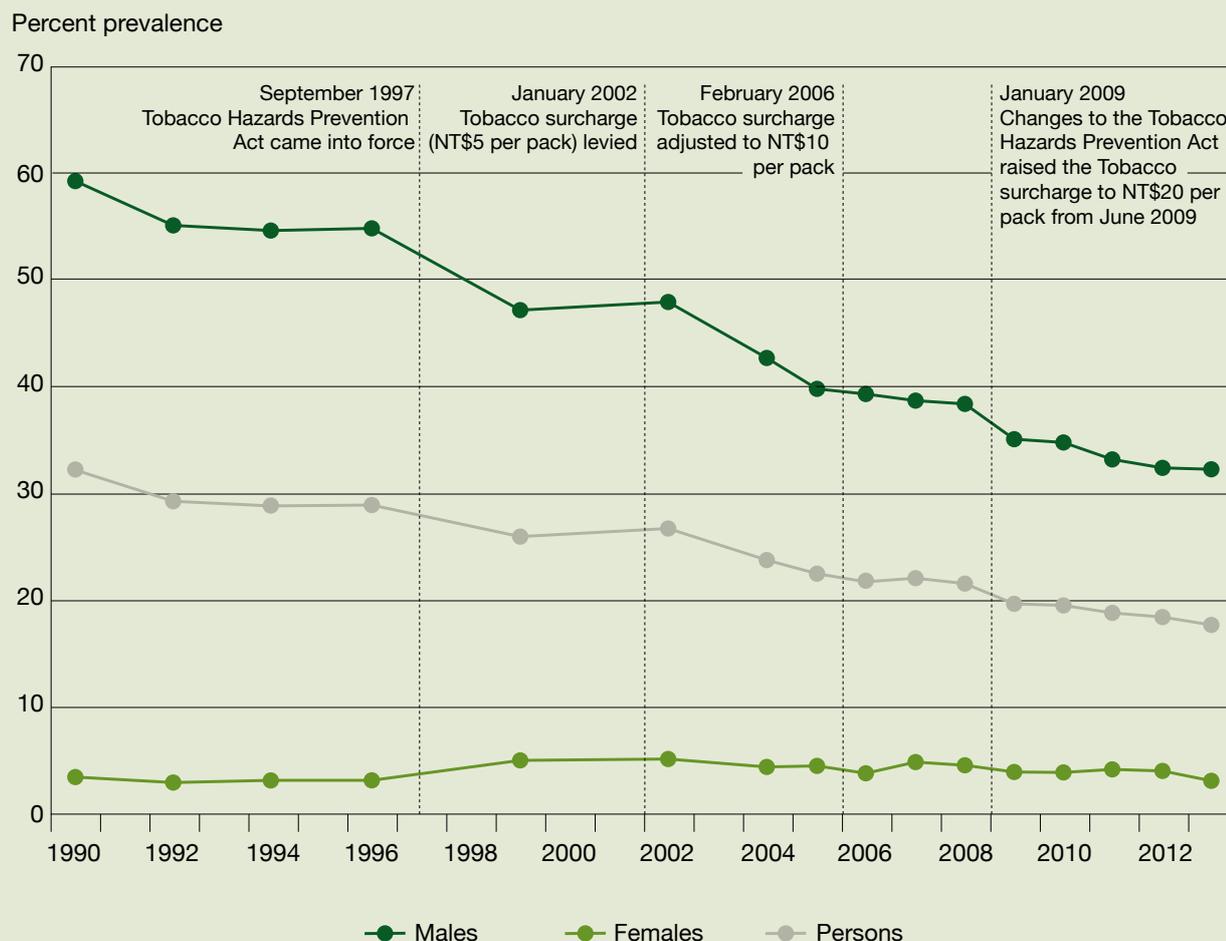
## Case Study: Smoking

Consumption of tobacco products is one of the leading causes of morbidity and mortality in Taiwan with significant inequalities in use. Reducing smoking rates remains a high public health priority (114). Taiwan has introduced several policy initiatives aimed at reducing smoking rates since the Tobacco Hazards Prevention Act was first introduced in 1997 (156). These interventions have been comprehensive including smoke-free areas to include almost all enclosed work-places and public places, introduction of graphic health warnings to cigarette packaging, increasing the surcharge on tobacco and banning tobacco advertising, sponsorship and promotions. These interventions were targeted at both adults and adolescents and have had a positive effect on both age groups. For adults aged 18 and over, the quit attempt rate increased from 39.4% in 2007 to 42.9% in 2010 and the annual cessation rate increased from 7.1% to 8.9% (156).

Since the original law was amended in 2009, there has been a decline in prevalence among adolescents with a greater decline in non-city areas than city areas (157). This decline is largely attributed to the reduction in adolescents experimenting with smoking (157). The trend in the reduction of overall smoking prevalence can be seen in Figure 3.8.

The reduction among men is a positive outcome. However, reductions in inequalities in smoking have not been as pronounced. Smokers with elementary education had lower quit rates than those with high school education (156). As Figure 3.8 and figure 2.30 show, interventions targeted at lower socioeconomic groups, especially males born after 1955, are needed in order to reduce smoking inequalities. Furthermore, interventions targeted at the causes behind the smoking habit, should be addressed to ensure a focus on the determinants.

**Figure 3.8** Smoking prevalence among people over the age of 18 in Taiwan, 1990-2013



Source: Taiwan Tobacco Control Annual Report 2014 (114).

### Diabetes mellitus prevalence and causative factors

The prevalence rate of diabetes mellitus (diabetes) in Taiwan was 9.9% in 2013 for those aged between 20 and 79 years (158). Incidence rates fluctuated between 2000 and 2007 with a higher incidence rate among males (159). There is an unequal social distribution of Type 2 diabetes across Taiwan with people of lower socioeconomic status being disproportionately affected (160). This is thought to be due to a combination of factors such as physical inactivity, disadvantaged environments and unhealthy behaviors (160).

In 2003, for children aged 6 to 12 years, there were six cases of Type 2 diabetes for every Type 1 case. Of the children that had Type 2 diabetes, their risk factors included obesity, high rates of hypercholesterolemia, higher blood pressure and a family history (161). There is a very high consumption of sugary drinks among children of elementary school age. In 2012, more than half the students had two sugary drinks per day (males 56.6% and females 53.7%) (162). Furthermore, junior and senior high school students had high rates of hyperglycemia. In 2011, 30.4% and 24.6% of males in junior high school and senior high school respectively had hyperglycemia, while females had slightly lower values of 21.5% of junior high school students and 12.3% of senior high school students (162, 163).

### Treatment

There have been a number of measures introduced in order to improve access to care. When comparing the care rate of people with diabetes enrolled in the NHI P4P program, there were significant gains and between 2009 and 2012 where more than half of the counties increased the number of patients enrolled (116). There has also been a positive reduction in national diabetes mortality rates in Taiwan from 37.6% in 1995-1997 to 20.9% in 2010-2012 (10). However, adding to the unequal distribution of diabetes incidence between socioeconomic groups, there are also inequalities in diabetes diagnosis and care (160). In rural areas, there is an increased risk of mortality, which may be indicative of poorer diabetic care (164). Disparities have also been noted regarding preventable hospitalization in which diabetic patients with higher education at a regional level, and higher incomes at an individual level, were less likely to have preventable hospitalizations (165).

### Tackling the causes of inequality

Diabetes has a number of causative factors, including poor diet and inadequate physical activity, which diabetes programs should target. However, programs also need to target the root causes of the inequality in the distribution of diabetes. Furthermore, healthcare for those with diabetes should be provided proportionate to need. Hsu et al (160) suggested interventions to reduce the inequalities include promoting health literacy among patients with diabetes, ensuring equal access to treatment in different geographical locations, enhancing the function of the primary care physician and ensuring accountability among all health care providers.

### Children

Taiwan has a relatively low rate of overweight and obesity among adults compared to many of the OECD countries (163, 166). In contrast, prevalence rates of overweight and obesity among children are relatively high (166, 167) with over one-third of boys and almost one quarter of the girls either overweight or obese in 2014 (34). In comparison to children who were not overweight, obese children had a higher level of calorie intake, spent more hours watching television and spent less time participating in vigorous physical activity (34). While this indicates the processes leading to many children becoming overweight, it does not identify the factors that might be causing these differences in behavior. Overweight and obesity prevalence among children is correlated with socioeconomic status. There are also regional differences with Keelung city and Chaiyi County having the highest prevalence rates (34).

### Adults

There is an association between obesity and poverty among adults, as there is in children, especially in less-developed areas (168). Causative factors for overweight and obesity among adults include a high-fat diet, sedentary lifestyle and betel quid chewing (169). For males and females between 18 and 65 years, there is a clear social gradient between levels of physical activity and education levels. The difference is more pronounced in males where those with lower than junior high school education do less than half the exercise than males with college and above education levels (34). In relatively higher income areas, lifestyles such as shift-work may be a contributing factor (168).

In 2012-2014, in parts of Southern and Eastern regions of the country (Taitung County, Hualien County and Pingtung County) some of the highest prevalence rates occurred (111) and these areas of the country are associated with lower socio-economic status (168). There also are higher levels of alcohol intake and lower education levels in these regions that account for a small proportion of the difference. The Eastern region also has a higher proportion of indigenous population (168).

### Need for targeted interventions

Evidence shows that a poor diet in childhood can have far reaching consequences later in life (31). Obesity in childhood can also cause psychological and medical complications during childhood as well as increased risk for morbidity and mortality in adulthood (170).

Obesity in adulthood is associated with a range of adverse health outcomes. Therefore it is essential that adequate interventions be put in place to improve levels of physical activity and healthy eating (fewer calories and improved quality) among children and adults in Taiwan. Steps towards reducing obesity currently include reinforcing the monitoring of environments conducive to obesity, implementation of the 'Modern Citizen Diet Plan' and increasing the proportion of people exercising regularly (113). In order to tackle inequalities in health, these interventions should be proportionate to social need.

## 3.6 Governance and delivery systems

### 3.6.1 Governance for health equity through a whole of government approach

Governance systems define who develops policies, how resources are distributed across society, how governments are held accountable, and by whom (171). Governance for health refers to:

*“the governance of health outcomes (both intended and unintended) relating to policy, expenditure and decision-making across the whole of government and society (that is, in the non-health sphere as well as in the health sector)” (172).*

This is a broader concept than governance of *the health sector*. Governance systems should strengthen accountability and

coherent action across sectors and stakeholders at all levels if they are to reduce health inequalities through action on social determinants. The aim is to prioritize actions to tackle inequities in health and its social determinants, increase resources and make better use of what is available so as to redress the current patterns and magnitudes of health inequalities, and improve the distribution of determinants across the population. Governance arrangements to achieve health equity that are capable of building and ensuring joint action and accountability of health and non-health sectors, public and private actors and citizens need to be in place if this is to happen (31).

Kickbusch & Gleicher (173) highlight five important features of “governance for health” that should be considered when embarking on whole-of-government/whole-of-society approaches.

These are governing through:

- 1) collaboration
- 2) citizen engagement
- 3) a mix of regulation and persuasion
- 4) independent agencies and expert bodies
- 5) adaptive policies, resilient structures and foresight.

These features highlight new roles and ways of governing for health using partnership models and engaging diverse stakeholders to create and sustain:

- a moral case and political support for equity in health and its social determinants
- the necessary legislation, regulations and working practices to strengthen joint accountability for equity across sectors
- mechanisms and resources that enable regular joint review of progress
- guidance and intelligence to inform decisions and to improve the design and assessment of policies, interventions and indicators
- a means of capturing learning and strengthening the evidence base so that policy and governance responses can be designed and adapted to achieve a scale and intensity that will ensure some leveling-up of the gradient
- use of evidence to sustain effective action on health equity over time and secure policy alignment.

A human rights approach to tackling health inequity is an important component of governance for health. It helps to build the moral case for action and political support for equity in health and its social determinants and shape the necessary legislation, regulations and working practices to strengthen prioritization and accountability for equity.

It is recommended that reducing health inequalities should become one of the main criteria used to assess health system performance and the performance of government as a whole. All sectors of society and government must be involved in endeavors to reduce health inequalities in Taiwan. The line of responsibility for reporting and accountability for action on health inequalities at local and national level must ultimately lead, through the Executive Yuan, to the Premier.

## Summary of system requirements

- 1) All sectors of society and government must be involved in endeavors to reduce health inequalities in Taiwan.
- 2) Health systems' focus on prevention must be enhanced with an emphasis on social determinants.
- 3) An effective monitoring system must be implemented which focuses on social determinants and the social distribution of health outcomes.
- 4) The line of responsibility for reporting and accountability for action on health inequalities at local and national level must ultimately lead, through the Executive Yuan, to the Premier.

## Key competencies to deliver strategies for addressing the social determinants of health

- High level of political will and commitment, globally, nationally and locally
- Transnational mechanisms that promote health and equity
- Accountability mechanisms
  - transparent
  - based on empowerment
- Equity in all policies
- Appropriate levers and incentives
- Institutional readiness
- Collaboration and action from key stakeholders
- Rights-based approach
- Involve communities
  - draw on and strengthen capabilities and assets
- Cross-sectoral and partnership working
  - embedded in existing management and performance systems

### 3.6.2 Delivery systems

A whole-system approach is needed to delivering reductions in health inequalities, with organizations and people working together with activity at national, regional, local and individual levels (19). Approaches that rely only on intervention in one part of the system will be insufficient to make the necessary difference to patterns of inequality. A key feature of these approaches is flexibility. National government must provide a coherent, consistent strategic direction and aspirational targets, while at the same time facilitating local partners to engage with the public and communities in finding local community-driven solutions to health inequalities.

The national and regional levels must be concerned with:

- The imperative of greater social justice and sustainability and the implications for policies to redistribute power and resources, and improve financial systems
- Policies to improve universal health and welfare systems
- Strategy and policy to enable public services to create and promote the conditions within which individuals, communities and the public take control of their own lives and have a voice.

Locally, the focus should be on:

- Creating opportunities for individuals and communities to set the agenda for change to define local problems and search out local solutions
- Developing, commissioning and improving good-quality, integrated local services co-produced with the public to achieve better outcomes for communities and individuals
- Appropriate links between these levels and organizations will be necessary to create partnerships to address health inequalities and there needs to be a shift in power and resources towards local communities.

Without citizen participation and community engagement, it will be difficult to improve penetration of interventions and to impact on health inequalities. The private sector also has a key role to play. To achieve this goal community engagement practices need to move beyond routine consultations, to involving individuals in partnerships to define problems and develop local solutions to address those problem (19).

### 3.6.3 Measurement, monitoring and review cycles

An effective monitoring system must be implemented which focuses on social determinants and the social distribution of health outcomes.

Improving health and health equity requires an approach that is based on evidence and up-to-date information. A monitoring system that supplies information to policy-makers and other stakeholders about the distribution and trends in health outcomes, risk factors, ill health prevention and treatment and their determinants is an essential part of the social determinants approach to improving health equity.

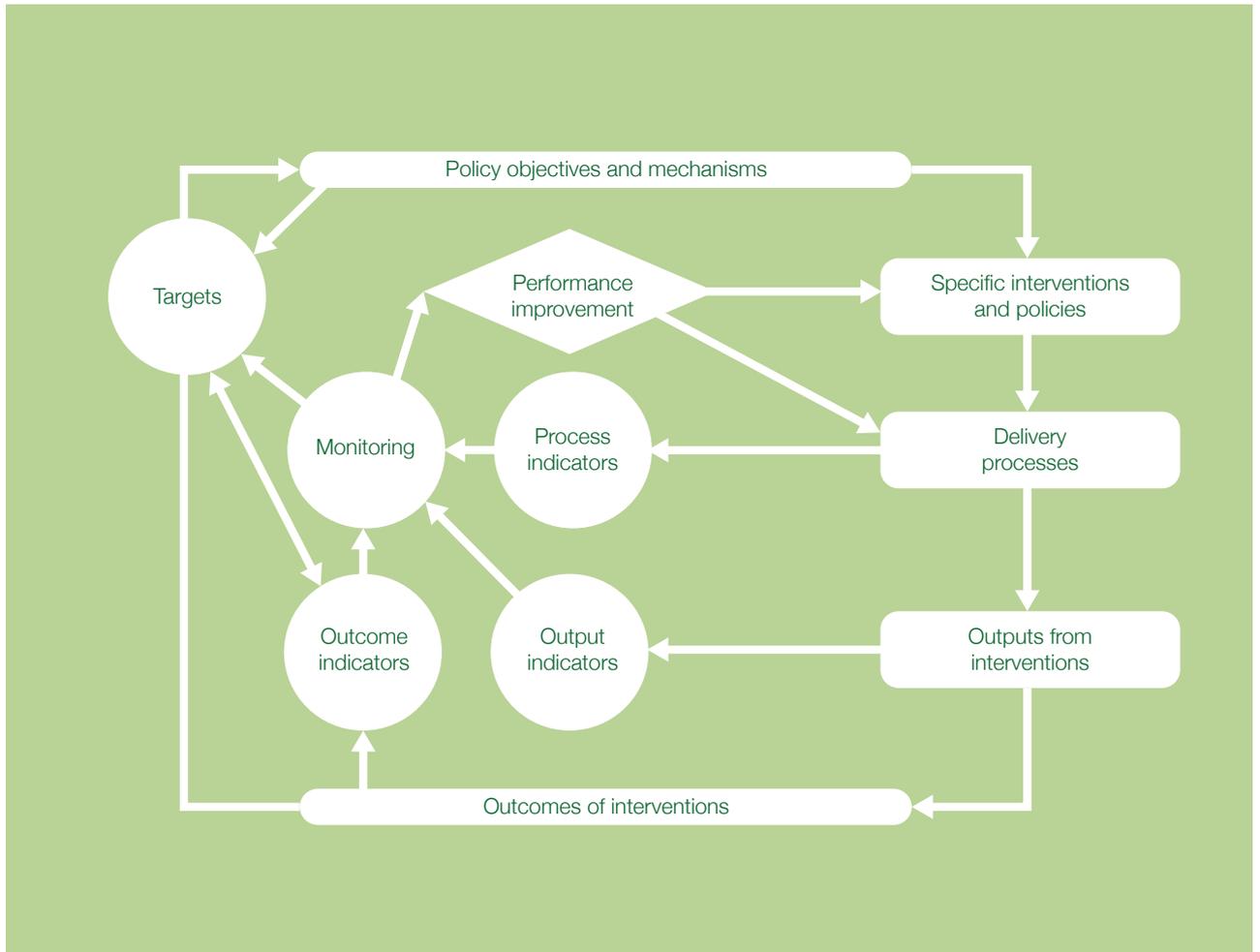
One role of a monitoring system is to enable stakeholders to evaluate the impact of policies and interventions and whether the benefits are fairly distributed to promote a long and healthy life for all. However, the time lags between policy interventions and their effects on health status, as well as the difficulties of attributing an effect to specific policy interventions, require the use of process and output indicators rather than relying solely on indicators of outcomes. However, outcome data are necessary and, in the final analysis, the definitive criteria.

Although indicators of process, outputs and outcomes are necessary, they are not sufficient to guide policy. Effective mechanisms are needed to enable the individuals and groups who are the targets of policy to be heard and involved in a meaningful way in decisions that affect their lives.

An effective monitoring system is essential to support the setting of targets, which are identified as desirable goals. The goals in a health equity-oriented approach are ultimately improvements in health outcomes that raise the health of all groups to the level of the best in society. Currently, the main challenges to setting targets and monitoring progress on social inequalities in health and, more broadly, social determinants of health, in the region are the lack of reliable data and the plethora of existing but not standardized data. European data legislation, including the relevant European Union directives, should facilitate rather than hinder such monitoring.

The setting of equity-oriented targets needs to be the result of a political process involving all relevant stakeholders. However, targets require a monitoring framework that is accompanied by data of sufficiently good quality, is comparable over time and can be disaggregated, so that progress towards the target can be assessed effectively. Figure 3.9 shows the iterative framework for doing this. This is designed to ensure the correct sequencing of target setting, policy intervention development, implementation and subsequent review, in the light of monitoring results.

**Figure 3.9** Indicator framework



Source: Marmot Review Team (19).



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## Chapter 4

# Developing and delivering the health inequalities strategy in Taiwan

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### Summary of a strategic approach

- Ambition, opportunities and potential barriers
- Leadership, champions and advocacy
- Levers and incentives
- Developing indicators, targets and review plans
- Accountability and evaluation

#### 4.1 Ambition, opportunities and potential barriers

This chapter sets out the challenges that need to be addressed in developing and implementing a strategy to reduce health inequalities based on the social determinants of health. It identifies the types of levers and opportunities that must be used to achieve a successful and sustainable reduction in both health inequalities and their determinants. It includes an outline of the governance, accountability, planning and monitoring arrangements that must be put in place to ensure that action is taken across the whole of government and society to address those inequities in the social determinants that lead to health inequalities.

##### 4.1.1 Ambition

As indicated in Chapter 3, health inequality strategies that rely only on intervention in one part of the system will be insufficient to make the necessary difference to patterns of inequality. A whole-of-government/whole-of-society approach is needed in which organizations and people work together within an overarching governance for health framework, with appropriate activities taking place at national, regional, local and individual levels (see Chapter 3 for details).

To achieve these objectives, at national and regional level, political, civic and managerial leadership in the public sector should focus on creating the conditions in which people and communities take control and all are able to sustain a wider range of capabilities across the life course,

lead flourishing lives and experience better health. To support this aim, political leaders need to appoint joint, multi-skilled teams working across all relevant departments to facilitate integrated cross-government policy under the direction of a single lead director with overall authority and responsibility for ensuring all policies are consistent with the aim of reducing disparities in health across the social gradient.

Government departments should set out explicitly their strategic contribution to taking action on the social determinants of health, so as to achieve this aim. All national strategies should then be routinely scrutinized through health equity impact assessments that use a social determinants of health lens.

The local and community interventions that are required to support these national and regional strategies should have, as a focus, building active and sustainable communities based on principles of social justice. This is about changing power structures to remove barriers that prevent people from participating in the issues that affect their lives. Promoting this approach sets a new challenge for political, civic and public service leaders (19).

##### 4.1.2 Opportunities

Equity-in-all-policies approaches will strengthen action coherence across sectors (policies, investments and services) and among stakeholders (public, private and voluntary), increasing resource flows to redress the current patterns and magnitude of health inequalities and improving the distribution of determinants of opportunities to be healthy across the whole population (31).

In developing a health inequality strategy for Taiwan to achieve this, the following questions need to be considered.

- What actions are being taken, or could be taken, to ensure that the premier, other senior figures in government and Executive Yuan are engaged in leading the plan to tackle health inequalities and advocating inter-sectoral action?
- Are there any documents or strategies that outline this type of approach?

- Are there any written statements that include information about ambitions and targets for reducing health inequalities and improving health?
- Is there any evidence of concerns among the general public or civil society about inequalities or specific disadvantaged groups?
- Does the National Plan include an equity focus?
- Is equity, including reducing economic and social inequalities, included in any of the national government priorities? If so, where is this set out?
- What is already in place nationally, to reduce inequities in social, economic and cultural arrangements?
- What are the other main government policy priorities for policies in the near to medium term? Do they incorporate objectives for reducing inequalities in social determinants?
- Is any cross government working in place which could be helpful in supporting action on the social determinants of health? For example, cross government decision-making groups, cross government structures to tackle inequalities, action to enhance social justice.

#### 4.1.3 Main barriers to action

The ambition set out in this chapter is extremely challenging. It requires both strong strategic leadership while at the same time empowering individuals and communities. Barriers commonly experienced elsewhere in attempting to reduce health inequalities include the following.

- Competing priorities, some of which could even damage health or health equity – e.g. economic growth which does not challenge inequalities or is not built on principles of sustainability
- A focus on delivery of health care and public health services, at the expense of addressing the causes of social and health inequalities
- Lack of public awareness and interest in health equity issues
- Lack of political and officials' awareness of the social determinants of health or health equity at national or local level
- Difficulties in getting investment to achieve long-term improvements in the social determinants of health and health equity

- Continuing impact of global economic downturn
- Difficulties in increasing cross sectoral working within national or local government
- Difficulties in engaging civil society organizations in health equity issues or the wider determinants of health
- National and local strategic plans and delivery mechanisms not being in place

## 4.2 Leadership, champions and accountability

Clear lines of accountability are required at executive level for addressing the social determinants of health effectively on a whole-of-government basis. This raises important questions about the mechanisms and structures required to achieve this. Accountability alone is not a panacea to resolving these structural issues – where it exists, it is often notional or spread so widely across the executive as to be ineffectual. Clear leadership and strong advocacy are also required (31).

Before implementing a health inequality strategy in Taiwan, the leading player competent to deliver this agenda must be identified.

- Who does, or could, provide national leadership and/or advocacy nationally?
- Who is, or can be made, accountable for leading action to tackle health inequalities through the social determinants?
- What formal accountability mechanisms, such as those set out in legislation, are possible?
- Who are the potential leaders locally? Are they to be found in every region and local government area?
- Is the medical workforce advocating and leading on any issues related to health equity? Could they be persuaded to do more?
- Is there evidence of strong leadership and advocacy in the public health community, nationally or locally?
- Which charities and non-government organizations could potentially provide support?
- How can leadership for health equity be enhanced, nationally and locally?

## 4.3 Levers and incentives

Intersectoral action requires that effective partnerships be built nationally and locally across government departments,

agencies and institutions, the third sector and, where appropriate, the private sector. Achieving this requires a compelling narrative on why improving equity is a priority not only for health, but also for the attainment of other societal goals and aspirations, recognizing that the social determinants of health are also the social determinants of many other outcomes.

Local-level activities that facilitate active public participation in community planning and program development are crucial to addressing health inequalities. They need to be supported by a funding mechanism and accountability structure that respond to local needs. Framing this issue in terms of levers and incentives that bring together the interests of all partners is important in initiating partnerships across sectors with differing organizational cultures and practices (31).

Developing a strategy in Taiwan requires identifying incentives that are in place to improve equity. These might be grouped as follows, for example:

- Sanctions or rewards tied to monitoring and review of strategic plans and achievement of objectives or targets
- Outcome based payments or other forms of encouragement to focus on reducing inequities in health and their determinants

#### Building the case for intersectoral action (174)

- a) Build on public concern for the health and wellbeing of a disadvantaged group.
- b) Use political champions to advocate for intersectoral action.
- c) Frame the issue in a way that all sectors can recognize.
- d) Build on international leadership.
- e) Create a platform for researchers.
- f) Build on concerns about the need to use scarce resources more efficiently.
- g) Acknowledge the limitations of previous approaches, especially those involving sectors working alone.
- h) Take advantage of political transitions to reassess roles and begin to work better together.
- i) Build consensus via shared gatherings, such as conferences or community meetings.

Similarly, questions around the levers that exist can, for example, be framed in terms of the following.

- Legislation on issues such as equity, health for all, health as a human right
- Regulations on issues such as occupational health, food products
- Use of the media or other publicity, for example internet or social media

#### 4.4 Plans, indicators, targets and review mechanisms

A plan to reduce health inequalities needs to be based on, and identify, strong political commitment within and across government to achieving these reductions through action on the social determinants of health, extending from clear leadership (either at national or local level) through to political authority to pursue the agenda, as outlined in Section 4.1 to 4.3.

Any plan should include a compelling narrative on why improving equity is a priority not only for health, but also for the attainment of other societal goals and aspirations. It should describe the delivery mechanisms, based on systems that demonstrate evidence of:

- a defined delivery chain
- ownership and active management
- levers and incentives
- performance management
- strong civic, executive and political leadership
- sustainable financing and training
- political support and statutory responsibilities
- high public visibility and engagement (31).

Proportionate universal policies are central to any plan to reduce inequalities in social determinants. The universal element is needed to ensure that these policies are sustainable, achieve social buy-in and political will, reduce stigmatization and avoid marginalization to attract sufficient investment. Those targeted at specific groups are less effective socially than actions that include the whole of society. To be cost-effective, the approach requires that investment and intensity of activity are proportionate to social need to ensure the population coverage needed to achieve a leveling-up of the social gradient.

All reports on the effects of specific policies and societal progress and development more generally should include equity impact assessments of policies on health and its social determinants. This requires that indicators are produced for monitoring progress, to cover both health outcomes and their social determinants. Where appropriate and whenever possible, each indicator should be disaggregated by gender, socioeconomic and geographic dimensions.

The plan should include a mitigation strategy that identifies commonly recognized reasons for failure. The most common reasons can be grouped under four main categories (172). These are set out in Table 4.1. Understanding how these can arise and affect success makes it more likely that the plan will be implemented successfully.

Specific questions to be resolved in developing an implementation plan in Taiwan include:

- What plans exist to put in place recommended policies and programs once the review is complete?
- What cross government groups/mechanisms are being put in place for taking forward implementation? For example, senior and working level cross government groups nationally, integration of functions/budgets at local level.
- What mechanisms/routes are available to build the policies and programs into strategic delivery plans at national and local level?
- How will better public awareness of the issues and sustainable political commitment to the delivery plans be achieved?
- Is it appropriate to set targets?
- Is there accountability for achieving goals set out in the plan?

- How will the impact of the health inequalities plan and the progress made be monitored and evaluated?
- What routine data exist to monitor progress at regular intervals (e.g. annually)?
- What barriers exist to making full use of these data for monitoring e.g. sufficient disaggregation by age, sex, geography and socio-economic markers?
- Do the available data support the creation of useful indicators and targets? Does this include overall health measures, social determinant indicators and the social distribution of health and its determinants?
- How well do they cover monitoring of the processes that are put in place, the outputs from these processes and their eventual outcomes?
- What ad hoc data can be collected to support periodic reviews of the strategies and plans?
- What are the current gaps in data to support both routine monitoring and periodic review?
- What can be done to fill these gaps?

#### 4.5 Taiwan national policy context and current focus on health equity

The development of strategies, plans and policies to tackle inequalities in health and its social determinants in Taiwan builds on a strong governance infrastructure. Existing health and welfare policy is based on the Constitution's protection of the basic human rights of citizens. Since World War II, Taiwan governments have made a considerable effort to improve public health. However, in doing this less focus has been placed on the social determinants of health.

**Table 4.1** Reasons for failure in governing for health equity through action on social determinants

Type of failure	Explanation
Conceptual failure	Failure to conceptualize the full “causal pathway” leading to the desired equity goals/outcomes
Delivery-chain failure	Failure to understand, construct or gain political commitment to an effective “delivery chain” capable of acting on multiple determinants to reduce inequities/increase equity in health over time
Control strategy failure	Failure to develop an effective “control strategy” capable of holding stakeholders and policies to account for equity results
Public health system failure	Failure to develop competencies needed to govern for health as a societal objective, not only a health sector objective

Source: Brown et al (172).

In recent years, with a substantial fall in death rates and associated epidemiological transitions, non-communicable diseases have become the major public health challenge in Taiwan. As well as seeking to achieve universal health care coverage, increased attention is now being paid to non-communicable diseases and the social determinants of health. A paradigm shift, from ‘healthcare for all’ to ‘health for all’, began in 2000 (175). The document “Healthy People 2020” published in 2009 (176) contained two themes, increasing healthy life expectancy and decreasing health inequalities.

Also in 2009, National Sustainable Development Policy Guidelines (177) were formulated and implemented. Social justice was one of the 10 basic principles. It was stated:

*Environmental resource, social and economic distribution should be in line with the principles of fairness and justice.*

The policy guidelines included the concept that the nation should enhance social welfare policies by promoting social welfare policies, eliminate the gap between rich and poor, and strengthen welfare measures for aboriginal citizens, senior and disadvantaged citizens and women and children, in order to achieve the goals of social fairness and justice. These are all important social determinants of health ambitions and would improve health equity in Taiwan.

Similarly, in 2007 Taiwan signed the “Convention on the Elimination of all Forms of Discrimination Against Women” (CEDAW) – see case study in Chapter 3. Implementation of this has improved equity for all women, but particularly those who are disadvantaged or in vulnerable situations.

The guiding principles of the social welfare policy were revised and approved in 2012 with the vision “Towards a new society of equity, inclusion and justice” (178). The policy emphasizes protecting disadvantaged citizens and reducing social inequality, removing all institutional obstacles and protecting the rights of all citizens to participate in society, and providing all citizens with equal opportunities for development.

The Golden Decade National Development Plan announced in 2012 (179) includes a ‘just society’ as one of its eight visions. The implementation themes are shared affluence, peace and health, care for children and the elderly, ethnic harmony, housing justice and gender equality.



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# Chapter 5

## Recommendations

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### 5.1 Introduction

#### 5.1.1 Structure

The recommendations made in this chapter draw on the evidence in inequalities in this report (Chapters 1 and 2) and on the current Taiwan context (Chapters 1 and 4). They are structured around the broad themes described in Chapter 1 – the life course, the wider society, the macro level context and the systems available for implementation. They draw on the description of actions required to address health inequalities, as outlined in Chapter 4.

#### 5.1.2 Wider benefits

Action on the social determinants not only leads to improved health but also brings improvements in outcomes in other important social and economic arenas. As outlined above, action to improve health equity is needed in relation to early years provision, education, employment, income and environment – alignment between health objectives and each sector's own objectives can bring additional benefits for all. For instance, reducing inequalities in educational attainment will help achieve ambitions within the education sector, aid long-term economic and social development and gender equity, and improve both health outcomes and health equity.

#### 5.1.3 Summary of evidence

As a preliminary to making the recommendations, the evidence from Chapters 1 and 2 is summarized below.

##### The Taiwanese context

- A rapidly aging population
- A very low fertility rate – 1.1 children per woman
- A relatively high ratio of boys to girls at birth
- Low infant mortality and high life expectancy, comparable to levels in Western Europe
- Women can expect to live six years longer than men

- A steep social gradient in life expectancy – eight years difference between the most and least deprived townships
- A relatively low unemployment rate, but also relatively low labor force participation among men by international standards
- A very good level of educational performance, particularly in mathematics, compared with other countries, measured by PISA
- Low levels of spending on health (0.2% GDP) and education (1.8%) by international standards, though comparatively more on social security and welfare (3.4%)
- Only 5% of achievement is considered lost due to gender inequality compared with a world average of 46%

##### Summary of the analysis of health inequalities in Taiwan

- A social gradient in life expectancy by township deprivation has persisted over time with a gap of 6.4 years for males and 3.5 years for females between the most and least deprived quintiles
- While a woman in the least deprived quintile can expect to live five years longer than a man, the gender gap is eight years in the most deprived quintile
- Infant mortality in the period 2004 to 2010:
  - remained persistently high among mothers who did not attend senior high school (over five per 1,000 live births), but decreased to below three for those who had attended senior high school
  - increased to over eight per 1,000 among teenage mothers as births became less common in this age group. By contrast infant mortality decreased to below three for those aged 25–34

- For men aged 25–64, mortality rates by occupational group:
  - broadly followed the gradient in their social position, with rates for skilled agricultural, forestry and fishery occupations and elementary laborers more than six times that of professionals
  - were 84% higher among blue-collar than white-collar workers. The gap in death rates for these groups was similar in all regions except Eastern – where both the gap and rate ratio were much higher than elsewhere. This larger excess among blue-collar workers in Eastern region partly explained the region's higher overall death rate in men
- Metropolitan areas have had persistently higher life expectancy than non-metropolitan areas – 3.3 years difference for males and 1.5 years for females
- Those who ceased education at secondary school level or earlier had higher rates of limiting illness later in life than those who stayed on longer
- The number of years spent with a disability did not increase with township deprivation – averaging around five years at every level
- Rates of mortality by quintile of township deprivation between ages 30 and 70 years in 2010–12 from circulatory disease, cancer and suicide:
  - were higher among men than women in all quintiles
  - showed consistent gradients related to deprivation, although all were steeper for men than women
- Those in lower status occupations are more likely to become unemployed than those in higher status occupations
- There were sharp gradients in mortality, by level of education for those both in and out of employment. At each level of education, mortality of those without a job was higher than those who were employed
- People with limiting physical disabilities – hearing, vision, mobility or communication problems – are less likely to be employed than those with symptoms such as fatigue, anxiety, pain or depression
- For men with long-standing illness, the proportion in employment is strongly related to their level of education
- There are steep gradients in clinical risk factors such as hypertension, hyperlipidemia and hyperglycemia by educational level
- There are clear inequalities in both original and final income, with those in the lowest quintile of income having only a sixth of the final income of those in the highest income quintile
- There is a steep gradient in death rates on the road among children related to levels of township deprivation. This is the main avoidable cause of death for children aged one and over

#### Summary of social determinants of health in Taiwan

- Infant mortality rates are higher in the most deprived quintiles than in the least deprived, for both pre- and full-term births
- There is a clear relationship between maternal education and:
  - low birth weight
  - postpartum depression
  - reading frequently to children at age three
  - teeth brushing at age three
- There is a strong relationship between family income and educational attainment at age eight, likely to lead to poorer life chances and poorer health outcomes in later life for children of poor families

#### Summary of the analysis of health risks in Taiwan

- Dissatisfaction with life 20% higher in the most deprived deprivation quintile than in the least deprived
- High smoking rates among men born after 1955, with a steep gradient by educational level, although rates have decreased over time for all educational groups
- Steep gradients in alcohol-attributable hospital admissions by level of education for both men and women
- While overweight and obesity levels are generally low compared with other countries:
  - rates for men are increasing for some educational groups
  - rates for women are lower than for men but are more strongly graded by level of education
- A steep gradient, by level of income, in rates of problematic drug use

## 5.2 Policy recommendations

### A GIVE EVERY CHILD THE BEST START IN LIFE

#### Existing policies in Taiwan

- Universal coverage of comprehensive preventive interventions: antenatal care visits, new born screening for congenital metabolic disorders, infant stool color card, hearing screening, vaccination, seven well-child check-ups, and fluoride application to teeth
- Special program for disadvantaged groups: enrollment in the national health insurance, life skill education and guidance, and multilingual versions of child and maternal handbooks for foreign-born mothers

### Case Study: Family Nurse Partnership (180-183)

The Family Nurse Partnership (FNP) provides intensive support to young, first-time mothers and their babies. Home visits by trained nurses support mothers from before birth until the child's second birthday, aiming to prevent poor outcomes in disadvantaged children and families and to prevent the intergenerational transmission of disadvantage. Evidence from the US shows that the program can reduce child abuse and neglect, as well as some indicators of household adversity (181, 184). In England, the Department of Health announced that 16,000 families would receive FNP support by 2015 (182).

### Case Study: Parenting Programs

CANparent is a network of organizations in England that provide quality assured universal parenting classes. CANparent provides a quality mark to parenting class providers who have met criteria including evidence of benefit to parents. The CANparent website enables parents and commissioners to find quality marked classes across the country (185).

The Incredible Years (ages 2–12) has been shown to be effective in bringing about improvements in parenting dimensions (including harsh/critical parenting, nurturing/supportive parenting and discipline competence) among parents who have a history of child maltreatment (186). The cost–benefit ratio is 1.37 (187).

Functional Family Therapy (ages 11–18) is a family support program focused on young people who are engaging in antisocial behavior, substance abuse or crime. It has shown improved child behaviors and reduced parent stress, depression and mental health problems. It has a cost–benefit ratio of 12.32 (187).

Triple P positive parenting program (age 0–16) has shown evidence of positive impacts on risk factors for maltreatment, such as reductions in parenting stress, improvements in parenting practices and parenting self-esteem (150). In addition, a US study found that making the program available to all parents in a country led to 17% fewer hospitalizations as a result of child abuse, and 16% fewer out of home placements (188). It has a cost–benefit ratio of 5.05.

The Chicago child–parent center (ages 3–9) in the US provides pre-school education, parent programs, outreach services and ongoing family support when children enter school. It has been shown to benefit children's development and skills and to improve parenting. Participating families had lower rates of child maltreatment by the age of 17–7.2% in the intervention group and 9.7% in the control (189). By age 21, return on investment is estimated to total over US\$7 per \$1 invested (189).

FEDUP (Family Environment: Drug Using Parents) (190) is an NSPCC face-to-face intensive intervention for families of in which there is parental substance misuse. It provides support to children aged 5–12 years. An interim evaluation in 2014 (190) found that the percentage of children and young people reporting a clinical level of emotional and behavioral problems dropped from 37% before the program to 25% after, and parents reported being less unhappy, being more confident about their parenting and having a greater knowledge about children's needs at the end of the program.

The IHE report Good Quality Parenting Program and the Home to School Transition gives more information on parenting programs and their relative benefits and sets out the case that parenting programs should be strongly supported.

## Recommendations

### A1 REDUCE SOCIAL GRADIENTS IN ADVERSE BIRTH OUTCOMES

Provide accessible, adequate-quality sexual and reproductive health services for women and girls in all existing health centers and facilities.

Every woman/family should receive a basic package of universal services during and after pregnancy. In addition those with greater social and/or health needs should receive services proportionate to their needs.

### A2 REDUCE SOCIAL GRADIENT IN OUTCOMES FOR MOTHERS AND BABIES AND CHILDREN IN THE EARLY YEARS

Postpartum support for mothers and focus on mental health of mothers through health care services and community programs.

Provide high quality universal parenting, childcare programs and other support services (including crèches and kindergartens) that assist and empower families with parenting and employment, services delivered according to social and health needs (including additional support for the most vulnerable).

### A3 GREATER GENDER EQUITY

Develop gender equity strategies to improve sexual and reproductive health and high quality parenting with a focus on:

- improving conditions to balance work and child rearing
- greater support for new parents – at community level and at work.

## B ENABLE ALL CHILDREN, YOUNG PEOPLE AND ADULTS TO MAXIMIZE THEIR CAPABILITIES AND HAVE CONTROL OVER THEIR LIVES

### Existing policies in Taiwan

- National compulsory education: increased to six years in 1946, nine years in 1968 and 12 years from 2014
- Increased gender equity in subjects undertaken
- Education for students with special needs: special education schools, special education classes at regular schools, home education, and bedside education

- Financial assistance program for disadvantaged college students: financial aid, free dormitory, living expenses supplements, and emergency relief assistance
- Lifelong education: employment training, vocational training, community colleges, tribal community colleges, elder colleges, social education centers and social work stations

### Case Study: Parenting/family support

#### Baby and toddler health centers, the Netherlands (191)

These have three main tasks: vaccination, screening of health and physical development problems, and educating young parents on nutrition, hygiene and family health care. They are free and neighborhood-located. Initiatives launched to set up a system of family support culminated in the creation of centers for youth and family, which include the baby and toddler health centers.

#### Sure Start children's centers, United Kingdom (192)

Sure Start provides a universal free service with more targeted help for those most at risk.

The services tailor responses to all families with children from pregnancy through to starting school. All provide interventions not codified in specific programs through outreach, group work and individual interactions. Some make use of formal programs in their work.

#### Association Aprender em Parceria (A PAR) [Learning in Partnership Association] program, Portugal (193)

A PAR is an early childhood primary intervention that aims to support and help parents of young children living in disadvantaged communities by combining individual and community-level approaches. It seeks to promote: bonding between parents and children; development of self-esteem; dispositions towards learning, curiosity and confidence; children's educational achievement; school attendance; and social support among families within their community. Evaluation has shown evidence of positive effects.

## Recommendations

- B1 ENSURE INCREASE IN COMPULSORY EDUCATION TO AGE 18 PROVIDES SKILLS TRAINING NEEDED FOR BOTH WORK AND COLLEGE
  - B2 ENSURE SUFFICIENT INCOME TO IMPROVE PARTICIPATION AMONG STUDENTS FROM POORER FAMILIES
  - B3 ENSURE QUALITY EDUCATION SERVICES ARE AVAILABLE TO ALL, NON-DISCRIMINATORY AND GUARANTEED TO THE MOST VULNERABLE
- C CREATE FAIR EMPLOYMENT AND GOOD WORK FOR ALL**

### Existing policies in Taiwan

- Basic wage: there is a minimum wage in Taiwan, the lowest hourly or monthly remuneration that employers may legally pay to workers (around 20,000 NT per month in July 2015)
- Implementation of occupational health and safety
- Occupational gender equality: prohibition of sex discrimination, prevention of sexual harassment, and measures for promoting equality in employment
- Occupational rights protection for aborigines and people with disabilities: government sections are required to employ one aborigine employee for every 100 employees, and organizations must employ at least one disabled person for every 34 employees

## Recommendations

### C1 CONDITIONS OF WORK

Promote the use of management standards aimed at reducing the causes of workplace stress, particularly for those in routine and repetitive jobs.

Focus on safety in high-risk employment.

Promote gender equity and family-friendly policies in the workplace, engaging with employers.

### C2 EMPLOYMENT POLICIES

Develop active labor market policies to integrate the most vulnerable into good quality work and retrain and up-skill long-term unemployed.

Ensure high level of employment for those who are in vulnerable situations, such as people with disabilities,

## Case Study: Extending the role of schools

The OECD has reported a wide range of initiatives in Europe and elsewhere linking schools and community services (194). Examples include: brede scholen (community schools) offering a range of services in the Netherlands; schools in Sweden commonly offering services such as counseling, study support and leisure activities to children; and efforts to link schools and communities, usually sponsored by NGOs, in parts of eastern Europe. State schools in United Kingdom (England) offer access to locally determined “extended services” which include: out-of-hours activities, learning and child care; family support; adult education; community access to school facilities; and close partnership with specialist services such as health and social care. Opportunities are presented on an open-access or targeted basis. Schools in deprived communities often offer most services. Evaluation has shown significant effects on educational and other (including health) outcomes for children and adults at greatest risk, though evidence for overall attainment and long-term differences to areas is less convincing (195).

long term unemployed, those in deprived areas, foreign born wives and indigenous populations - in accordance with principles of a sustainable economy, without compromising standards of decent work and policies of basic social protection.

Work with employers to increase employment rates among those with long-standing health problems or disabilities.

Create employment opportunities for all young people and ensure they are positioned to take up good quality work through education, training and active labor market policies.

### C3 UNEMPLOYMENT POLICIES

Policies for growth should give priority to reducing the long-term unemployment of young people.

Improve social protection for unemployed and others out of work, including an explicit focus on gender and vulnerability in social welfare measures and policies.

### C4 GENDER EQUITY AT WORK

Achieve parity of esteem for women in the workplace.

Promote family friendly policies.

Employ greater action to prevent discrimination, bullying and exploitation.

## Case Study: Occupational health and safety

### Harmonizing and promoting occupational health and safety

The WHO Regional Office for Europe has launched a number of initiatives to improve occupational health and safety and address regional variations. The initiatives, which reflect EU policies and the WHO global plan of action on workers' health (196), include the network of WHO collaborating centers and national focal points and the development of regional networks, such as the Baltic Sea Network, the Northern Dimension Partnership for Public Health and Social Wellbeing and the Southeast European Network on Workers' Health. Relevant policy initiatives are elaborated and implemented, framed by continuous exchange with occupational health researchers.

### European Psychosocial Risk Management Excellence Framework (PRIMA-EF) program

This policy-oriented project focused on the development of a European framework for psychosocial risk management in the workplace and has been ongoing since 2004 through the WHO network of collaborating centers in occupational health. PRIMA-EF has particular reference to the fundamental WHO global plan of action on workers' health and incorporates best-practice principles and existing validated psychosocial risk-management approaches across Europe (196).

### Prevention of injuries and accidents at work

Legal and organizational measures undertaken by occupational cooperatives in Germany over the last century have been particularly successful. The number of work-related accidents from 1960 to 1986 reduced from 140 per 1000 employees to 40 (197). Main measures included improved monitoring and recording of accidents, systematic implementation of safety measures (such as instruction and technological innovation) performed by a well-trained new professional group (safety experts) and comprehensive legal regulations protecting vulnerable groups. Low-status occupations at increased risk (construction, wood and sawmill, and farm and agricultural workers) had the largest health gain. More recently, a nationwide campaign against falls at work, in which public personalities from sport and entertainment acted as role models to reinforce appropriate behavior, was launched. This approach had previously been effective among low-education occupational groups. Falls were reduced by 15% during the two-year campaign among members of occupations involving frequent physical mobility (such as using stairs frequently or heavy lifting or dragging).

## D ENSURE A HEALTHY STANDARD OF LIVING FOR ALL

### Existing policies in Taiwan

- Basic economic security through social insurance and pensions: Government Employee Insurance since 1958, Labor Insurance since 1950, Farmers' Health Insurance since 1985, National Pension since 2008, National Health Insurance since 1995
- Employment Promotion Plan, 2010
- Unemployment services: provide information on resources available for obtaining employment

### Recommendations

#### D1 MINIMUM STANDARD OF INCOME

Older people should have an appropriately calculated minimum standard of living based on income, social participation and health care provision requirements.

Policies aimed at protecting older women from absolute poverty and isolation should be a particular priority.

#### D2 TAX AND WELFARE

Ensure that there is an equity focus in the tax and transfer system – leveling up the gradient, investing in programs that show evidence of making the poorest more productive and economically engaged. This includes health, education, welfare and active labor market programs.

Social protection systems must be sufficient to enable recipients to live a healthy life and provide a safety net against adversity (for example ill health, disability, redundancy from employment)

Develop a national minimum standard for healthy living based on a standard international framework.

## E CREATE AND DEVELOP HEALTHY AND SUSTAINABLE PLACES AND COMMUNITIES

### Existing policies in Taiwan

- Healthy City Project: integrates planning, transport, housing, environmental and health systems to address social determinants of health in each locality
- Healthy communities and health promoting settings: promote community participation and action; reduce social isolation

## Recommendations

Focus more on deprived townships, as they are likely to reap the greatest benefit from interventions that provide a healthier and safer environment, since they tend to be disproportionately exposed to inadequate environmental conditions.

Improvements are needed in levels of air quality, particularly where this is unequally distributed according to the social composition of areas.

### Case Study: Healthy urban planning objectives

The WHO Regional Office for Europe recommends creating long-term urban planning objectives to address environmental risks. Numerous professionals and departments at local, national and regional levels are responsible for planning policies that affect health directly and indirectly, so there are many different ways of addressing health inequalities through urban planning. Grant et al. (198) created objectives for the planning profession to help identify factors that would help develop healthy urban environments. The objectives are based on the social determinants of health and wellbeing map and include advice on adapting existing communities and creating newly built ones.

Similar objectives are included in the growing body of healthy spatial planning policies in Europe. Health is one of the core principles of urban land use planning in Germany, for example.

Section 34 of German planning legislation states that development projects have to consider the requirements of healthy living and working conditions. The German Federal Building Code (199) includes a requirement that all residential land has access to natural resources and recommends:

*Land-use plans shall safeguard sustainable urban development and a socially equitable utilization of land for the general good of the community, and shall contribute to securing a more humane environment and to protecting and developing the basic conditions for natural life. In the preparation of land-use plans, attention is to be paid in particular to the following: the general requirement for living and working conditions which are conducive to good health, and the safety of the population at home and at work.*

Ensure that all population groups, particularly those who are excluded (such as homeless people and refugees) or vulnerable (young and elderly), experience safe and healthy environmental conditions.

All new policies should be subject to health equity and environmental impact assessment. The links between health, equity and environment need to be explicitly recognized in these assessments.

Action should be taken to mitigate the impact of natural disasters and climate change, based on both social need and geographic location of communities likely to be affected.

The risks to children associated with road traffic should be reduced, through providing safer urban and rural road systems and traffic calming measures.

### Case Study: Beat the Street (202)

The Beat the Street scheme is a global initiative that encourages children and parents to walk to school in order to gain points for their school and compete with others. It is a prime example of an effective and innovative method to encourage physical activity in an outdoor setting.

An evaluation report looking at the performance of Reading Borough Council's Beat the Street scheme over three months from June 2013 identified a number of positive outcomes, including:

- The participation of 5,651 people (2,994 adults and 2,627 school children) walking a total of 51,003 miles.
- 67% of adult users said they had increased the amount they walked since participating in the scheme and 27% said they had cycled more.
- Eight out of ten participants said they would continue to walk/cycle even after the scheme ended.

The most commonly cited reasons for participating were: to win points for the school, to have fun, and to get more exercise.

### Case Study: Community Houses (200)

Bolsover District Council, England set up a number of community houses to help reduce social exclusion and bridge the gap between deprived areas and other parts of the district. New Houghton's project was to improve the local environment. It did so by restoring a village green and having gardening projects for over-50s. Shirebrook Model Village took over a piece of derelict land and created a garden with a poly-tunnel to grow vegetables for the community. It also increased awareness about the importance of exercise and a healthy diet. Castle Estate residents created a food cooperative and sold low-cost fresh produce to residents. Advice on healthy eating was provided and cookery skills were developed. South Normanton provided transport for the less mobile to encourage them to participate in chair-based exercises. Healthy meals were provided along with advice on healthy lifestyles and diets. Funding was also used to provide cooking sessions for young mothers. Recipe books, and advice on wellbeing and healthy eating were also provided. Health professionals also provided advice to help them overcome a fear of intimidation.

### Case Study: Cycling in Copenhagen (201)

Copenhagen is a model city for sustainable travel, with large numbers of trips made by bicycle or on foot. Interventions began in 1962 and include creating car-free streets, eliminating parking spaces, creating pedestrian streets, creating public spaces, increasing the numbers of people living in the city center and developing bicycle lanes and crossings, contributing to reducing greenhouse gas emissions and improving social capital. The measures led to a three-fold increase of car-free space and a similar increase in people in public spaces between 1968 and 1986, with one third of residents commuting by bicycle.

Interventions that make cycling attractive include easy-to-buy bicycles and accessories, including locks, lights and child seats, good infrastructure, easy connections to public transport, bicycle lanes and safe parking places.

Cycling policies have improved health. The Copenhagen heart study examined 13,375 women and 17,265 men aged 20–93 years and found that those who did not cycle to work experienced a 39% higher mortality rate than those who did.

## F STRENGTHEN THE ROLE AND IMPACT OF ILL-HEALTH PREVENTION

### Existing policies in Taiwan

- Investment in health prevention: utilized income from tobacco surcharge to expand budget for prevention
- Comprehensive coverage on treatment and health prevention: National Health Insurance pays for disease treatment, Centers for Disease Control pays for vaccination, Taiwan Health Promotion Administration pays for preventive services such as check-ups, cancer screening, smoking cessation, oral health and so on
- Population-wide intervention on health risks: Taiwan ratified the WHO Framework Convention on Tobacco Control in 2005 and adopted the WHO MPOWER package on smoking cessation
- Reducing inequality in healthcare delivery
- Comprehensive monitoring on social determinants and health: mortality, morbidity, surveillance of risk factors, evaluation of public awareness and practice
- Emphasise (and strengthen the accuracy of) information in the media about women's health. Enhance the autonomy of women in the health care system and their self-management of health.

### Recommendations

Action is needed to stem the transition to some of the unhealthy patterns of consumption that are developing, leveling up the social gradient in lifestyles through action both on behaviors and their social determinants.

These actions include increasing prices: a minimum price for alcohol and greater taxation on smoking; and ensuring extensive bans on smoking in public places and near children/pregnant women.

Ensure that public health delivery systems have shared objectives with other sectors involved in addressing social determinants.

### Case Study: Romsås in motion, Oslo (204)

This initiative started in 2000 as a low-cost, three-year community-based intervention program implemented in a multiethnic district with low education levels and high total and CVD mortality rates. Romsås district had the highest mortality rates of all 25 administrative districts in Oslo. At baseline there was also a high prevalence of diabetes, obesity and physical inactivity. The aim was to increase physical activity in the district, with Furuset in Oslo the comparison control area.

There was a 9.5% increase in physical activity following the program and the proportion who increased their body mass was 50% lower in the intervention district compared with the control. Beneficial effects were also seen for cholesterol/high-density lipoprotein cholesterol ratio, triglyceride levels, glucose, systolic blood pressure and daily smoking. The results were comparable for those with high and low education, but lower follow-up response rates by non-western people indicate caution in generalizing the results to this population. Overall, however, the target group, including those usually seen as “hard to reach”, evaluated the intervention and its effects positively. The project group continues to meet five years after the intervention.

Jenum et al. (204) identify four key lessons from the intervention for clinicians aiming to encourage increased physical activity:

- 1) there is value in using a theoretically informed multilevel and targeted intervention with a community-based and high-risk approach to improve physical activity
- 2) people with low levels of education and ethnic minority groups will adopt physical activity behaviors when provided with a culturally sensitive intervention that changes their psychological readiness
- 3) a strong partnership is needed between researchers and local people to promote local ownership of the intervention
- 4) clinicians should continue to advocate for geographic/location-targeted health promotion in disadvantaged areas as part of the overall national policy to reduce the social gradient in health.

### Case Study: Rapid appraisal to assess community health needs in Croatia (203)

This method combined three information sources: existing quantitative health indicators, participants' essays and participant observations.

Combined with a two-day consensus conference, the approach allows those involved to: assess health in the city (and serve as the base for creating the city health profile); select (Healthy City project) priority areas; establish working groups on priority areas; and build on the previous steps to contribute to the development of a city action plan for health.

The advantages of this method are that it is rapid, inexpensive, scientific, sensitive, participative (involving all major interested parties, such as politicians, experts and citizens) and able to produce immediate action and sustain benefits gained.

The rapid appraisal was applied in 12 Croatian cities between 1996 and 2011. It provided a scientifically based account of health in each city and identified future targets by using health-related measures and citizens' observations about the community, its problems and potentials. The establishment of strict selection rules strengthened academic credibility for participants and panels and by the process of triangulation of information sources (essays, observations and collected quantitative indicators) and researchers (experts from different backgrounds, including public health, epidemiology and medical information science).

## 5.3 Effective delivery and governance systems for equity

### 5.3.1 Building a comprehensive life-course approach to policy action

Taiwan will need to develop a comprehensive life-course approach to policy action – beginning with the earliest years of life and sustained throughout each subsequent stage.

#### Recommendations

A review of current policies across the life course and embedding life-course approaches into the national plan.

### 5.3.2 Systems that both improve health and level up the gradient

#### Recommendations

Universal healthcare systems, delivered with an intensity that is proportional to health and social need, are essential to maintain and improve health levels across the social gradient.

Put in place core planning and review mechanisms.

Identify the potential of existing systems to deliver change in existing inequalities in healthcare access and outcomes.

Ensure that a whole of government approach is taken throughout the planning and review cycle for health-promotion, health-protection and disease-prevention systems.

Ensure that health care delivery systems have shared objectives with other sectors in addressing the social determinants of access and outcomes.

### 5.3.3 Develop a comprehensive, sustainable social determinants approach

#### Recommendations

There are good examples of action in Taiwan but action should be increased in scale and intensity.

Ensure that action to deal with the current patterns and magnitude of health inequalities is integral to mainstream policies – rather than being based on isolated initiatives.

### 5.3.4 Whole of government approaches to health equity

#### Recommendations

##### WHOLE OF GOVERNMENT APPROACHES

Develop a clear strategy for action on the social determinants of health to reduce health inequalities, involving all sectors and action across government.

Ensure that the National Plan addresses the current patterns and magnitude of health inequalities.

Embed the strategy for action in mainstream policies.

Ensure that a whole of government approach is taken to setting up a planning and review cycle.

Ensure that delivery systems have shared objectives in addressing social determinants.

#### HEALTH EQUITY IN ALL POLICIES

“Health equity in all policies” approaches should be used to assess current policies across government and aid in the development of new policies to ensure greater health equity.

#### INTERGENERATIONAL EQUITY IN ALL POLICIES

Adopt an intergenerational approach and assess policies for impacts on equity in future generations as well as for the current generation.

### 5.3.5 Accountability and review

#### Recommendations

Measurement and indicators should be built on available evidence. This should include identification of gaps in basic data and development of long-term plans for data improvement.

Efforts should be made to collate as much as possible of the available evidence in the country, in order to identify as accurately as possible improvements needed to the strategy.

Analysis of reports should identify where improvements are needed, for example to understand life-course issues and evaluate the effectiveness of interventions.

Minimum standards should be developed to guide development across sectors of more sophisticated evidence collections and evaluations.

There should be annual reporting, measurement and monitoring of health inequalities – nationally and by local area.

Legislation is needed to support accountability and review mechanisms, such as health inequalities legislation.

Policies and legislation should be framed in a way that provides effective mechanisms for adequate participation, engagement and consultation of those most at risk of vulnerability and exclusion.

### 5.3.6 Summary of key actions required

#### 1) Take action at every stage of life

Advantage and disadvantage accumulate across the life course – beginning before birth and continuing into old age. This requires:

- at the start of life, addressing the transfer of disadvantage in social determinants and ill health between generations
- in the early years, supporting families and good parenting
- reducing educational inequalities by developing the skills and capacities of all young people
- improving opportunities for good quality work for all, reducing inequalities in unemployment and adverse work conditions
- supporting older people's social participation, health and wellbeing

#### 2) Develop good examples of action in Taiwan

Promising examples must be scaled up and intensified, so that issues of inequity are addressed across the whole of society but with a response that is proportionate to the inequality experienced by each group or sector. For example:

- addressing key gaps in gender equity – such as work/family balance, education and access to amenities – can contribute to greater health and socioeconomic equity
- reducing inequalities in the quality of environments, housing, transport and green spaces will improve health equity
- enhancing healthy aging initiatives will address the impending 'demographic time-bomb'

#### 3) Ensure effective social protection systems that reduce health inequalities

Social protection systems must be sufficient to enable recipients to live a healthy life and provide a safety net against adversity (for example ill health, disability, redundancy from employment).

#### 4) Tackle the drivers of exclusion and vulnerability

Several groups in Taiwan are particularly vulnerable to processes that lead to disadvantage and exclusion, impacting on their right to health. These include:

- foreign-born wives
- vulnerable migrants
- disadvantaged indigenous groups
- some fishing and farming communities

#### Governance system requirements

- All sectors of society and government must be involved in efforts to reduce health inequalities in Taiwan.
- Health systems' focus on prevention must be enhanced with an emphasis on social determinants.
- An effective monitoring system must be implemented which focuses on social determinants and the social distribution of health outcomes.
- The line of responsibility for reporting and accountability for action on health inequalities at local and national level must ultimately lead, through the Executive Yuan, to the Premier.

#### Strategic approach required

- Ambition, opportunities and potential barriers
- Leadership, champions and advocacy
- Levers and incentives
- Developing indicators, targets and review plans
- Accountability and evaluation

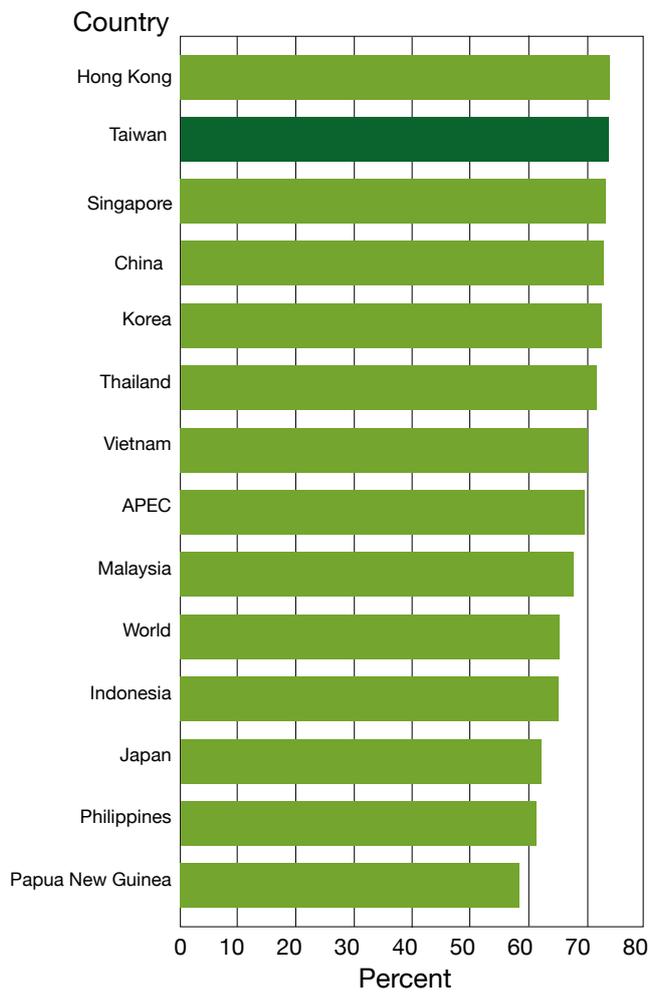


# Annex

## Health and social determinants in Asia

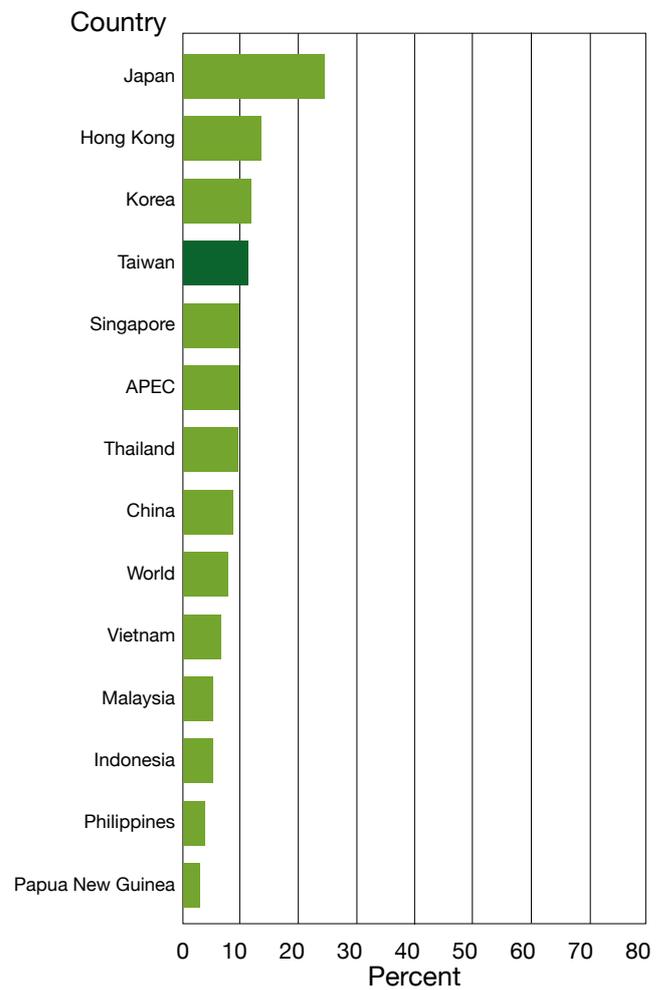
### A.1 Demographics

**Figure A.1** Percentage of population aged 15 to 64, selected Asia-Pacific Economic Cooperation member economies, 2012



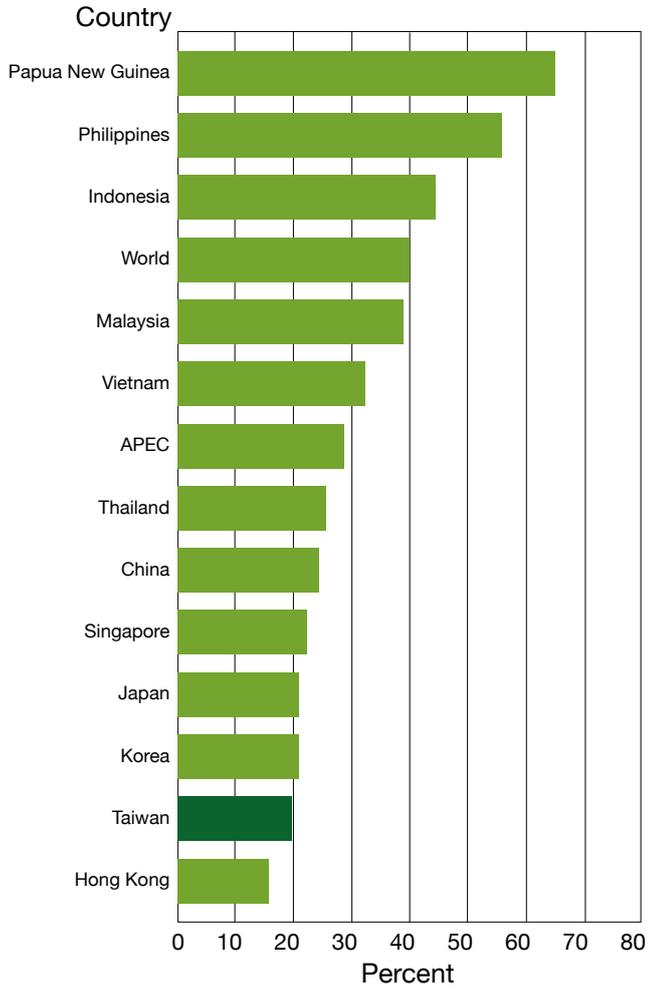
Source: Stats Asia-Pacific Economic Cooperation (1).

**Figure A.2** Percentage of population aged 65 and over, selected Asia-Pacific Economic Cooperation member economies, 2012



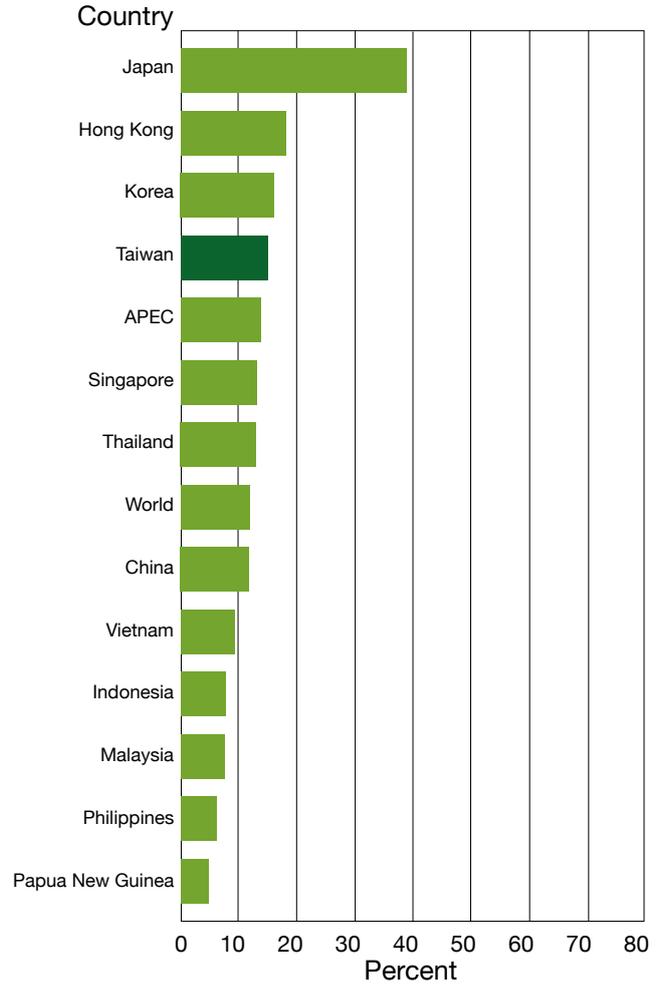
Source: Stats Asia-Pacific Economic Cooperation (1).

**Figure A.3** Child dependency ratio: population aged under 15 as a percentage of population aged 15 to 64 selected Asia-Pacific Economic Cooperation member economies, 2012



Source: Stats Asia-Pacific Economic Cooperation (1).

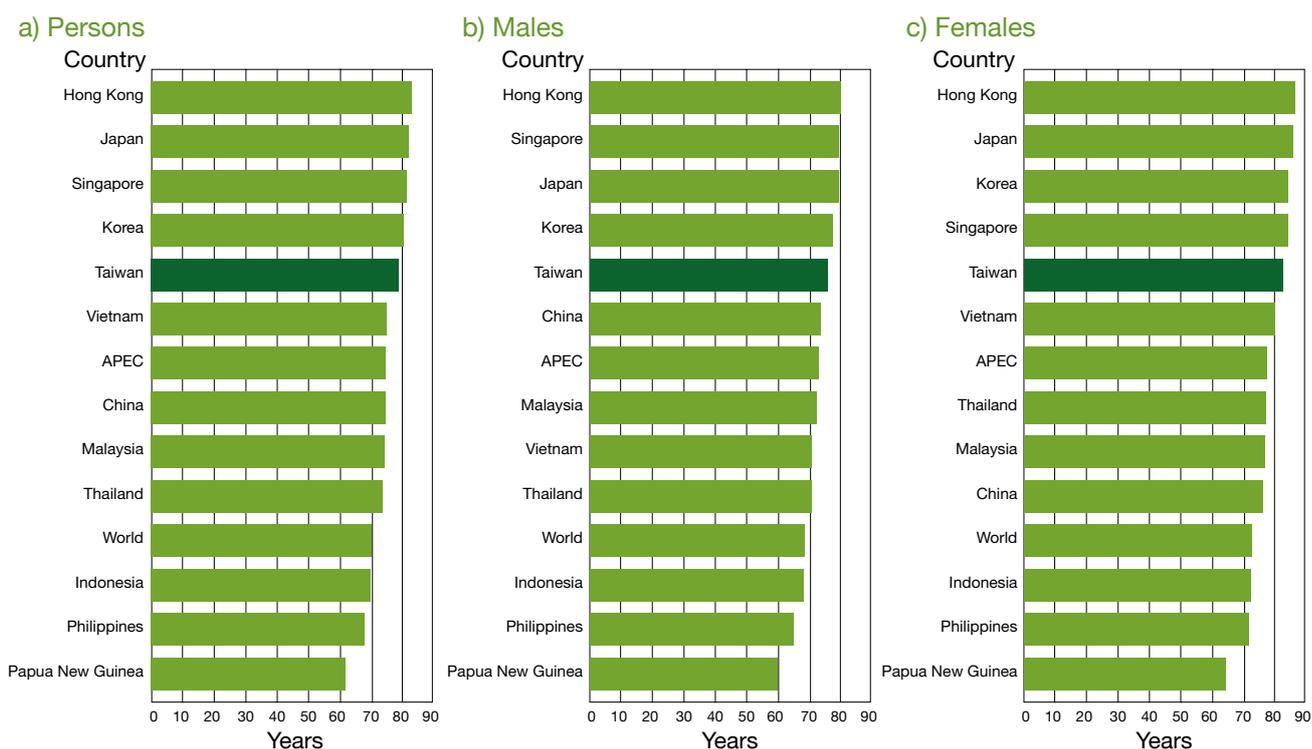
**Figure A.4** Elderly dependency ratio: population aged 65 and over as a percentage of population aged 15 to 64, selected Asia-Pacific Economic Cooperation member economies, 2012



Source: Stats Asia-Pacific Economic Cooperation (1).

## A.2 Health outcomes

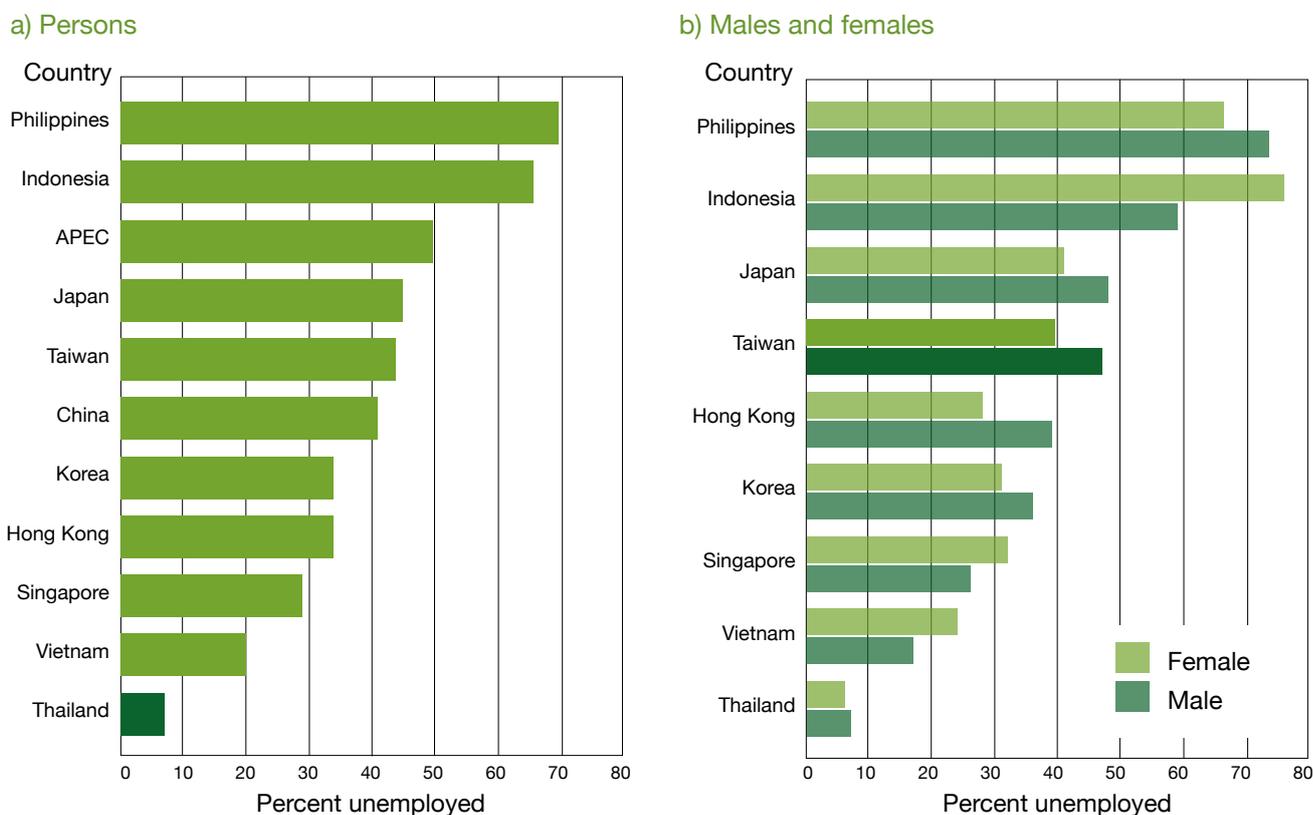
**Figure A.5** Life expectancy at birth, selected Asia-Pacific Economic Cooperation member economies, 2012



Source: Stats Asia-Pacific Economic Cooperation (1).

## A.3 Labor market

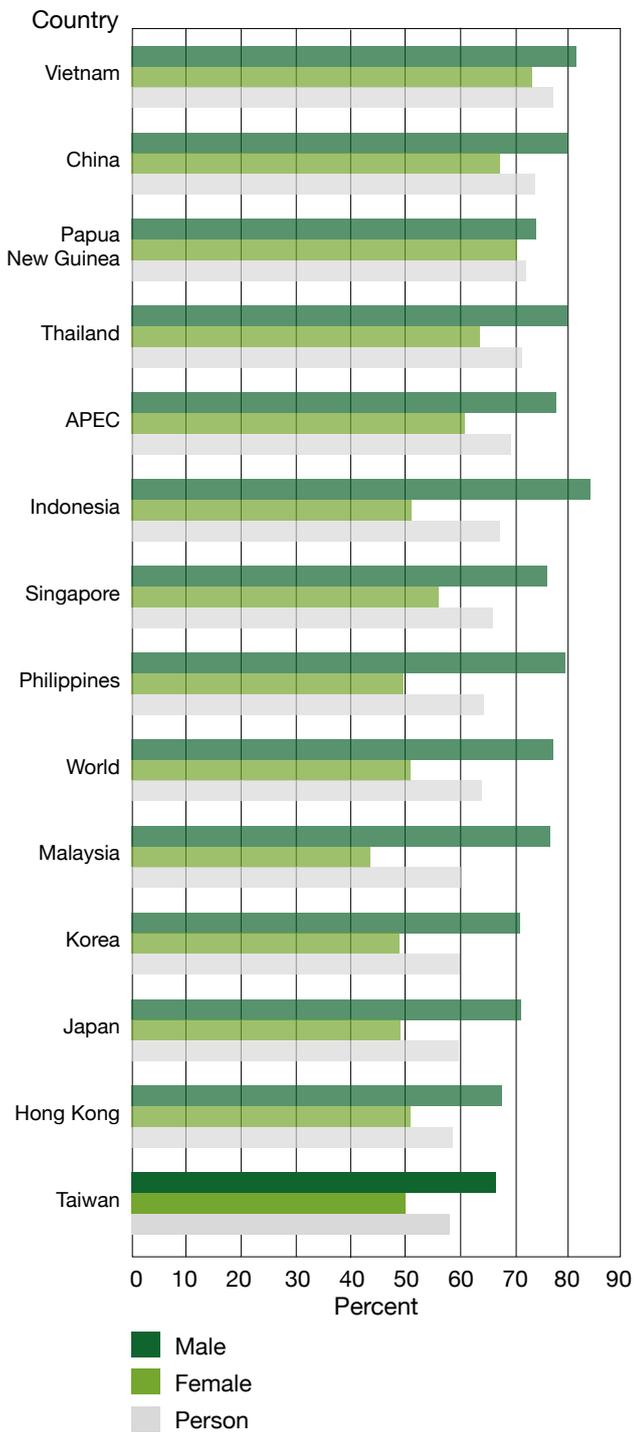
**Figure A.6** Unemployment rates, selected Asia-Pacific Economic Cooperation member economies, 2012



Source: Stats Asia-Pacific Economic Cooperation (1).

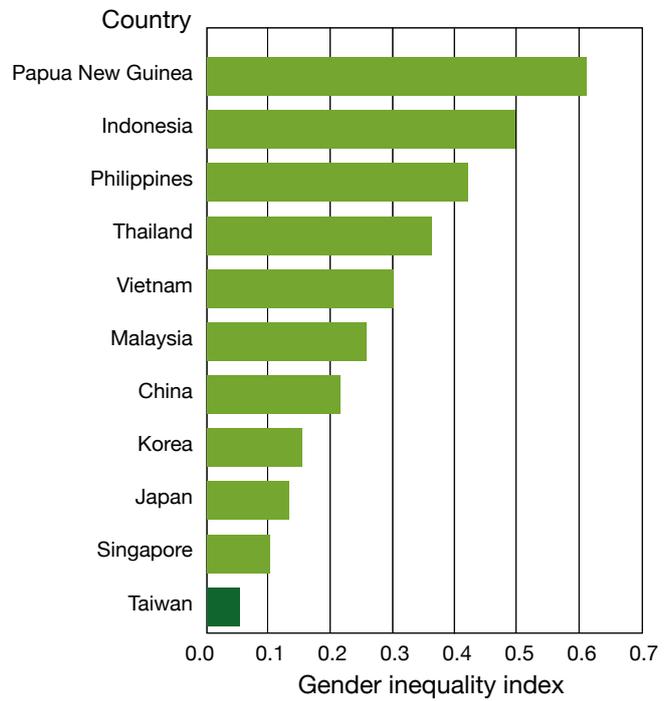
## A.4 Gender equity

**Figure A.7** Labor force participation rates by sex, selected Asia-Pacific Economic Cooperation member economies, 2012



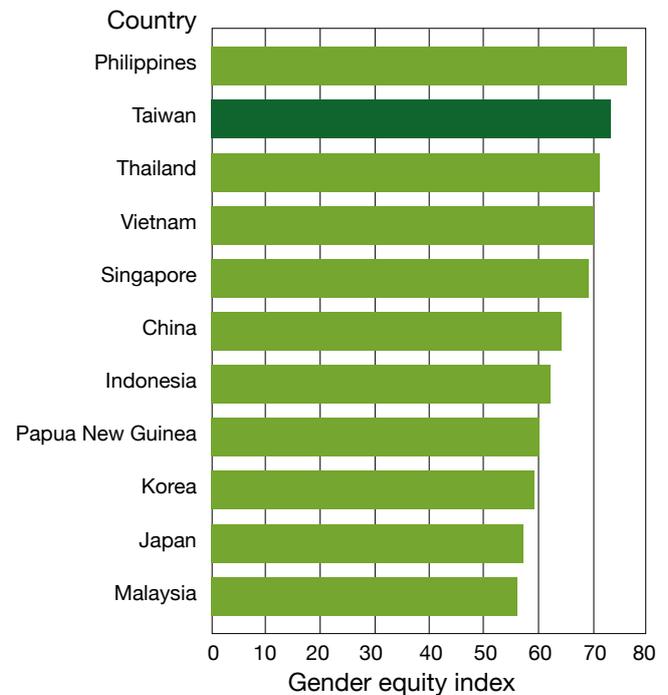
Source: Stats Asia-Pacific Economic Cooperation (1).

**Figure A.8** Gender inequality index, selected Asia-Pacific Economic Cooperation member economies, 2012



Source: Stats Asia-Pacific Economic Cooperation (1).

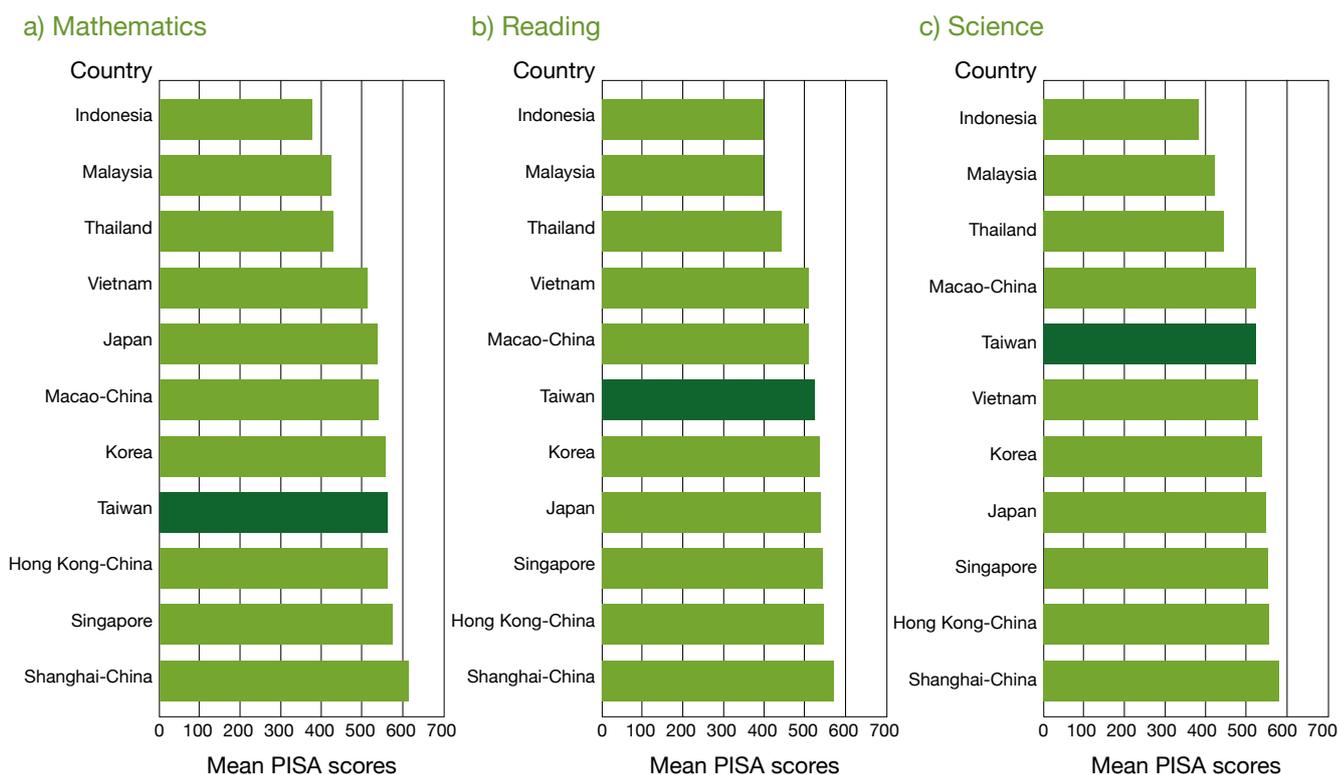
**Figure A.9** Gender equity index, selected Asia-Pacific Economic Cooperation member economies, 2012



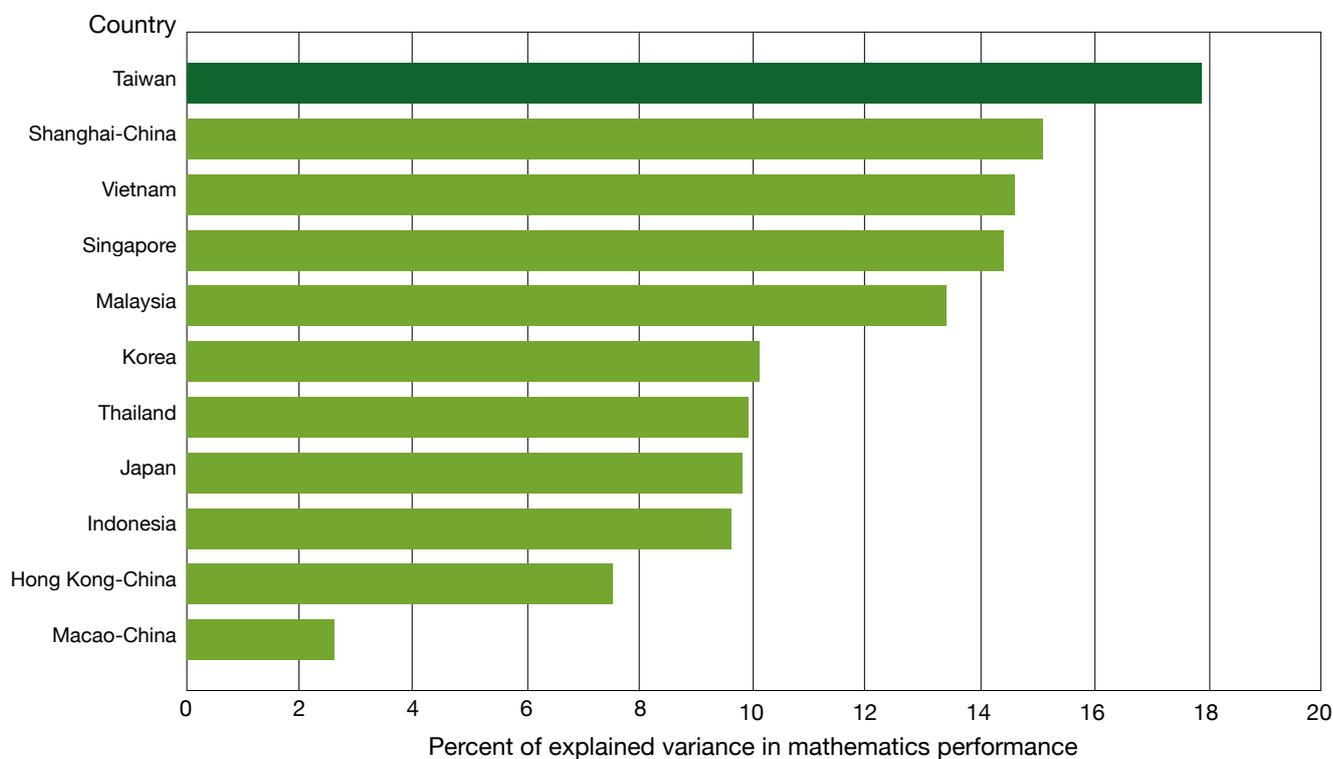
Source: Stats Asia-Pacific Economic Cooperation (1).

## A.5 Education performance

**Figure A.10** Education performance: mean PISA scores, selected countries in East Asia Pacific region, 2012

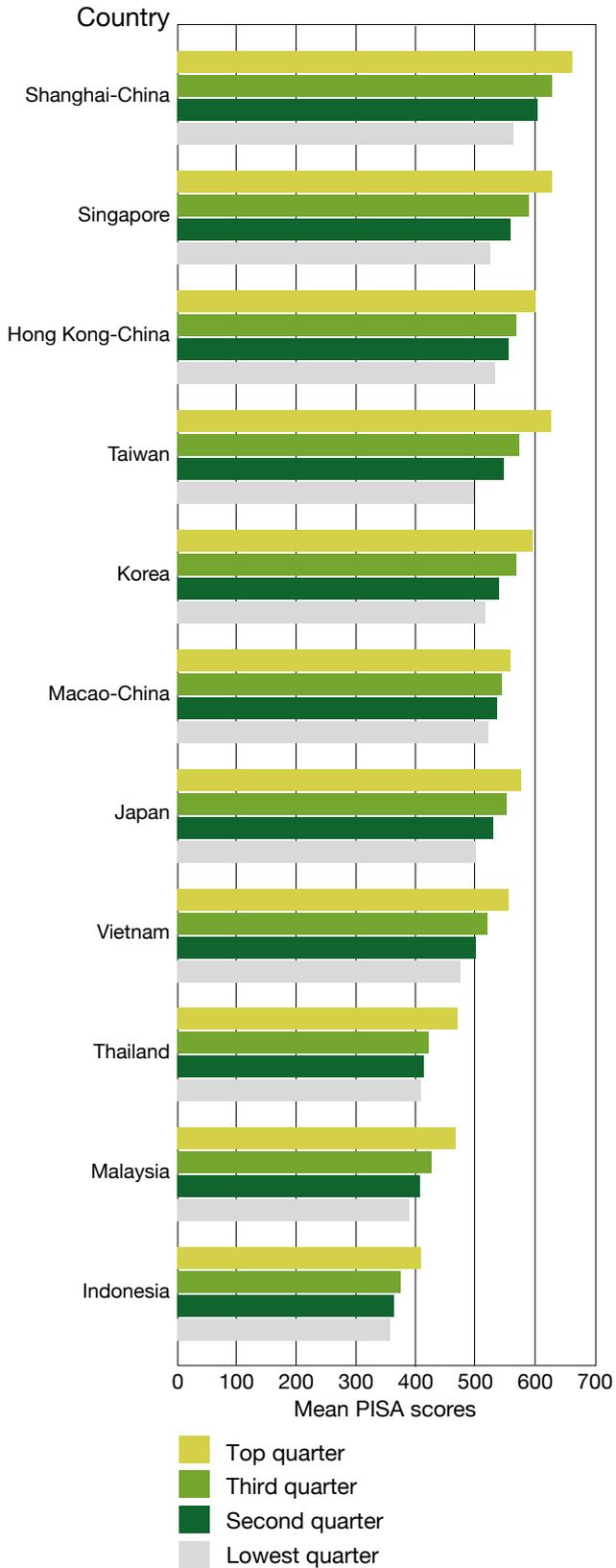


**Figure A.11** Relationship between performance in mathematics and the PISA index of economic, social and cultural status (ESCS), selected countries in East Asia Pacific region, 2012



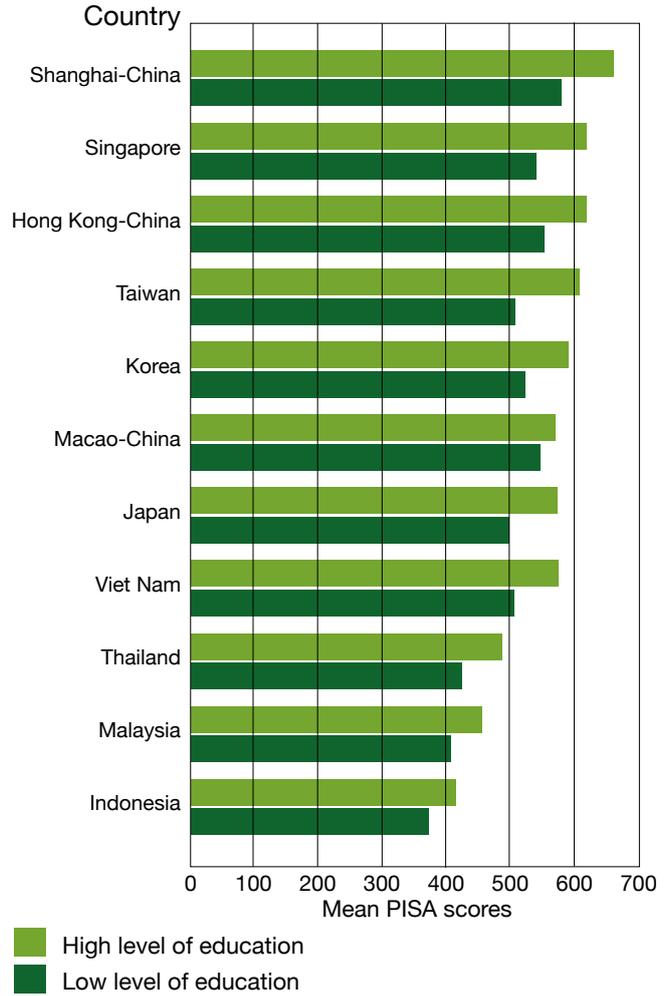
Source: Programme for International Student Assessment (PISA) (16).

**Figure A.12** Performance in mathematics, by national quarter of PISA index of economic, social and cultural status (ESCS), selected countries in East Asia Pacific region, 2012



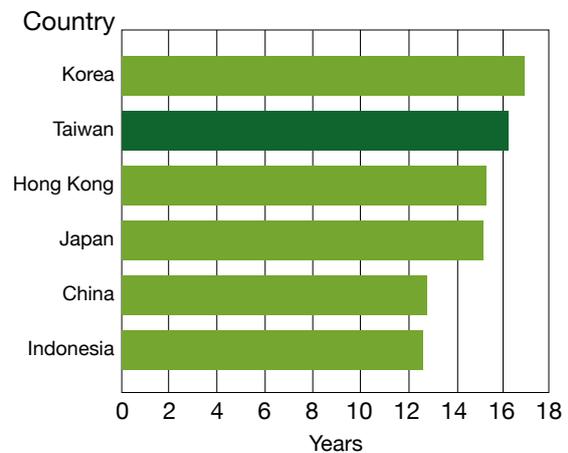
Source: Programme for International Student Assessment (PISA) (16).

**Figure A.13** Performance in mathematics by level of parent's education, PISA, selected countries in East Asia Pacific region, 2012



Source: Programme for International Student Assessment (PISA) (16).

**Figure A.14** Expected years of school attendance, 2011



Source: Stats Asia-Pacific Economic Cooperation (1).

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