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Investment in Population Health in Five OECD Countries

Jan Bennett

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OECD HEALTH WORKING PAPERS

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SUMMARY

3. There is growing interest in the potential for preventive interventions to improve average health status in OECD countries and to tackle remaining health inequalities. The interest is in a wide range of interventions spanning not only health services but also measures to influence behaviour and lifestyles and action to improve the contribution of the social, economic and physical environments to health. These interventions are referred to in this paper as examples of a government's 'population health investment' effort.

4. The paper notes the evidence on trends in health and health inequalities in OECD countries and reviews the general case for population health investments and the evidence on the effectiveness of selected interventions.

5. It focuses on population health investment strategies and institutions in five member countries: Australia, Canada, Korea, Sweden and Switzerland. In particular, it reviews the methods of financing population health investments and levels of spending on preventive activities. It illustrates the range of measures adopted in these five countries to tackle two particular health problems: alcohol-related harm and falls among the elderly.

6. Some conclusions are drawn. There are many population health investment activities, which have been shown to be cost-effective, involving interventions such as health education, community participation, government regulation and taxation. However, there are also barriers to population health investments, including the fact that evaluation of such investments is difficult and evidence of their cost-effectiveness is generally lacking. Also, it is often difficult to co-ordinate action across different government agencies when there are multiple risk factors. Finally, population health investments may be disadvantaged by the methods of financing adopted for public health activities - such as closed-ended historical budgeting - compared with the more activity-related and open-ended methods associated with curative programs in some OECD countries.

7. Finally, some suggestions are made about carrying forward aspects of the population health agenda in OECD's future program of work on health.

RESUME

8. Un intérêt croissant se manifeste pour les possibilités d'interventions préventives visant à améliorer l'état de santé moyen dans les pays de l'OCDE et à remédier aux inégalités de santé persistantes. Cet intérêt est porté à un large éventail d'interventions couvrant non seulement les services de santé mais aussi les mesures destinées à agir sur les comportements et les modes de vie et les actions visant à accroître la contribution des environnements social, économique et physique en matière de santé. L'éventail de ces interventions peut être désigné sous le terme "investissement dans la santé des populations".

9. Ce document présente les informations recueillies sur les tendances en matière de santé et d'inégalités de santé dans les pays de l'OCDE et examine la question générale des investissements dans la santé des populations ainsi que les preuves de l'efficacité de certaines interventions.

10. Il est centré sur les stratégies d'investissement dans la santé des populations et les établissements de cinq pays membres : l'Australie, le Canada, la Corée, la Suède et la Suisse. Notamment, il étudie les méthodes de financement des investissements dans la santé des populations et les niveaux de financement des actions préventives. Il présente l'éventail des mesures adoptées dans ces cinq pays pour lutter contre deux problèmes de santé particuliers : les préjudices liés à l'alcool et les chutes chez les personnes âgées.

11. Plusieurs conclusions sont tirées. Il existe de nombreuses activités d'investissement dans la santé des populations, dont la rentabilité a été démontrée, comprenant des mesures dans des domaines tels que l'éducation pour la santé, la participation de la collectivité, la réglementation publique et la fiscalité. Toutefois, il y existe aussi des obstacles aux investissements dans la santé des populations, notamment le fait que ces investissements sont difficiles à évaluer et qu'en général la preuve de leur rentabilité fait défaut. De surcroît, il est souvent difficile de coordonner l'action des différents organismes publics quand les facteurs de risque sont multiples. Enfin, les investissements dans la santé des populations peuvent être désavantagés par les méthodes de financement adoptées pour les activités de santé publique - comme la budgétisation au coût historique - par rapport aux méthodes plus ouvertes employées pour les programmes à caractère curatif dans certains pays de l'OCDE.

12. Enfin, il est proposé d'inclure certaines questions à approfondir en matière de santé des populations dans le futur programme de travail de l'OCDE sur la santé.

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PART A. INTRODUCTION TO THE PROJECT, CONTEXT AND DEBATES

1. INTRODUCTION

1.1 A search for broader action

13. People living in OECD countries are amongst the healthiest in the world. While average life expectancy in 1998 across the 191 Member States of the WHO was 65 years for men and 69 years for women, populations of the 30 member countries of the OECD will, on average, enjoy around ten extra years of life. Their health improved dramatically during the 20th Century - life expectancy for females increased from around 55 years to almost 80 years during this period. Whether measured by declining death rates, increasing life expectancy, or low rates of life-threatening infectious diseases, health in the OECD countries is continuing to improve.

14. Averages, however, do not tell the whole story. Life expectancy varies widely across different regions of the world, and for some parts of Africa, has declined in recent years. Across the member countries of the OECD there remains a gap of more than ten years between the average life expectancies of males and females in the most advantaged and disadvantaged countries, respectively.

15. Despite ready access to health care services having been a feature of OECD health systems for many years, good health is not enjoyed equally. Wide variation in patterns of health and disease, and in the level of preventable mortality before the age of 65 years, persist within countries. Differences in morbidity and mortality between persons with different socioeconomic status have been recorded in all OECD countries with available data, though the magnitude of disadvantage may vary.

16. Most theoretical models of the determinants of health distinguish between four main groups of external factors that have an impact on health: health care, health related behaviours and lifestyle, the physical environment and the social environment.

17. There is growing interest across OECD countries in action to bolster the equity and efficiency of *health care systems*. That, in turn, leads to an interest in finding the right balance between treatment and care interventions provided through health care services, *health promotion and early preventive interventions*, and actions designed to affect these wider determinants of health. Investments in population-based health advancement programs and public health measures are promoted as a way of countering persistent health inequities, as well as tackling the rising impact of non-communicable diseases and injuries that persist despite the overall improvement in health status.

18. This paper provides a general overview of these issues. It goes on to explore case studies of the population health approach in response to the specific health issues of *harmful alcohol consumption* and *falls in the elderly* within five OECD countries. These case studies formed the core of the Population Health Investment Project referred to throughout this paper.

1.2 Project overview

Objective

19. The overall intent of the Population Health Investment Project was to assess the extent to which countries are implementing a preventive approach to health system funding, policy development and implementation and, if so, to what extent they are acting on evidence of cost-effectiveness. Specific case studies were examined to gather evidence for the success or otherwise of *population-based* health advancement programs and to identify the critical factors which contributed to investment in these approaches.

Project outline

20. The project was commissioned to evaluate, in a sample of OECD countries:

- Evidence about trends in selected major risk factors or persistent public health problems, including evidence of any trends in growing health inequalities.
- For each of these selected health issues the project sought to:
  - Identify the range of interventions most commonly chosen to address the problem;
  - Document the evidence base used to support such decisions including any systems in place to assess programme effectiveness and cost-effectiveness; and
  - Document resource allocation strategies currently in use and describe the systems in place to identify the sources and amount of funding applied.
- The project describes in general terms the financial and structural systems within which broader population health policy and programs operate.

1.3 Methodology

Selection of health issues

21. Two health issues were used as case studies to highlight common themes and approaches to the development and implementation of broader population health policy and interventions. The issues examined were harmful consumption of alcohol and falls in the elderly. These were chosen because:

- They each contribute significantly to the burden of disease in developed countries;
- They are at least theoretically preventable to some extent and amenable to a population health program approach; and
- They provide to varying extents the opportunity to examine the effectiveness of a broad range of possible interventions from taxation policy, regulation, screening, and information to health education and promotion.

Country participation

22. Five countries were selected to participate in the project on the basis of their interest in the use of population health approaches; availability of key informants during the period of the study; the ability to access data and program information, and their agreement to participate. Countries which participated in the project were Australia, Canada, Korea, Sweden and Switzerland.

Scope of the project

23. The focus of the project was on the *preventive activities that health portfolios* (or government agencies) finance or deliver in typical OECD countries. However, the activities of other, non-health, portfolios were also touched upon where these are clearly linked to a health advancement policy objective. This in part reflects the complex nature of population based programs, and the fact that investment, policy development and program delivery may often involve federal, state and local health authorities, related government portfolios, non-government organisations, private industry and individual community members.

24. This was primarily a policy oriented project - what policies are in place for particular issues? what works and what doesn't (or don't we know)? how can we promote wider adoption of good policy approaches? and what are the critical success factors for good policy in this area? Issues such as the level of investment in population health and measures of health outcome were discussed in general terms; however a rigorous review of the associated methodological and technical issues was not undertaken.

Data and program information

25. A review of the literature on health promotion and its effectiveness, socioeconomic determinants of health and health inequalities, and the appropriate role of government in health was undertaken to assist with identifying the project themes. Current literature relevant to the two case studies - epidemiology, policy approaches, prevention strategies and their effectiveness - was also reviewed.

26. Country specific information was gathered initially through a survey of participating countries. Information was sought on key themes such as recent reforms or policy changes relevant to the financing and delivery of population health, formal processes of performance monitoring and review, resource allocation strategies currently in use, and evidence about trends in the selected public health case study issues, including evidence of any trends in growing health inequalities.

27. Information on population health programs and interventions was also analysed. The focus was on material such as published national programs or strategies, formal evaluations and other policy documents. The starting point for examination was to identify policy at the national level, but to supplement this with local or regional information where this provided a fuller picture of the scope of the sector.

1.4 Terminology

28. As well as providing treatment and care services for individual members of the public at times of ill health, and 'secondary' prevention in the context of primary care, all OECD health systems have in place policies and programs the main intent of which is to promote well being and good health, and to prevent illness and injury in their broader communities. These approaches are variously known as public health, health promotion and population health. There is overlap in the common usage of these terms and they are often used interchangeably, though distinctions between them are strongly defended. All three approaches acknowledge that health is determined by a broad range of factors that go beyond the provision

of health care services. They each advocate the benefit of intersectoral action across a range of sectors to promote health, and they each acknowledge the importance of intervening to reduce health inequalities. Differences in emphasis, however, are evident.

29. In this paper public health, population health and health promotion have been used in the following way:

- **Public health** represents the most comprehensive bundle of policies and interventions. It describes the systematic and organised responses of society to protecting the health of its population. Public health measures are therefore diverse and include *infrastructure* support such as disease surveillance systems, workforce development of public health officers, legislation and regulation, as well as taxation and pricing policies; *intelligence* and research activities to monitor and identify emerging issues and potential health threats, as well as monitoring the patterns and trends in health status, and *interventions* aimed at protection and promotion of the health of the community, such as through organised population wide prevention or early detection services.

- **Population health** is an approach to health that aims to improve the health of the entire population and to reduce health inequities among population groups. In order to reach these objectives, it looks at and acts upon the broad range of factors and conditions that determine health. The policies and interventions that are implemented using this approach may well be within the scope of public health action broadly described above. However, given its explicit acknowledgement that socio-economic conditions and the social and physical environment are key in determining people's health and wellbeing, a population health approach is likely to emphasise that action across many sectors such as education and social support are necessary if health inequalities are to be reduced.

- **Health Promotion** has been used here to describe the broad range of interventions and programs which are designed to promote health and well-being. While these interventions may often focus on behaviour and lifestyle and individual change, the approach goes much further than this. A comprehensive health promotion approach includes advocacy for change, community development and support, and acknowledgement of the benefits of working in settings such as schools and workplaces and in collaboration across sectors. Health promotion is part of the more comprehensive measures of health protection, which make up a public health approach. While health promotion acknowledges the social, economic and political context in which people make lifestyle choices, it does not go as far as a population health approach in promoting action in these other sectors.

2. Current issues of debate in population health

30. As population health is concerned with important areas of individual and social behaviour, and with matters such as fairness of financing, equitable access to preventive and treatment services, and with a desire to achieve equitable health outcomes, population health policy debates necessarily involve competing ideologies and values. The same themes often arise whether the issue under discussion relates to a specific disease or risk factor behaviour – for example, how can we prevent elderly people sustaining serious falls and resultant fractures? what can be done to limit the extent of binge drinking amongst adolescents? – or to broader questions concerning the distribution of poorer health outcomes across particular social groups.

31. Lively debate is focussed around questions such as whether we know what policies and interventions "work", how ought we to address the underlying social factors including poverty which play a key role in determining peoples' health status, and what, if anything, governments can or should do about

these sorts of population health problems. These three themes are introduced in the following sections - the attempt here is not to summarise the extensive literature that is emerging in these areas, but rather to outline briefly some key concepts and viewpoints, in order to illuminate the discussion of the two case study areas found later in Part B of this paper.

2.1 Evidence of effectiveness of population health

32. Lack of evidence of effectiveness is often the grounds for deciding against extra public expenditure on population health activity. When an evaluation of population health program intervention is lacking or insufficient, the tendency has been to call the intervention dubious. The issue is further complicated by lack of consensus about the nature of population health activity, lack of consensus over what evidence to use to inform policy decisions and divergent views on appropriate methods for reviewing effectiveness (Speller, 1997).

33. Methodologies for assessing effectiveness in this area are poorly developed and are the subject of much debate in the academic literature. Niessen (2000) has identified many technical difficulties contributing to designing studies of effectiveness in population health: measurement of ill health and measures of quality of life; estimation of 'net' effect of a particular contributing factor, and questions related to time lags between exposure and outcome. Difficulties are encountered because:

- Randomised controlled trials are not easily applied to population based community programs. It is often difficult to arrange for experimental and control groups.
- As a consequence, there are often difficulties in isolating the effect of confusing factors which influence the health of the population at the time of the intervention.
- The assessment of effectiveness is often hampered further by long lag times between intervention and effect.
- The need for intersectoral action in population health further complicates the issue and raises the questions of how to design, implement and sensibly evaluate programs that cover more than one portfolio.
- The methodology for measuring resource utilisation against health outcomes is also poorly developed.

34. Population health interventions have most often been evaluated in terms of the outcome indicators for particular social groups and not in terms of reductions in inequality between social groups. Some commentators argue that not enough emphasis has been given to equity issues in the assessment of population health effectiveness, and that achieving efficiency, for its own sake, may disadvantage further 'hard-to-reach' social groups.

35. Introducing questions of cost-effectiveness into the analysis may not sit easily with the equity objectives of many population health programs. For example, the effect of an intervention may be the same for two people (or populations), yet it may cost much more to treat one of them, perhaps because of the difficulty of delivering services in remote, under-populated areas. Marginal costs may well rise as access is expanded; it is necessary for each health care system to balance its equity and efficiency objectives in these circumstances.

36. Despite the methodological issues outlined above, there are many population health interventions for which solid evidence of both effectiveness and cost-effectiveness does exist. In their recent assessment of clinical preventive services Coffield *et al.* (2001) identified eight screening services (including screening

adults for problem drinking) and three vaccination programs as highly cost effective. Also rated in the most effective group were three counselling interventions – counselling adolescents on drinking and drug use, providing brief tobacco cessation counselling to adults, and providing adolescents with anti-smoking messages. Some examples of population health interventions widely acknowledged as effective are given in Box 1**.**

37. Of the 14 most highly rated preventive interventions Coffield (2001) identified a group of eight interventions which are delivered to less than 50% of the target population in the United States and which therefore represent important missed opportunities for preventing disease and promoting health.

38. Some commentators argue that health protection through fiscal or legislative change should have a higher priority than health promotion interventions aimed at the general population. Without doubt many of the successful programs identified in Box 1 have adopted these approaches.

39. Nutbeam (1998) argues that comprehensive and sustained approaches to population health appear to work best. They need to be underpinned by investment in the infrastructure for health promotion – research, education, job training, surveillance, and information development. A range of actions is required, for example, education, community development, and legislation at the population level, complemented by targeted approaches for high-risk groups.

40. In situations of insufficient evidence of population health program effectiveness, policy makers have to resort to other approaches to justify the use of resources for population health including: expert opinion, trial programs with evaluations, or risk based assessments (Altman, 1995).

41. Further development of evaluation models for population health can be expected to contribute to the accumulation of a more comprehensive evidence base in support of population health interventions. However, it is naive to assume that the existence of a stronger evidence base will automatically lead to "evidence-based policy" in support of a stronger population health system.

42. In addition to the presence of sound evidence in support of a given approach, health policy makers must take into account other factors such as the existence of political will to address an issue, the weight of public opinion, the preferences of powerful interest groups, value judgements and ideological stances (Palmer, 2000).

Box 1: A sample of effective population health interventions

The Centres for Disease Control and Prevention in the United States highlights the following practical interventions that exist for controlling and preventing many chronic diseases:

Proven clinical smoking cessation interventions would cost USD 2 321 for each year of life saved.

Each USD 1 spent on diabetes outpatient education saves USD 2-3 in hospitalisation costs.

The cost of preventing one cavity through fluoridation is USD 3, far below the average USD 55 cost of a dental restoration.

Mammography screening, when performed every 2 years for women aged 50-69 years, costs between USD 8 280-9 890 per year of life saved. This cost compares favourably with other widely used clinical preventive services.

Cervical cancer screening among low-income elderly women is estimated to save 3.7 years of life and USD 5 907 for every 100 Pap tests performed.

For every USD 1 spent on preconception care programs for women with pre-existing diabetes, USD 1.86 can be saved by preventing birth defects.

Participants in the arthritis self-help course experienced an 18% reduction in pain at a per-person saving of USD 267 in health care system costs over a four-year period.

The World Bank, in its 1993 World Development Report raises the idea of a minimum package of essential interventions which are both effective and cost effective to provide. Amongst the package are a variety of public health interventions such as immunisations, micronutrient supplementation, de-worming, and health education and promotion; as well as the control of tuberculosis, sexually-transmitted diseases and a cluster of childhood diseases, prenatal and delivery care, family planning and treatment for pain, other infections and minor traumas.

Teng *et al.* (1995) have assessed 500 life-saving interventions and their cost-effectiveness. Many population health interventions were found to be highly cost-effective (*e.g.* seat belts laws and use, reduced lead in petrol, pre-natal care, breast and cervical cancer screening, immunisation).

A study by the US Public Health Service in 1994 estimated that population–based strategies in six areas – heart disease, stroke, fatal and non-fatal occupational injuries, motor vehicle related injuries, low birth weight and gunshot wounds – would reduce medical spending by USD 69 billion by 2000, or 11% of medical spending on those conditions.

In Australia, Segal assessed the relative cost-effectiveness of six interventions to reduce the burden of diabetes (NIDDM) and found investment in workplace based programs for overweight men to be highly effective in terms of life years saved and net savings to the health system.

2.2 Tackling social and underlying determinants of health and health inequalities

43. While it is now generally agreed that a complex web of factors is operating which ultimately contributes to population patterns of health and disease, the difficulty lies in assessing the relative contribution of these different factors to health. The relative weight of any one set of factors and the strength of the relationship with health depends to a high degree on particular circumstances. Among the factors contributing to health status and to health inequalities are the following:

- Underlying social, cultural, and economic factors (*e.g.* income, race, educational attainment, employment, social support);
- Behavioural, lifestyle and environmental factors such as physical activity, tobacco use, diet, and access to clean air and water supplies;
- Factors which operate at the individual level including physiological factors (*e.g.* human biology, genetics,) and psycho-social factors (perceived control over life and the work environment, learned helplessness and fatalism); and
- Access to preventive and curative health care services.

44. The association between socio-economic status and health status is one of the strongest, most durable and most universal in epidemiological terms (WHO, 1998). Relatively poor households spend a higher proportion of their income on food than wealthier households and small variations in income can have a substantial effect on the diet and health of individuals.

45. While the link between poor health and poverty is greatest for developing countries, nevertheless in developed countries the association between poverty or lower socio-economic status and health remains. It has been argued by the WHO, though, that in developed countries the relative importance of material circumstances decreases in proportion to increases in the role played by psycho-social factors.

46. For developing countries, a relationship exists between increasing gross domestic product and improvements in health indicators. The relationship between poverty and health in developed countries is particularly complex, and is heightened by the absence of a clear understanding of what constitutes poverty. As economies grow, benchmarked levels of absolute poverty are often surpassed while the health effects of poverty remain.

47. Ross (2000) and others suggest that populations in areas where there is an unequal income distribution have a higher mortality than populations in more homogenous areas. Thus, mortality is more weakly correlated with mean or median income across a state than various measures of how that income is shared within a state.

48. Socio-economic differences in mortality have been widely observed within countries for which there is data available. Inequalities in mortality from disease specific causes of death (*e.g.* cardiovascular diseases) vary greatly between countries and within countries. Persons variously classified as low socio-economic status also experience more ill-health, (For example, see Kaplan 1997, Feinstein 1993, Turrell 1995, Fox 1989, Mackenbach 1994, Mathers, 1996, Bolen 2000.)

49. People from lower socio-economic groups are, however, less likely to act to prevent disease or detect it at an asymptomatic stage. Disparities in risks for chronic diseases and injury are therefore evident across social groupings, or among racial groups within countries (Bolen, 2000). Moreover, socioeconomic differences in health are evident for both males and females at every stage of the life course (Mathers, 1994, 1995, 1996)

50. In a recent comparative study across eleven European countries Kant (1998) highlighted the role played by local circumstances in strongly influencing the magnitude, pattern, and causes of socio-economic inequalities in health.

51. Ross (2000) suggests that one possible explanation for the variation in health status across socioeconomic groups is the way that social services such as health and education are distributed and resourced. In countries where social services are absent or income dependent (*e.g.* they are essentially private sector services, and they rely on fees and co-payments), health status is likely to reflect lack of access to health care by lower socio-economic groups and/or lack of ability to pay. By contrast, in countries where health care is publicly funded and available, the association between income and health is weaker.

52. Psycho-social environment interpretations of health inequality alternatively pose psychological and not structural factors as paramount in understanding the different health effects of income inequality. It is argued that inequality affects health through the perceptions of place in the social hierarchy based on relative position according to income (Lynch, 2000).

53. Other views concerning inequalities in mortality tend to focus on changes in the social distribution of risk factors by socio-economic class. For example, ischaemic heart disease over the past 40 years has changed from being a high income health problem to a lower income health problem. This change is mirrored in changes to other risk factors such as smoking rates and levels of obesity.

54. There are mixed views about whether health systems in general and population programmes in particular, can help narrow the health inequalities gap. Improvements in access to health services and the implementation of population health programmes targeting health inequalities, in the absence of broader social action, may not be effective in isolation in reducing inequality.

55. There is a key difference between equality of health and equity in access to health care. How far addressing issues of the adequacy and fairness of access to health care will address issues of broader health inequality is unknown. It can be argued that improvements in equity of access to health care - while important - is only one of the actions required within a broader intersectoral approach to address inequalities in health status.

56. A report by the King's Fund (1995) identifies four areas for intervention in designing a successful approach to addressing health inequality: the physical environment, social and economic factors, barriers to adopting healthier lifestyles (particularly smoking and high-risk alcohol consumption), and access to effective and appropriate health and social services. A package of interventions targeting multiple factors is more likely to be effective.

57. There is evidence to suggest that certain sorts of population health programmes are more effective in reducing inequality for certain groups (Murray *et al.*,1998). For example, population health programmes have been demonstrably effective in reducing child mortality through improved water supply, sanitation, immunisation, and health education. Adult mortality is more dependent on cultural and social factors such as employment, locus of control, psycho-social stress and non-communicable diseases and injury.

58. Support for the concept of "healthy public policy" has also received prominence as a useful tool for promoting intersectoral action and addressing the underlying socio-economic determinants of health. Healthy public policy is characterised by explicit concern for health and equity in all areas of policy including finance, justice, housing, education, recreation, the physical environment, employment, transportation and social services. It is based on recognition that complex factors affect health and illness, and that complex relationships exist between different sectors of society.

59. Healthy public policy is an intrinsically political activity. Baum (1998) has suggested that incorporation of social objectives into health is a useful mechanism to increase support for purposes that, for whatever reason, are less easily supported on traditional grounds.

60. The broad aims of healthy public policy have been characterised as health imperialism, through its attempt to influence other sectors that do not see health as a legitimate player in their policy environment. Others go as far as describing the healthy public policy movement as a broadly based political reform agenda, based on the notion of the redistribution of power through wider participation in decision making. These political interests are advanced through piggybacking them onto the powerful and more broadly based support for health (Evans *et al.* 1994) The health sector needs to be conscious of these criticisms and renew its efforts to work in *a collaborative way* so that it can influence sectors outside of health whose policies and actions can significantly affect health status.

61. Whilst the research is indicating increasingly the need for broad intersectoral action to address health inequalities, unfortunately, scientific evidence on effectiveness of multi-faceted programmes is scarce. However, as briefly discussed in section 2.1, the methodological issues are complex, and are currently being addressed with vigour in the literature.

2.3 Role of governments in health and population health

62. Economic theory provides several rationales for government intervention in health. The most common ones are the existence of externalities and public goods and various elements of imperfect information (often collectively referred to as "market failure"). The market may not work well or at all:

- *Where there are externalities*. A health service has a positive externality if its use generates benefits to society beyond the benefit to the private individual (*e.g.* prevention or treatment of infectious diseases). In the case of pure public goods (such as national defence) virtually all of the benefits are external. In the health sector, examples of (partly) public goods include prevention or treatment of infectious diseases, some forms of vector control (*e.g.* draining swamps), as well as research, epidemiological surveillance and monitoring food and drug safety (Gertler and Harmer, 1997).

- *Or where information is incomplete or imperfect*. Individuals may make decisions about their behaviour, which do not accurately account for the impact on themselves or others. There are asymmetries of information in preventive health care as in curative care. Cutler (1996) has argued that there are strong grounds for supporting the premise that governments should intervene when individuals do not accurately perceive the costs of their actions to themselves.

63. Programs to tackle such market failures are part of the small but extremely important collection of health related activities which must be financed by the state, or at least attract a heavy concentration of public expenditure, if they are to be provided at the socially optimum level of consumption. Musgrove (1996) has suggested that these interventions account for much of the impact of health spending on health improvement, and that they probably help to explain why public health expenditure is somewhat more effective than private expenditure in extending life expectancy (Or, 2000).

64. In addition to market failures, there are distributional, political and strategic issues which governments must consider in determining if, and how, they will intervene in health. For example, in many countries national health insurance is valued for its contribution to political stability and social solidarity. In the absence of market failures, there might still be a case (justified on ethical and political reasons) for government intervention on grounds of poverty reduction (Belli, 1997) or in an attempt to reduce the health differentials identified in section 2.2.

65. The World Bank (Musgrove, 1996) has argued that governments can employ five different instruments of health policy to affect the outcomes a private market would generate:

- *Create and disseminate information*: publicise risks of smoking, inform the public about basic public health, inform providers and suppliers of health care, conduct research, surveillance and dissemination of information on disease patterns;

- *Regulate private activity*: determine how a private activity may be undertaken by, for example, regulating the health labour force, insurance industry, or drugs, food and water supply;

- *Mandate certain actions by individuals or firms*: for example, obligates someone to contribute to health insurance fund; mandates that children must be immunised at school entry;

- *Finance health-related service*: through the provision of public funds; and

- *Provide or deliver service*: through public facilities or staff, or through the delivery of public health insurance schemes.

66. Governments perform a range of other activities which do not fit easily within this list: taxation policy can play a key role in promoting health, for example, through taxes on cigarettes and alcohol. Priority setting and policy development are fundamental activities and promoting and funding health research and training may well be better described in a category of its own rather than as part of an information role.

67. It is clear that the appropriate public role does not necessarily include providing health care; the state need not deliver services to make them available. However, commentators such as Deepak Lal have argued that there may be exceptions for a few crucial services or perhaps geographic areas, where competitive private provision is not feasible.

68. It is also clear that government intervention does not necessarily imply a need for public expenditure (Devarajan, and Harmer, 1997). Some commentators would further argue that the role of governments in financing health services in middle to higher income countries should be limited to the provision of those public health activities that are not provided in private markets; others stress the benefit of government subsidies on the utilisation of services by the poor.

69. The allocation of subsidies is one of the major policy instruments that governments have to reduce the impact of poverty on health status. Gertler and Harmer (1997) suggest that certain types of preventive services and health care services in rural areas should be more heavily subsidised because there are fewer private sector alternatives.

70. Evidence does not favour public over private finance irrespective of what is being financed, but does indicate the importance of enough public expenditure to ensure that the most valuable public health interventions are adequately provided. Priority in spending public funds should go to highly cost-effective public goods, such as those interventions identified in section 2.1, Box 1. This is relevant to developed as well as developing countries, if they have not achieved universal coverage of such services as immunisation or exploited all the possibilities for influencing behaviour through regulation or effective, evidence-based information and education programs. Coffield's recent analysis suggests (2001) that population coverage in a range of key highly effective, cost-effective preventive interventions remains below 50% in the US. A similar situation may exist in other OECD countries.

71. Governments also intervene in health care in order to promote goods and services which they deem to have intrinsic value in their societies. Programs that promote healthy eating habits or safe sex practices are examples of instances where governments urge the consumption of health care products that they regard as merit goods.

72. However, Pedro Belli (1997) has identified the controversial nature of using the merit goods argument for justifying government intervention particularly in areas of behaviour and lifestyle. For example, some civil libertarians might argue that no one group has the right to impose its will on another group. Moreover, there is the fear that special interest groups will attempt to use the government to further their own views about how individuals should act or what they should consume.

73. Depak Lal takes a very strong stance on this issue, suggesting that in matters basically to do with regulation of behaviours the government should limit its role to information provision only. To do more raises a number of very serious issues of civil liberties relating to the rights of the individual *vis a vis* the state.

74. Musgrove (1999) sees a wider government role in this area as legitimate. How far interference in people's ordinary behaviour is justified depends on whether the health benefits outweigh the curtailment or modification of individual choices, including non-health benefits. There is no straightforward answer to this question.

75. Much of the criticism of public action and intervention concerns government's role as a provider of services, particularly where this is seen to be in competition with private providers. Less attention is given to questions of whether governments are in fact doing too little to intervene in the health care market. Musgrove suggests that failure often results from Governments doing too little rather than too much. He highlights in particular the under-utilisation of regulation and information provision as two key areas for government intervention. Examples of the former could include regulation of food and product safety, or of quality standards for service providers; examples of the latter might include increased investment in successful education and health promotion interventions.

76. Health systems are complicated in-principle and extremely varied in practice. The variation in government intervention is in part the result of differences in economic, social, and political circumstances, especially the legacy of past commitments and institutional arrangements. In these circumstances, the appropriate role of the public sector in population health is not a settled question.

PART B. HEALTH IMPACT, POLICY RESPONSES AND FINANCING: A COMPARISON OF APPROACHES IN AUSTRALIA, CANADA, KOREA, SWEDEN AND SWITZERLAND TO MATTERS OF PUBLIC HEALTH CONCERN

77. Whatever the public health problem under examination, there will be questions concerning the evidence of effectiveness of possible population health interventions, the appropriate role government should play in addressing the issue, and what approach, if any, should be taken to address health inequality. These themes were introduced in Part A of this paper. How governments approach these issues clearly plays a part in determining their degree of support for population health policy and programs and their resourcing.

78. Against this background Government responses in participating countries to the specific health issues of harmful alcohol consumption and falls in the elderly are examined in Part B. The section begins with a brief overview of health status in participating countries, and provides an outline of their population health system structure, financing mechanisms, and level of resources.

3. HEALTH AND SOCIAL WELL-BEING – OVERVIEW FOR SELECTED COUNTRIES

3.1 Introduction

79. As has been noted above, people in OECD countries are amongst the healthiest in the world, and their health is continuing to improve. Australia, Canada, Sweden and Switzerland already enjoy levels of health amongst the highest in the developed world. For Korea, improvements in health outcomes have been substantial in the past 30 years so that life expectancy is rapidly approaching the mean for OECD countries.

3.2 Life expectancy

80. Life expectancy at birth is heavily influenced by deaths amongst infants and the very young. Improvements in life expectancy at birth reflect a decline in mortality rates at all ages, but particularly, the sharp decline in infant mortality rates over the past 30 years. These gains have been made possible by rising standards of living, provision of maternal and public health programs, and progress in medical care.

81. The life expectancy of women in Australia, Canada, Sweden and Switzerland is now more than 81 years (Table 1, Annex Part 1) Men in these countries also could expect to live around 2 years longer than the OECD average. While the rate of increase in life expectancy has declined since the 1970s in these countries, nevertheless life expectancy continued to increase throughout the nineties.

82. Women in Korea had a life expectancy of 78.1 in 1997, while males had a life expectancy of 70.6 years. Improvement in life expectancy has been dramatic in Korea since 1971, with females gaining an extra 12 years of life and males over 11 years.

83. The gap in life expectancy between women and men has declined somewhat over the past two decades, but remains at more than five years in all participating countries.

84. Since data became available for all cause mortality in Korea in 1991, rates have remained virtually static over the decade. The "excess mortality" experienced by Korean men though is much higher than that in the other countries, with rates being over 84% higher than those in women.

85. Further examination of the continuing gap in life expectancy between men and women, and its causes, including underlying determinants and risk factors is warranted. The possible contribution of harmful consumption of alcohol to this disparity is examined later in this paper.

86. There have also been steady gains in life expectancy for people at older ages, so that women aged 65 years in Australia, Canada, Sweden and Switzerland can expect to live around 20 further years, while older women in Korea can now expect to live a further 17 years. Life expectancy for older men in the more developed economies is now over 16 years, with men in Korea having a further 13 years to look forward to (Table 2, Annex Part 1).

3.3 Potential years of life lost (PYLL) before age 70 years

87. Mortality rates represent the spread of deaths across all ages and are therefore influenced by the fact that the majority of deaths occur at older ages. An indicator highlighting deaths at younger ages is also appropriate as one way of giving an indication of the spread of deaths among different age groups. The Potential Years of Life Lost, PYLL, is one measure of the impact of premature death, defined here as the number of years of life lost before age 70 years. Deaths amongst younger people may be more sensitive to the allocation of health care resources.

88. For both males and females, PYLL before age 70 years fell substantially between 1971 and 1995 in Australia and Canada (over 42%) and Sweden and Switzerland (declines of over 30%), with Korea trending steadily downward in the years for which data have been available (Table 3, Annex part 1).

89. The rate of decline in premature death over the past three decades was greater for females than males in Australia, Korea, and Switzerland, while Canada and Sweden experienced similar rate of decline for males and females. In all five countries men are almost twice as likely as women to die before age 70 (Table 4, Annex Part 1).This would indicate that there are still potentially gains to be made in preventing early deaths amongst males, particularly in the areas of injury prevention, cardiovascular disease, cancer and suicide, where the mortality rate for men exceeds that of women by a high margin. For example, in OECD countries in 1995, the rate of death for women under 70 years from ischaemic heart disease was 181 per 100 000 whereas for men the rate was 746 per 100 000. In the case of deaths from injuries and poisoning, the rate of premature death in females was 554 per 100 000 compared with a rate of 1 818 per 100 000 in men. Despite the fact that the rate of premature death from lung cancer amongst women has more than doubled during this period, the rate for men was still more than three times that of women in 1995.(Table 5, Annex part 1).

90. The consumption of alcohol at harmful levels contributes to a number of these causes of premature death, and in particular to the increased mortality rates seen in men.

4. PROVIDING AND FINANCING PREVENTION AND POPULATION HEALTH

4.1 Overview of population health systems in selected countries

91. The decision-making processes which countries have established to support population health policy development, program implementation and financing arrangements are likely to influence the levels of funding and priority given to population health measures within their health systems. A full description

of each countries' population health system and its financing mechanism is provided in Appendix 4. It is useful, however, to highlight here some of the common system features and challenges.

92. Country case studies of Australia, Canada, Korea, Sweden and Switzerland report a growing emphasis on population health measures within their national health strategies. Australia acknowledges the importance of understanding the underlying social determinants of health in its policy framework and the issues and difficulties involved in implementing cross-sectoral action. Canada and Sweden both refer to the underlying social determinants of health status in their respective approaches and have incorporated population health explicitly into their policies. Korea has specific health promotion legislation in place. Although Switzerland does not have a specific national policy for population health it looks to international policies (WHO and UNAIDS) to provide a basis for intersectoral action.

93. All countries reported that the capacity of the research and evaluation sector to demonstrate that population health yields significant health gains is a major methodological challenge. In the absence of appropriate evaluative criteria to support long-term planning and priority setting in population health, the strategic allocation of resources is difficult.

94. Country population health systems vary in the degree of centralisation of decision making relating to policy and financing issues. The population health systems of Australia and Canada are characterised by strong national leadership and priority setting. The emphasis is on *joint* policy and planning across different levels of government rather than *central* decision making. In both countries the federal government plays a strong role in the surveillance, prevention, management and control of communicable diseases and has a legislative role with respect to food safety and the regulation of therapeutic goods and chemicals.

95. In each of these countries there are a number of intergovernmental mechanisms in place to ensure that population health policy is both developed and implemented in a coordinated way across government. Joint public health activities conducted by the federal and State/Territories governments in Australia are coordinated through the National Public Health Partnership (NPHP), which was established in 1996 as a subcommittee of Australian Health Minister's Conference. A very similar structure operates in Canada, through the Advisory Committee on Population Health (ACPH.) The ACPH is a federal-provincial-territorial committee that reports to and advises the various Deputy Ministers of Health on national and inter-provincial strategies to improve the health status of the Canadian population and to provide a more integrated approach to health.

96. In Canada and Australia the federal health departments are also responsible for the delivery of supplementary health services to their Aboriginal populations.

97. The Population health system in Korea is the most highly centralised of those studied. The national Ministry of Health and Welfare has responsibility for setting priorities and goals, service planning, performance monitoring, inspection and evaluation, education and training of health personnel, and providing guidelines and technical support.

98. The Ministry of Health and Welfare is also responsible for the administration of important supportive legislation including a National Health Promotion Act (1995). Key features of the National Health Promotion Act include a requirement for central and local government to develop health promotion plans, introduction of restrictions on cigarette and alcohol advertising, promotion of health education approaches, introduction of programs to improve nutrition and dental health, and establishment of the National Health Promotion Fund.

99. At the Provincial level, the role of government is less clear and it has in the past been seen as a conduit between national and local authorities. There is little service planning at Provincial level, and a limited, but increasing, role in service inspection and evaluation. Local government authorities are responsible for setting local goals and program objectives, as well as implementing programs in their local

areas. However, most population health programs implemented locally are based on program guidelines issued at the national Ministry level.

100. The Swedish Population health system is one where centrally determined regulations, objectives and strategies sit along side a strong County Council role in program delivery and priority setting at the regional level. The overall objective of the Swedish Health and Medical Services Act of 1982 is the provision of "good health care on equal conditions for the entire population". Under this legislation, County Councils are responsible not only for providing health care but for promoting health and disease prevention. The Act requires County Councils to promote health, offer equal access to good medical care and undertake needs based planning.

101. In 1997 a Parliamentary Committee was established to develop a national strategy for public health. The Committee has proposed eighteen health policy objectives based on a health determinants perspective within a time frame of ten years until 2010. Examples of these broad national health goals include "A High level of employment", "A Healthy Working Environment", and "A Supportive Social Environment". These complement the more traditional goals of reducing tobacco consumption and reducing harmful alcohol consumption. It is proposed that other public sectors each be accountable for their contribution towards achievement of the public health goals.

102. In 1992, the National Institute of Public Health (NIPH) was established to manage national and intersectoral health promotion and disease prevention programs. These programs focus on: alcohol and other drugs, injuries, children, youth and women. The role of the Institute has been strengthened and re-oriented from July 2001. The NIPH will be responsible for follow up and evaluation of the new national health goals.

103. In addition to the work of the National Public Health Committee, population health services are developed through the County Councils and organised in primary health care districts. There are regional cooperation bodies, established by the County Council, to implement a population based public health approach.

104. Current reforms in Sweden recommend a strong co-ordination role for public health agencies in response to a perceived lack of coordination between federal and regional levels.

105. Population health in Switzerland is managed through a variety of programs, projects and activities at different levels of government, in the private sector and the non-government sectors.

106. The federal government plays a significant role in the promotion of health by funding the development, management and coordination of disease prevention and health promotion programmes. Funding is provided at the federal level to address issues of national importance such as: alcohol, tobacco, other drugs and HIV/AIDS.

107. The cantons support numerous health promotion and disease prevention projects at the local and regional levels. These vary widely in both scope and nature. As well as supporting local or regional activities the cantons, municipalities and non-government organisations have responsibility for implementing federal programs and strategies.

108. Coordination between the federal and cantonal systems and the development of information systems present major challenges for the funding and support of population health activities.

109. Up until 1989, there were no strategic cantonal objectives covering the whole of Switzerland and no means of implementing national projects. The Swiss Foundation for Health Promotion was set up partly to remedy this situation. The Foundation, established in 1989, is funded by revenue from compulsory health insurance premiums and develops programs to promote population health and prevent disease.

110. The Foundation is also the national instrument for initiating, coordinating and evaluating population health programs. Various attempts at developing national and regional evaluation strategies for population health have been made in the past but these evaluations were hampered by the lack of reliable and appropriate data. Current national information systems are guided by the requirements of the statistics law and the insurance law and focus on health care system utilisation and expenditure data.

111. A prominent element in the new health policy approach currently under discussion is the creation of a Swiss Health Observatory to address these information deficits.

4.2 Population health financing mechanisms

112. In all countries studied funding for population health activity is diverse and comprises contributions from the national and sub-national levels of government, and to varying extents, contributions from non-government organisations, the private sector, and private consumer contributions.

113. Significant differences are sometimes reported between the public funding mechanisms for population health and those for the mainstream hospital and medical services. Population health funding mechanisms typically operate in a set, capped, and time-limited budget environment. This can differ from the system of funding in the acute and primary care treatment sectors, which in some of the countries examined here is uncapped, driven by fee-for-service, not subject to limited period of budget approval and mainly dependent on national health insurance or private health insurance.

114. The application of different funding mechanisms to the prevention and treatment sectors can influence the mix of services provided. For example, it could be said that current financing mechanisms sometimes discourage good long-term management of diabetes but readily enable subsequent amputation of lower limbs. True, health systems can also provide advice and treatment at the primary practitioner level to assist diabetics to better mange their condition. However, finding a source of funding for a work site based weight reduction program for a group of men (for which there is strong evidence of effectiveness) may prove very difficult.

115. While some countries have core programs for population health, additional funding for key program initiatives is most often *ad hoc* and subject to competing pressures from the tertiary medical system. These latter allocations are normally funded by means of strategies which have achieved significant political support, such as those in support of HIV/AIDS, Tobacco control or Alcohol programs in most of the countries studied.

116. In Australia transfers from the federal to the state/territory governments are linked to specific national strategies and programs. Capped funding is provided through the Public Health Outcome Funding Agreements (PHOFAs) for the major national health programs including HIV/AIDS, immunisation, and breast and cervical screening programs. PHOFAs incorporate annual performance reporting requirements for key outcomes and outputs for each of the component programs. There are no block transfers of funds outside of the program context. States and Territories fund and support a range of population health activities through their own resources including public health promotion and education programs, and health promotion foundations. Local government provides support for sanitation and hygiene, food safety and water quality monitoring.

117. In Canada the provinces and territories may also add their own funds in support of an agreed national strategy. However, outside of specific funding linked to agreed strategies, there are no block transfers of funds from federal to provincial governments specifically for population health initiatives.

118. The population health system in Korea is primarily financed through the regular system of budget appropriation and allocation. The national, provincial and local governments often jointly finance

programs. While funding is not provided on a set ratio between federal and provincial levels of government, Provincial governments contribute the greater share.

119. The traditional approach of government in Korea has been to see the provision of health care, and of illness prevention and health promotion approaches, as being the responsibility of the individual and of the private sector. Coordination between the public and the private sectors in population health service provision is therefore not well developed. The private sector plays the most significant role in service delivery in Korea with up to 85% of services delivered in the private sector. Interest in health promotion and prevention approaches, as well as experience and expertise in this field, is thought to be very low in the private sector.

120. In Sweden financial responsibility for most population health, like medical care, rests with County Council governments. Programs are funded at the County Council level through the tax system, with funds being allocated by County Councils according to identified local and regional needs.

121. In 1985, the Dagmar Reform was introduced which changed the basis of health insurance reimbursement for ambulatory care (including population health) to the number of inhabitants and social criteria of specific Counties. Other financing arrangements include weighted capitation payments for services, collective purchasing across Counties for joint initiatives, and user payment. In some Counties, there is a special per capita allocation for population health.

122. In addition to County level funding, national grants are provided for national programs and strategies in a similar fashion to that in place in other countries. A priority for national level population health funding in Sweden is the development of systems to demonstrate cost-effectiveness and appropriate cost containment.

123. Population health in Switzerland is funded from multiple sources at different levels of government, the private sector and by health consumers. The overall proportion of population health care funded through public financing is low relative to other OECD countries. Compulsory health insurance pays for a limited number of interventions such as the early detection of diseases in defined risk groups and for examination carried out in connection with pregnancy and childbirth. The Swiss Foundation for Health Promotion, which is the central coordinating body for population health, is funded by revenue from compulsory health premiums.

124. At the federal level, decisions about the funding of population health initiatives in Switzerland are made by the Federal Council. Programs are conducted through the Federal Office for Public Health and funding is generally provided for a fixed period of three to five years. However, much of the responsibility for financing population health, as well as health care, rests with the cantons, municipalities, private insurance companies and private providers. Funding at these levels is also typically project based, and time limited.

125. A number of population health financing initiatives are under development or have recently been introduced in several countries in order to raise additional finance for preventive initiatives.

126. In Australia, a model for resource allocation in population health is in the development stages. Such a model links resource requirements to estimated population size and health needs, current and projected health status targets and levels of inequality in health status. Similarly in Canada there has been some experimentation at the provincial level with developing needs-based funding methodologies for determining the appropriate size of regional funding pools.

127. A model of per capita funding for population health is also in place in Sweden in some counties.

128. In Korea, under the National Health Promotion Act a Health Promotion Fund has been established as a mechanism for raising funds specifically dedicated to health promotion related research

and to policy and program development at the national level. Funds are raised from tobacco companies by levying a tax of 2 won per pack of cigarettes sold. A levy equivalent to 5% of their preventive health care expenditure is also imposed on health insurance companies. The fund raised 15.4 billion won in 1998 (around 15.8 billion USD).

129. While health promotion foundations with various funding arrangements exist in some of the Australian States and Canadian Provinces, Switzerland is the only other country studied which has a national health promotion foundation. The Swiss Health Promotion Foundation is funded by revenue from compulsory health insurance premiums. Insurance authorities are required to allocate to the Foundation a set number of francs per head (currently 2.4CHf at the time of writing) for each person insured. This amount is able to be changed every three years.

130. In principle all countries in this study appear to wish to shift the emphasis in their health systems to give greater priority to promoting health and preventing illness. Developing an appropriate financing mechanism in order to achieve the desired priority for funding and support for population health remains a major challenge.

4.3 Identification of financial resources applied to population health

131. It is difficult to asses whether the expressed wish of countries to "re-orient" their health systems in order to give greater emphasis to the prevention of illness has been matched by any corresponding re-orientation of the resources applied in support of their health systems.

132. At the very broadest level, we know that the percentage of GDP devoted to health spending has been quite stable in Australia, Canada and Sweden since the mid-1990s, whilst expenditure has risen somewhat in Switzerland and Korea over this period (Table 6, Annex Part 1) With total expenditure on health in 1998 at 10.4% of GDP, Switzerland is amongst the highest expenditure countries in the OECD, well above the mean of 8.3%. Total health expenditure in Canada, at 9.5% of GDP, is also somewhat higher. In both Australia and Sweden total health expenditure is around the mean for OECD countries, whilst in Korea total health expenditure at 5.0% of GDP is well below the mean.

133. It is however the case that as countries become more wealthy they tend to spend more on health. Nevertheless, per capita health expenditure in 1998 in Switzerland and Canada was above that which could be expected on the basis of their per capita GDP (See Figure 1) Australia and Sweden spent around the expected amount per capita on health, based on their GDP per capita, whereas expenditure in Korea remains below that which could be expected.

134. How much of this expenditure on health is expended on population health programs and interventions rather than within the medical care and treatment system is difficult to asses. Population health activity may be delivered to an individual by a general medical practitioner, to a group of people in a worksite by a non-government agency, within the school setting by a school employee, or at the broad community level *via* a mass media campaign. Each of these interventions may well be funded from more than one sources.

135. Differences in the scope and nature of the population health service delivery systems, both within countries with decentralised systems and between countries, make international comparisons of expenditure difficult. Service delivery arrangements necessarily flow through to differences in definitions and categorisation of activity for accounting purposes.

136. These difficulties of accounting for population health expenditure are obviously compounded if one attempts to account for the contribution to population health through the activities of other sectors of government.

137. The OECD has for many years attempted to capture information on expenditure on prevention and public health. The difficulties mentioned above are reflected in the fact that data has been provided on a regular basis from only eight countries, including Australia, Canada and (since 1980) from Korea. No data is available from Sweden or Switzerland.

138. Missing data for Sweden and Switzerland on population health expenditure reflects the difficulties of accessing data in a decentralised health financing system rather than implying that the relative importance of population health is any less in these systems. Furthermore, the boundary between health and social care is drawn somewhat differently in Sweden, which further adds to the difficulties in comparing population health resource levels.

139. According to the available OECD data, expenditure on prevention and public health in 1997 ranged from 0.1% of GDP in Australia, Austria, and the Netherlands, to 0.2% in France and Korea, 0.4% in Germany and 0.5% in Canada and the US (Table 7, Annex Part 1). While few conclusions can be drawn from a comparison of the levels of expenditure across countries, it is interesting to observe that within each of these countries the percentage of GDP allocated to prevention and public health has basically not changed since at least 1995 – in most cases it has not changed since the mid-1970s.

140. In a background paper prepared for the National Public Health Partnership in Australia, Deeble (1999) examined Australian expenditures on population health over time and drew some limited comparisons with other countries. The proportion of total health expenditures devoted to public health and community health services combined was only marginally higher in 1995/6 than nearly 30 years earlier. Deeble concludes that for preventive services only, the data (which he acknowledges to be approximate only) are highly suggestive of a predominantly historical pattern of resource allocation – that is, to one where the share of public health type services has been virtually fixed, with the major allocative decisions being largely confined to the division between primary and secondary prevention programs.

141. The reported public expenditure on prevention and public health per capita (Table 8, Annex Part 1) casts doubt on the reliability and comparability of this class of expenditure data within the current OECD database.

142. Other sources of data on population health expenditure are very limited. Deeble's analysis of Australian data suggests that the cost of population health programs over the past 30 years amounts to around 2-3% of total health expenditure per year. In Sweden, current estimates of the cost of population health vary within a range of 3-5% of total health expenditure per annum, depending on the definition used for measurement.

143. The recent development at the OECD of the *System of Health Accounts* provides a promising opportunity to improve the collection and international comparability of data related to expenditure on population health. The main purposes of the OECD *System of Health Accounts* are to provide a set of internationally comparable health accounts, to categorise and define boundaries of health care, to identify flows of financing in health care and to provide a framework for consistent reporting of health care services over time.

144. The System proposes a classification of health care by functions, service providers, and by sources of funding. The classification of functions includes a category of activity described as Prevention and Public Health Services, which includes services designed principally to enhance the health of the population such as maternal and child health services, prevention of communicable diseases, and related activities such as monitoring and disease surveillance.

145. The System presupposes that there can be some uniformity, at least hypothetically, in the structures and processes for extracting information on population health. As has been shown, at the present time there is no such uniformity of approach across OECD countries. As the System develops and is piloted

it will be important to work closely with country experts who are familiar with the complexity of population health service delivery and financing arrangements to ensure that the system develops into a useable tool which will provide genuinely comparable data.

146. It will also be necessary to consult with experts in countries where initiatives may also be in place to improve the collection, categorisation, and comparability of population health expenditure data at the national level.

147. There is a clear and strongly held perception within the population health community of health professionals, administrators and advocates that the resources applied to health advancement and illness and injury prevention is inadequate. While there is unlikely ever to be a simple measure of the adequacy of population health funding, the lack of national and internationally comparable data mean that it is not possible to inform the necessary judgements with any certainty at this time.

148. Recent developments at the international and national levels to develop meaningful population health expenditure data should provide a more reliable basis for making comparisons between investments in population health and investments in the rest of the health sector. Such data could be an important tool to assist judgements about the adequacy and cost-effectiveness of population health programs.

5. ALCOHOL-RELATED HARM

149. This section begins with an overview of the literature regarding alcohol and its impact on health at the individual and population level.

150. Section 5.2 outlines the pattern of alcohol consumption in participating countries, while section 5.3 examines the health impact and the flow on effect this has on their health systems. Section 5.4 provides a very brief overview of some of the evidence in support of various policy approaches, before looking in more detail in Section 5.5 at the policy responses countries have adopted to address the harmful effects of alcohol on health and health systems. A discussion of the issues and challenges identified is to be found in Section 5.6.

151. The meaning of terms used in this section, such as alcohol-related, harmful consumption of alcohol and harm reduction strategies, should be evident from the context in which they are used. Definitions of terms can, however, be found in the Glossary at Appendix 2.

152. Finally, a degree of caution needs to be exercised when making cross country comparisons of alcohol consumption. Where possible data has been drawn from the *OECD Health Data 2000*, however as there are many issues of interest to this project on which this data is not collected, supplementary sources of information have been used. Additional data has been drawn principally from the responses countries provided to the project survey, but also from routine information publicly available at country level and from various other publications. The sources of the data presented in Box 2 and Box 3 are set out in Appendix 3.

5.1 Alcohol and health

153. From the public health perspective alcohol provides many challenges. Alcohol can bring benefits as well as harm to individuals, and in many countries people consider having an alcoholic drink to be a pleasurable part of social life.

154. At the same time, alcohol consumption is a leading cause of premature death, preventable illness and disability. Mortality, both accidental and intentional, has been shown to increase dramatically with increasing alcohol consumption (Andreasson *et al.* 1988, Edwards *et al*., 1995). The level of harm in a

society tends to rise and fall in line with the overall level of national consumption (Institute of Alcohol Studies 2000).

155. Alcohol problems do not only, or even principally, occur among "alcoholics' and problem drinkers. While these people may experience severe problems, in terms of total impact on society, regular heavy drinkers and other more moderate consumers contribute most of the problems. This is because there are so many more people in these groups that collectively they contribute the larger share of the total harm (Institute of Alcohol Studies (IAS) 2000, Edwards *et al.*, 1995).

156. Many analysts draw attention to the significance of patterns of drinking, including the number of heavy drinking occasions, for alcohol-related harm (Stockwell *et al.*, 1996). Particularly high rates of alcohol-related harms have been found among low and moderate level drinkers on the occasions they drink to intoxication.

157. Deaths from alcohol-related diseases include alcoholic liver cirrhosis, stroke, toxic effects of alcohol, alcohol psychosis, alcohol dependence syndrome, alcoholic cardiomyopathy and a number of cancers including cancers of the mouth, larynx and liver (Thun *et al.*, 1997; IAS 2000, English *et al.*, 1995, Edwards *et al.*, 1995)

158. There is some evidence that suggests women are at increased risk of breast cancer from even moderate doses of alcohol (Thun *et al.*, 1997; English *et al.*, 1995). A meta-analysis and review of 38 case-control studies in 1994 found evidence of a modest dose-response relationship between alcohol and breast cancer. One alcoholic drink per day was associated with an 11% increase in the risk of breast cancer compared with non-drinkers (Longnecker, 1994). A correlation between breast cancer incidence and alcohol intake has continued to be supported by recent pooled analyses (Smith-Warner *et al.*, 1998).

159. Alcohol also contributes to a range of other causes of death - principally as a result of road crash and fall injuries, suicide and other violence. Alcohol consumption is implicated in around one third of all road crash deaths in Australia and the United Kingdom, and 42% of such deaths in the United States. Male motorists are more frequently involved in alcohol-related road fatalities. Data from Sweden for the period 1970-1980 identified 47% of both murderers and their victims as having been intoxicated during the attack (NBER, 2000).

160. The main chronic diseases attributable to alcohol use are liver cirrhosis, mental disorders, cancer, cardiovascular disease, and foetal alcohol syndrome. Alcohol is a causal factor in a number of mental health conditions including alcoholic psychosis, alcohol dependence syndrome and alcohol-related dementia.

161. The relationship between alcohol and cardiovascular disease is complex. Alcohol can cause cardiomyopathy and is a causal factor in high blood pressure, haemorrhagic stroke and heart failure. On the other hand, there is evidence to suggest that low level alcohol consumption is associated with reduced risk of coronary heart disease and ischaemic stroke among older male adults and in older females with cardiovascular risk factors.

162. The association between alcohol consumption and coronary heart disease and ischaemic stroke is often described as 'J'-shaped, with both abstainers and heavy drinkers considered to be at higher risk of premature mortality than light or moderate drinkers (Stampfer, 1988, Fuchs, 1995). While this has been well accepted, the extent of the protective effect afforded by alcohol consumption for light and moderate drinkers compared with abstainers has recently been questioned (Hart 1999, White 1999). Meta-analyses of combined study results concluded that characteristics of non-drinkers, other than their abstinence from alcohol, may have accounted for the observed higher mortality risk (Fillmore 1998a, 1998 b).

163. The greater part of the reduction in risk of CHD is achieved by very low levels of consumption (ranging from one drink every second day to one to two a day – WHO Europe). In their analysis of CVD

outcomes for over 40 000 people in the US, Liao *et al.* (2000) identified a consumption level of less than one drink per day for men, and infrequent to 1 drink per day for women as conferring the lowest all-cause mortality rate once they had controlled for race, education level and smoking status. In a study of 500 000 US adults Thun *et al.* (1997) identified a similar low level of consumption as offering some protective effect.

164. Liao, Thun, White (1999) and others have drawn attention to a number of factors that they believe warrant a cautious interpretation of the contribution of alcohol consumption to lower all-cause mortality:

- The combination of lifetime abstainers with former drinkers in one category as a reference (in some previous studies) is likely to overstate the benefits of alcohol;
- No benefit for younger ages can be inferred from these studies which have almost all concentrated on middle-aged and older people;
- With the steep decline in CVD mortality experienced in the past decade the protective effect of alcohol may have decreased as well, and the optimal level of intake may well have shifted downward;
- Socio-economic status is likely to be a confounding factor;
- Heavy drinkers are likely to be under-represented in study populations;
- Hence, public health will, on balance, be improved if heavy drinking is successfully discouraged.

165. As well as harming the health of the individual drinker, alcohol consumption is often a significant cause of harm to the health of family members, particularly women and children, through family violence, diversion of financial resources to alcohol consumption, and other disruptive family behaviours.(WHO, 1995). Children of alcoholic parents are at particular risk of negligent and abusive rearing practices, and suffer economic hardship and isolation (Grant, 2000).

166. Alcohol is frequently implicated in impaired work performance and productivity, absenteeism, high rates of workplace injury, and premature retirement. Alcohol-related absence is more likely to occur with employees who get drunk frequently, drink at work and have reported alcohol-related problems (Henderson, 1996).

167. Problem drinking is also associated with lower earnings, lower employment rates and greater unemployment (Mullahy and Sindelar, 1995; Burgess and Popper 1998). Heavy drinking in high school has been shown to reduce the average number of years of schooling completed post-high school (Cook and Moore, 1993) - this is likely to play a part in reduced future work related prospects.

168. The ILO has estimated that up to 3-5% of the global workforce are alcohol dependent and up to 25% drink heavily enough to be considered at risk of dependence (ILO, 1998).

5.2 Patterns of alcohol consumption

169. The OECD has assembled time series data on per capita alcohol consumption going back over a 40-year period. Figure 2 illustrates that data for the period 1960-1996. The average alcohol consumption in OECD countries grew rapidly in the post–war period, peaking in around 1980 at 11 litres per head for people aged 15 years and over. Average consumption declined steadily until the 1990s, and this decline

continued at a somewhat slower rate through until 1995 (Figure 2). Since 1995 average consumption appears to have stabilised.

170. As can be seen in Figure 2, alcohol consumption followed a similar trend in Canada and Australia until the mid-1990s, but a very slight upward trend in consumption has been reported for later years. The peak in consumption was reached a decade earlier in Switzerland and Sweden, and rates in these countries are still slowly declining. For Korea, average per capita consumption was quite stable from 1990, the first year for which OECD data is available, to 1995. However, more recent data indicate that since then consumption has been rising at a steady rate. WHO data (WHO, 1999) show a sharp rise in alcohol consumption in Korea from 1970 right through to 1996.

171. Average alcohol consumption per head was greatest in Switzerland at 11.3 litres per head in 1996, well above the OECD mean of 9.1 litres. Both Australia (9.7Ltr) and Korea (9.1Ltr) are average consumption countries, while Canada (7.2Ltr) and Sweden (6.0Ltr) consume at levels well below the OECD mean (Figure 3).

172. Drinking cultures vary widely across countries and this impacts directly on the pattern of alcohol consumption and the spread of harmful outcomes across communities, as well as in the type and intensity of policy responses from governments.

173. Sweden has been a spirit producing country for centuries. Levels of consumption of spirits were extremely high in the mid-19th century at 46 litres per head, and widespread opposition to this high level of drinking developed. Community acceptance of strong government intervention to control alcohol consumption arose out of this experience.

174. Current drinking culture is reflected in heavy concentration of weekend drinking and at times of festivals. It is reported that to a greater extent than in other drinking cultures people in Sweden drink to become intoxicated. Of the total per capita alcohol consumed, spirits accounts for 25%, wine 31% and beer 44%.

175. Switzerland also was a high spirit consuming country in the mid-19th century, with potato spirits being a popular intoxicating drink produced by local farmers and widely consumed by men, women and children. It was concern to reduce this in particular that spurred early policy interventions. Spirit consumption now accounts for around 20% of consumption, wine 50% and beer 32%. Despite declining consumption Switzerland remains a very high consumption country. The most frequent and highest consumption is amongst the Italian Swiss, followed by the French Swiss, and lastly the German Swiss. It is reported that the proportion of people drinking to excess is rising.

176. From the early colonisation of Australia to the late 19th century spirits were the most widely consumed alcoholic drink. Consumption of spirits over the next few decades fluctuated with periods of economic prosperity. During this time annual beer consumption increased, and over the past century Australia developed predominantly a male beer drinking culture. While beer remains the drink preferred by men, women more often drink spirits or wine. In 1997 Australians consumed 94.7 litres of beer, 18.4 litres of wine, and 1.36 litres of spirits per capita (World Drink Trends 1998).

177. In Korea the culture of drinking is one that promotes drinking to intoxication. There has existed a generous attitude to drinking and excessive drinking by males. This is particularly the case in rural areas. The country's leading distilled spirit product, *Soju* accounts for more than half of the pure alcohol consumption, followed by other spirits and beer. Very little wine is consumed.

178. Canada is a largely beer drinking culture, with beer accounting for 60% of alcohol consumption in 1994, spirits 27% and wine around 13% (WHO, 1999). Most drinking is done in private settings, such as at home, or at parties or other social gatherings. A 1996 report suggested that there were substantial

revenue losses from the evasion of excise duty on spirits due to non-regulated "home production" (Auditor-General, 1996).

179. Despite the difficulties in comparing across countries, a number of features emerge concerning the pattern of harmful alcohol consumption. Relevant data, which are presented in Box 2, can be summarised as follows:

- Alcohol consumption is widespread, with the majority of adults being current drinkers;
- Drinking at harmful levels is also widespread. At the *whole population* level, at least one in five men and women in Australia, and men in Canada drink regularly at harmful levels.
- Figures from Switzerland suggest that around 40% of male and female *current drinkers* do so at harmful levels. Approximately one third of Australian men (33%) and women (38%) who are current drinkers usually consume alcohol in a hazardous or harmful manner;
- In general, women of all ages consume less alcohol than men and are also more likely to be non-drinkers;
- Widespread problems in the areas of alcohol misuse and violence have been identified as major health policy issues for men (Connell *et al.*, 1998);
- There are clear gender differences in the age of initiation and patterns of alcohol consumption. Men usually begin drinking younger than women;
- There are legal minimum drinking ages in all countries but these are widely ignored by young people;
- While average consumption may be stable or declining, this appears to be masking the rise in harmful drinking among adolescents and women;
- Young people are increasingly binge drinking. For example, data from the Swedish National Survey of school children in 1998 found that, of those who drank, more than 40% of boys and 38% of girls drink until they felt intoxicated on every or almost every drinking occasion (WHO, 2001)

180. The pattern of harmful drinking by adolescents and people in their early 20s was reported to be of great concern in Australia, Canada, Sweden and Switzerland. Countries are concerned at the role played by alcohol in adolescent culture. This group does not necessarily see drunkenness as harmful. In fact the aim of most underage drinkers is to get drunk and get drunk quickly (Shanahan, 1999).

181. Marketing plays a critical role in the globalisation of patterns of alcohol use among young people (WHO, 2001). The past two decades have seen new alcoholic beverages designed for the youth market, including wine coolers, alcoholic energy drinks, and alcopops. Industry marketing on the internet at popular youth sites, sponsorship of sporting events and rock concerts, and CD give-aways are among the techniques commonly employed to attract the youth market.

182. Harmful drinking amongst adolescents is not considered a serious issue yet in Korea, where young people do not commonly begin drinking until in their 20s. However, in view of the strong upward trend in consumption in Korea, and the global marketing practices described above, there is likely to be some convergence of adolescent behaviour towards that more common in other western economies.

5.3 Health consequences and health system impacts in selected countries

183. In section 5.1 the consequences of harmful alcohol consumption were shown to impact not only on individuals, but also their family and community. These consequences extend beyond narrowly defined health outcomes, and include a wide range of social disruption. Nevertheless, in order to manage the scope

of this project, and in view of data limitations, the focus of Section 5.3 is on health related consequences at the individual level.

184. Comparison between countries of the health consequences of harmful drinking is made difficult by variations in definition, sampling, and methods of data collection. For example, in the regular health and lifestyle behaviour surveys countries undertake, different definitions are employed for basic terms such as harmful drinking or regular drinking, and different age categories define youth.

185. Box 3 outlines the health impact in each country against key indicators such as alcohol-related deaths, prevalence of alcohol dependence, road-traffic fatalities, cirrhosis deaths, and suicide attributable to alcohol consumption. Data is also presented on the number of alcohol-related hospital separations and bed-days. Common features across participating countries include the following:

- The health outcomes for men are significantly worse than those of women, reflecting their much higher overall consummation of alcohol;
- Chronic health outcomes, such as cirrhosis of the liver and alcohol dependence are more common in middle aged and older adults, reflecting the length of time it generally takes for these conditions to develop;
- Alcohol still plays a significant part in road-traffic fatalities, even though overall deaths from this cause have declined;
- The high-risk drinking patterns of adolescents and young adults means that they are more likely to die suddenly as a result of road-traffic injury, suicide or other injuries such as falls.
- Most people attending hospital for an alcohol-related condition were male. Most hospitalizations were due to falls, alcohol dependence or road-traffic injuries.

Box 2. Patterns of alcohol consumption

	Consumption, (litres /capita, 15+)	Drinking prevalence	Youth drinking Behaviour
Australia	9.8 (1997)	84% M, 77% F current drinkers 70% M, 15% F drink at least weekly 13.9%M, 6.4% F are daily drinkers 83% of alcohol is consumed by 20% of the population	52%M, 46%F are weekly drinkers Boys drink double the amount of girls 26.1%M, 26.3% F regularly drink at harmful levels 35% of 17year olds binge drink Highest consumption at M 14-24yrs, F20-24 yrs
Canada	7.2 (1996)	81.6% M, 72.2% F current drinkers 42.1% of drinkers had 5 or more on single occasion 23.4% exceed low-risk guidelines 2.5% drink at levels that are indicative of clinical depend	60% M, 57.6 F school children drank in past year 31% of 13year olds drank alcohol in past year 19.7% youth drink weekly, with 42.4% drinking heavily 29.1% prevalence of high-risk drinking among youth risky drinking peaks at ages 20-24 years
Korea	8.9 (1997)	83%M & 44%F are current drinkers 12%M & 2%F are daily drinkers Of the population as a whole, 5.8%M, 1.6%F drink at harmful levels Of drinkers, 50.8%M & 13.5%F drink at harmful levels	Estimated prevalence of high-risk drinking among young people is 4%
Sweden	5.9 (1997)	90%M & 75%F are current drinkers 1% of adults are daily drinkers 23% drink once or twice week 10% of M account for 33% of total M consumption 10% of F account for 50% of total F consumption	82% 15/16 yr olds have drunk alcohol 63% have drunk to intoxication 19% boys, 11.3% girls (15 yrs) drink weekly 27%M, 22%F had been drunk twice or more
Switzerland	11.2 (1997)	89% of the population are current drinkers 40% of drinkers drink at harmful levels	40%M, 25%F aged 15-19yrs drink at least weekly 5% boys this age drink daily

Box 3. Alcohol and health outcomes

	Alcohol-related deaths	Alcohol dependence	Alcohol – related road trauma	Hospital patients and bed-days
Australia	Total deaths - 3.4% M + F M – 2 296 (7% of male deaths) F - 994 (4% of female deaths) Cirrhosis: M - 539 F - 144 Suicide: M - 246 F - 41	727 820 people alcohol depend Estimated 1% of total population Deaths from alcohol depend = 254M, 67F	Alcohol-related road fatalities = 343 M, 75F 30% of fatally injured drivers over legal BAC Alcohol implicated in 42% of deaths of pedestrians	M 49 499 F 22 803 hospital separations (= 2% of M, 0.76%F separations) M 276 640 F 127 155 hospital bed-days (= 2.6%M, 1.01%F of all bed-days
Canada	Total deaths = 6 701 (3.1% of all deaths) Cirrhosis: M - 788 F - 261 Suicide: M - 821 F - 134	438 000 people alcohol dependent 2.6% of males, 1% of females Deaths from alcohol depend = 521M, 171F	Alcohol-related road fatalities = 790 M, 358 F 34% fatally injured drivers are over legal BAC Road fatalities = 22% of all alcohol-related deaths; 33% of PYLL	86 076 hospital separations. This = 2% of al l separations 1 149 106 bed-days (= 3% of all bed-days)
Korea	Cirrhosis M –7 808 (hepatitis impact) F - 1 948 Suicide: M - 4 041 F - 1 815	M 43%, F 2% life prevalence M 19.2% F 0.90% prevalence, adults, in 1994 7-8% psychiatric hospital admission Deaths from alcohol depend = 1 121 M&F	18% of all road crashes attributed to drunk driving	27 013 admissions 538 209 bed-days for alcohol depend. 30 561 admissions 420 342 bed-days for cirrhosis
Sweden	Cirrhosis: M - 381 F - 185 Suicide: M - 872 F - 381	3-4 per 100 000 300 000 problem drinkers 10% adult M, 3-6% adult F are heavy drinkers Deaths from alcohol depend = M230 & F55	Alcohol-related road fatalities = 345 M, 176 F 4.8% of all traffic accident fatalities	M 4.4%,F 1.1% Total = 2.6% of all hosp. Admissions are alcohol related 5.9% of all psych. Hospital patients have alcohol-related diagnosis
Switzerland	Total of 3 000 deaths attributed to alcohol	300 000 people estimated to be alcohol dependent 8-13% of males	40.2 road crashes involving alcohol per 100 000 popn 10% of all crashes are alcohol related Over 50% of traffic offences are for drunkenness	8-13% of male hospital patients aged 30-59 yrs had a diagnosis of alcohol dependence

5.4 Policy approaches in participating countries

186. What approaches have been adopted in Australia, Canada, Korea, Sweden and Switzerland in response to their individual experience of alcohol-related harm in their communities?

187. In Section 2.3 issues relating to the potential role of government in the population health arena were discussed and Musgrove's work in identifying possible levers for government intervention was highlighted. Governments, Musgrove suggests, may *create and disseminate information, regulate private activity, mandate certain actions by individuals or firms, finance health-related service* and *provide or deliver service.* This catalogue of interventions, together with the additional levers of *taxation policy, health research and training*, and *priority setting and policy development*, have been adapted to provide a checklist for the analysis which follows of the various country responses to alcohol-related harm.

5.4.1 Policy development and co-ordination.

188. Sweden has a long history of alcohol policy development, with strong leadership being provided by the national government since early in the 20th century. The reduction of harmful consumption of alcohol has recently been selected as one of the 18 national public health goals, which are expected to be endorsed by the national parliament early next year. This is evidence of the Governments continuing commitment to the reduction of alcohol-related harm.

189. National policy in Sweden supports a combination of measures aimed at both reducing the availability and supply of alcohol, and with demand reduction measures. Policy has developed within a population health framework; the overall aim is to reduce total society wide consumption, in recognition of the strong correlation between a country's total alcohol consumption and harm for individuals and the population as a whole. Preventive measures, control policy, and the treatment of alcohol abusers are seen as complementary elements of a comprehensive approach.

190. The national alcohol policy also sets specific objectives in key policy areas such as the avoidance of significant consumption during childhood and adolescence, promoting abstinence in specific situations such as when driving or during pregnancy, and maintaining an active pricing policy.

191. An important feature of the national alcohol policy is that it requires every municipality to have an alcohol policy in place, based on an analysis of its local alcohol situation. The local plans must describe the measures which will be taken at the municipal level to reduce alcohol-related harm. As a result, many municipalities have alcohol and other drug policy committees charged with the co-ordination of local preventive activities.

192. Australia and Canada have a much shorter history of national policy in this area. Australia's first national approach, the National Campaign Against Drug Abuse, was in 1985, while in Canada the first National Drug Strategy was launched in 1987. These policies have been renewed and re-launched under new titles since that time, with continued Government support. In Australia a specific National Alcohol Action plan has been developed as one of a series of action oriented plans developed under the National Drug Strategic Framework 1998/9 – 2002/3.

193. Both countries have developed their alcohol policy within the context of a broad national drug strategy covering illicit drugs, alcohol, tobacco and prescription medication abuse. They have each adopted a harm reduction principle from the start - the aim is to minimise the consequences of alcohol-related harm, rather than, as in Sweden, a goal of reducing the overall consumption of alcohol *per se*.

194. Canada and Australia have also developed similar approaches to coordination between Federal and State/Provincial Governments. While Federal Governments provide a leadership role, the development of policy is undertaken more through a partnership approach between the levels of Government. Both countries have in place a committee of senior Federal/Provincial officials of their health and, at times, their law enforcement portfolios. A variety of expert advisory committees are in place to provide technical input on issues related to specific drugs such as alcohol.

195. In Canada, consideration of the determinants of health is a key feature of their policy approach to prevention. Efforts are made to address not only substance abuse, but issues of marginalisation, disparate social and economic status, levels of education and employment status, and other underlying issues.

196. As a result of the history behind its establishment, Swiss alcohol policy has been principally geared at reducing the consumption of spirits. This does not reflect contemporary consumption patterns, with spirits today accounting for less than one fifth of the total quantity of alcohol consumed in Switzerland. This is recognised by the Federal Council, and preparatory work has begun for a total revision of the alcohol legislation and its policy approach. A new National Alcohol Action Plan is under development. This plan sets 18 specific targets to be achieved by 2005.

197. There is no national alcohol policy or action plan in place in Korea. However, in its broad policy document "Health Vision 2010" the Health Ministry has set down its key policy directions for the coming decade. Addressing alcohol-related harm is identified as a necessary policy measure to improve overall length and quality of life in Korea. Targets have been set for the reduction in the ratio of adults consuming alcohol on a daily basis.

5.4.2 Taxation and pricing policies

198. Increasing the price of alcohol has repeatedly been shown to be one of the most effective measures in reducing the consumption of alcohol. Taxation regimes are one of the main ways that Governments can influence the price of alcohol The taxation of alcohol by Governments in this study is generally through the imposition of excise duties and value added taxes, at either the national level or by both the national and sub-national governments. The extent to which these taxation measures are used as deliberate alcohol control policy levers varies across countries.

199. Taxation as a control measure forms part of the Swedish alcohol policy and it is one of the main instruments for controlling alcohol consumption. Sweden has amongst the highest levels of taxation on alcohol in Europe, along with other Nordic countries. The tax on medium and high strength beers constitutes about 45% of the retail price of these beverages. There is no excise duty payable on low-alcohol beer. In addition to the excise duty there is a VAT of 12% on low-alcohol beer and 25% on full strength beer.

200. There is concern within Swedish alcohol policy circles that relaxation of the rules governing imports by private travellers, to a level consistent with other EU countries, will lead to increased cross-border trade while even Sweden maintains high alcohol taxation and prices compared with its EU colleagues. This is likely to lead to pressure to reduce taxation and prices in Sweden, and, it is believed, lead to increased alcohol consumption. Certainly, when a similar issue arose with Finnish EU membership beer imports rose from 3.5 litres in 1994 to 30 litres in 1995. Spirit imports per head more than doubled in the twelve month period.

201. Wine has enjoyed favourable taxation status in Switzerland, consistent with the practice in place in most wine producing countries (The EU regulations stipulate minimum taxation rates to be applied to alcoholic beverages, but treat taxation on wine as optional.) At present wine produced in Switzerland does not attract any excise duty, though imported wines are taxed. However, Switzerland does apply a much higher excise duty on spirits compared with beer, as one of its policy levers to limit the consumption of

spirits. A 7.6% VAT is also applied in Switzerland. Overall however, there has been a reduction in the level of alcohol taxation since 1999.

202. In Switzerland 10% of the alcohol taxes collected by the Federal government are returned to the cantons with a requirement that they use the money to help prevent alcohol and drug abuse. The Swiss Alcohol Board also distributes substantial funds the Swiss Institute for the Prevention of Alcohol and Other Drug Problems to support prevention programs.

203. Until recently the alcohol taxation arrangements in Australia did not strongly support alcohol harm reduction policies, with low-alcohol beer being taxed at a higher rate than wine or regular strength beer. Reforms implemented in 2001 as part of an overhaul of the national taxation system are expected to favour low-alcohol products. Wine has traditionally attracted lower levels of taxation, principally as an industry support measure.

204. In Canada Federal taxes make up approximately 6.7% of the total retail sales of alcoholic beverages. In addition there is a proliferation of taxes at provincial level and no official statistics exist on total tax burdens. Estimates of the total tax levy per litre of absolute alcohol have been made by the WHO (1999). These estimates show that low-alcohol beer attracts the lowest overall tax imposts, followed by wine, with spirits the most heavily taxed. This is consistent with a population health objective of limiting alcohol consumption.

205. Federal taxes on alcohol beverages in Korea are levied at differential rates, however the basis for the differentiation is not clear. Alcohol content is not the distinguishing feature. Beer is the most heavily taxed beverage, followed by spirits and then wine; the percentage of tax in the average retail price of beer is 3 – 4 times higher than that applying to wine. Pressure from spirit exporting countries has seen the tax on spirits imported into Korea decrease, and that on domestic spirits increase to a corresponding level. There has also been a decrease in the tax applied to beer in the past year. To this extent, then, the use of taxation as a population health policy lever would appear to be less influential in Government decision making in this area than are other policy concerns.

5.4.3 Regulate and mandate activity

206. Australia, Canada, Sweden and Switzerland have in place a solid regulatory framework to control the supply of and demand for alcohol. In Canada, Australia and Switzerland the exact nature of the regulations and the penalties they attract will often vary across the States/ Provinces/Cantons, but the picture described below gives an indication of the type of measures typically employed.

207. In these four countries businesses, including retail outlets, bars and restaurants, must be licensed to sell alcohol. The supply of alcohol is also restricted in these countries through regulation of the number of alcohol outlets and their hours of opening. Sweden maintains the tightest control over opening hours; the sale of alcohol must end by 1.00am; the monopoly retail stores close at 6.00pm and were, until recently closed on the week-ends. The retail sale of alcohol is not regulated in Korea, nor are opening hours controlled.

208. In Switzerland the price of distilled spirits is regulated to the extent that they must not be sold below cost price. The sale of spirits through public vending machines is prohibited in Switzerland, while Australia, Canada and Sweden do no allow the sales of any alcoholic drinks in this way.

209. The service of alcohol to intoxicated persons is also prohibited in most jurisdictions. Countries have tended to focus their approach on encouraging restaurants and bars to better train their staff in the identification of intoxicated patrons as the key intervention strategy. The National Alcohol Action Plans in Australia, Canada, and Sweden support this approach. Some Provinces in Canada require all licensees and

serving staff to take training courses in responsible serving practices. Research suggests, however that this approach needs to be supported by more vigilant enforcement of the regulations.

210. Minimum age restrictions on the purchase of alcohol are in place in all countries including Korea. The legal minimum age for the purchase of alcohol depends in some countries on the type of beverage or the setting in which it is to be consumed. These vary between 16 years in Switzerland for the purchase of beer, to 21 years in Korea. Details are illustrated in Box 4. Despite these minimum age restrictions being in place, all countries reported the increasing consumption of alcohol amongst teenagers as a matter of serious concern.

211. Drink-driving is an offence in all participating countries. Box 4 also sets the Blood Alcohol limits each country has in force as a measure to limit drink-driving offences. Sweden has the lowest permissible level (.02mg/100ml) followed by Australia (0.02 to 0.05). Only five countries for whom this information is available have levels higher than 0.08mg/100ml. Australia and Sweden strictly enforce their blood alcohol limits, including through random breath testing of drivers on a large scale.

212. The control of drink driving is the main plank in alcohol control policy as it currently exists in Korea. Measures to prevent drink driving are reported to have been relatively successful, due to the fairly strong punishment regime and the strict enforcement of the regulations on all offenders. Licences are permanently or temporarily removed for all offenders.

213. In Switzerland advertising of alcoholic beverages is restricted, with the advertising of spirits being most highly regulated. Under the specific Alcohol legislation advertising of spirits is not permitted on television or radio, in or around public buildings, at sporting events or other events likely to include minors. Advertising of other beverages is restricted through the Swiss food ordinance, which prohibits advertising of all alcoholic beverages directed towards young people, and through laws applying to the electronic media.

214. In Sweden the Alcoholic Drinks Marketing Act (1978) basically prohibits all advertising of alcohol to the general public. Moderate marketing is allowed at the point of sale in retail outlets, and of low-alcohol beer more generally. The Marketing Practices Act (1996) creates various offences such as misleading advertising, for which high penalties may be applied (*e.g.* fine of 10% of turnover). A number of self-regulatory bodies play a role in advising on appropriate advertising standards.

215. The marketing of alcohol in Australia is essentially managed through self-regulation by the industry. The Alcohol Beverages Advertising Code was established in 1998 by the four major alcohol beverages industry associations, who fund, manage and operate the code. An independent complaints panel assesses any complaints that have been referred to it. Amongst other things the code directs that advertisements for alcohol must not have a strong or evident appeal to children or adolescents. There are limited sanctions available for breaches of the voluntary code.

216. The Code for the Broadcast Advertising of Alcoholic Beverages in Canada follows a similar approach to that in Australia. The code does not permit advertising messages to attempt to influence non-drinkers of any age to drink alcohol. The Brewers of Canada also have a code of practice covering the marketing of high alcohol beer. Under this Code, the industry association recommends that advertisements not be screened before 10.00pm, and that they be screened in programs that "appeal predominantly to individuals over the age of 24." Complaints must be made to the industry body; there is no independent review of the complaint, and there do not appear to be sanctions for breach of the code.

217. In Korea the advertising of alcohol on television is prohibited during regular public broadcasting hours. There are no restrictions on newspaper or magazine advertising, or on advertising in particular settings. Under the National Health Promotion Act health warning messages are to be printed on alcohol beverage containers.

Box 4. Selected alcohol control measures

	Minimum legal drinking age	**Blood Alcohol Content (mg/100ml)**
Australia	18 years in all States and Territories	0. 02mg/100ml for drivers under 25 years; for all drivers within first 3 years of obtaining licence; and for all heavy vehicle drivers 0.05 for all other drivers Random Breath Testing
Canada	18 years in Quebec, Manitoba and Alberta 19 years in all other provinces	0.08
Korea	21 years	0.08
Sweden	Low-alcohol beer - 18years Medium/ high strength products - 20 years for take-home purchase - 18 years in restaurants	0.02 Random Breath Testing
Switzerland	Fermented beverages - 16 years Distilled beverages - 18 years	0.08

5.4.4 Finance health services

218. The role of governments in the financing of health services is well established in all countries in relation to the treatment of alcohol-related illness and injury. Most of the inpatient treatment for alcohol-related illness and injury is likely to be provided through the general hospital system in each country, financed through the usual mechanisms. Similarly, financing arrangements for treatment in the primary care setting would not be expected to differ from the standard mechanism operating in each country.

219. National and/or sub-national governments also finance specialist services such as psychiatric hospitals and residential alcohol treatment and rehabilitation services. The extent of private financing of residential and treatment services, through private insurance or out-of-pocket client contributions or other sources, is unknown. While a market for such services exists, the nature of the client group and issues of equity of access would suggest that they are likely to be under-provided without government playing an active role in this area.

220. Governments also finance much of the activity related to the prevention of alcohol-related harm, such as major media campaigns, school-based education programs, or community-level information and prevention strategies. While some of these initiatives will be both financed and delivered by government, often governments finance non-government and community organisations to provide these services. A viable market for such services, in the absence of government financing, would be unlikely to exist.

221. It has not been possible within the scope of this project to identify the amount of government finance applied to address issues related to the harmful consumption of alcohol. No comparative estimates of direct health system costs are available, nor of the proportion of this expenditure financed by governments.

5.4.5 Service delivery role

222. In all participating countries national governments are directly involved in information development and collection, population wide community education campaigns, and research and evaluation activity. While national governments play a substantial role in the financing of treatment services, overall they do not play an active role in service delivery. The principal responsibility for individual client service delivery rests with the sub-national governments in each country.

223. At this level, services are either provided directly by the provincial/ state or municipal level government, or alternatively, these governments act in a purchasing role by funding non-government or other service providers.

224. In Sweden the national government plays a major direct role in the distribution of alcohol. The government has a monopoly over the sale of alcohol through its retail outlets Systembolaget (This monopoly does not cover the sale of light strength beer, which may be sold in supermarkets). The original state monopoly introduced in 1917 extended to the import, export, production and distribution of alcohol. The monopolies on exports, imports and production were all abolished under a settlement between Sweden and the European Union in 1995. A new central authority, the Alcohol Inspectorate, was set up to monitor and control the activities of the new private producers and wholesalers.

225. The operation of the retail monopoly is a central element in the Swedish alcohol policy, and is seen as having played a key role in limiting the supply of alcohol. The retail centres have staff trained to give accurate information about alcohol; moderate marketing is allowed at retail outlets, only brand neutral information is provided, and all other public alcohol advertising is basically prohibited. The government is able to control the opening hours of their retail stores in a further measure to limit alcohol supply.

226. The Swiss federal government is also directly involved in the alcohol industry through the Swiss Alcohol Board. However in Switzerland the alcohol monopoly is restricted to matters concerning the production, import, sale and taxation of spirits. This monopoly, which has existed for over 100 years, has a mandate to control the supply of alcohol (in this case spirits only) as a means of improving population health. Like that in Sweden, the Swiss alcohol monopoly is credited with having achieved its major public health aim - the per capita consumption of spirits having dropped from 4.7 litres to 1.6 litres over its lifetime.

227. Monopolies at the provincial government level in Canada control the sale of alcohol for off-premises consumption.

5.4.6 Information and education strategies

228. A variety of measures are in place in all countries to educate and inform the public on the nature and extent of the harm related to alcohol use and how to avoid such problems.

229. Programs may be broadly-based community education strategies, or communication initiatives targeted at specific groups in the community, such as adolescents, pregnant women or health workers. Health education programs, particularly targeting excessive drinking by adolescents, are promoted in Korea, however not within the school setting. The school setting is particularly popular for such initiatives in all the other countries. In Australia alcohol and drug education has been formally incorporated into school curriculum.

230. Targeted mass media campaigns have been conducted at regular intervals in Sweden, Switzerland, Canada and Australia, all of whom acknowledge the difficulty in evaluating the impact of these measures. While such campaigns have given inconsistent results when evaluated, evaluations have tended to focus on short-term effects such as recall of messages, rather than long-term changes in

community attitudes and behaviours in relation to excessive alcohol consumption. Information research from Sweden suggests that campaign effectiveness is increased when the campaign is co-ordinate with or accompanied by local initiatives. This is supported by evaluative research in Australia. A new national prevention campaign was launched in Switzerland in 1999 and will run for several years, with the aim of raising awareness of the problems associated with binge drinking. The national alcohol campaign launched in Australia in 2000 also targets adolescents, and as well as using television commercials, has developed an internet site as one of the campaign approaches, and companion material for parents of teenagers.

231. Information is seen as a critical resource for the identification of emerging trends and the development of appropriate intervention strategies. National governments have clearly identified this as part of their role. In all participating countries the Federal governments conduct large-scale population health surveys which incorporate questions related to alcohol use from time-to-time. For example, the Swiss National Health Survey is conducted every five years, and is supplemented by a specific survey of health related behaviour in school-aged children every four years. The Korean Institute of Health and Social Affairs has conducted population health surveys ever three years since 1989.

232. Canada and Australia conduct alcohol specific population surveys on a regular basis. The National Drug Strategy Household Survey in Australia also includes questions designed to probe community attitudes to alcohol and other drugs and potential intervention strategies. The Canadian Community Epidemiology Network on Drug Use (CCENDU) collects information on alcohol use in 14 cities across Canada as part of an early warning surveillance system on substance use.

233. The National Institute of Public Health in Sweden is responsible for the collection and compilation of data on alcohol consumption and its consequences. A comprehensive report is produced annually by the Institute together with the Swedish Council for Information on Alcohol and other Drugs (CAN). Specific alcohol surveys are undertaken every second year, alternating between adult surveys and youth surveys. Every year CAN also carries out a survey on alcohol consumption in a representative sample of classes in the final year of school, and on all people enrolling in national military service.

5.4.7 Health research

234. The national alcohol action plans in Sweden and Australia and the National Drug Strategy in Canada all identify ongoing support for relevant research as an essential plank of their alcohol control policies. The role of governments in this area has been to support behavioural and social sciences research in particular, as these fields are thought to receive less prominence in medical-oriented research grant processes or in industry supported research. Local qualitative research, and process and outcome evaluation of intervention strategies feature in these three countries. Australia has also identified economic evaluation of the costs and benefits of alcohol consumption as a key research objective in its National Alcohol Action Plan. Sweden has identified the need for further research into the effectiveness of interventions in the primary care setting.

235. Sweden, Australia and Canada have adopted two complementary strategies to support research in the alcohol field. They each support a variety of local and regional research projects through funding other levels of government, non-government or community organisations for particular research undertakings and program evaluations. In addition, they provide core funding to support the work of particular institutes with expertise in the field. Examples include the National Institute of Public Health and the Swedish Council for Information on Alcohol and other Drugs, the Canadian Community Epidemiology Network on Drug Use and the Canadian Centre for Addiction and Mental Health. Relevant national research institutes supported in Australia include the National Drug and Alcohol Research Centre (NDARC), and the National Centre for Research into the Prevention of Drug Abuse (NCRPDA).

236. Support for research in the alcohol policy area is provided through the Federal Office of Public Health in Switzerland. Research in addiction oriented preventive interventions and their evaluation is an identified research priority area within the broadly based institutes of preventive and social medicine.

237. The development of policy to underpin population health, including alcohol-related harm, is in its early stages in Korea. Accordingly, no specific research programs or strategies have yet been established. However, research in the alcohol field could be supported through the Health Promotion Foundation Fund, given the focus in the Foundations enabling legislation on the reduction of alcohol problems.

5.5 Where next with alcohol policy? A discussion of evidence-based options.

238. For more than a century countries around the world have been experimenting with a diverse range of policies to counter the harmful effects of alcohol. As can be seen from the overview of alcohol policies in place in Australia, Canada, Korea, Sweden and Switzerland, approaches vary according to the historical and cultural context. As a result of the long history of active policy intervention, combined with a substantial research and evaluation experience, Governments are now well placed to design and review alcohol policies in the light of the scientific evidence.

239. Public health measures of proven effectiveness and which, therefore, represent potential policy levers are listed below. Many of the policy options remain under-utilised.

240. Taxation and Pricing Policies which promote moderation:

- The cost of alcoholic beverages has an effect on the level of consumption; studies from many OECD countries have consistently shown that a rise in price has lead to a drop in consumption (Edwards *et al.*, 1994, Stockwell 1999). Taxation is therefore a potentially useful lever for population health. Alcohol taxes based on the amount of absolute alcohol in a product are consistent with a population health approach, as are policies which maintain the real price of alcoholic beverages. Despite the known effectiveness of excise taxes in reducing alcohol-related problems, increases in excise taxes are infrequent.

Controls on the retail sales of alcohol:

- Restrictions on access to alcohol can effect alcohol consumption and related health and other problems. Reviews of the relevant research evidence (Holder 1991, Jewell 1995) identify measures such as restrictions on the number of sales outlets, hours of opening, differential regulation according to alcohol strength, and minimum legal drinking ages, as all being potentially beneficial.

- The US General Accounting Office reviewed all relevant studies examining the impact of raising the minimum purchase age from 18 to 21 years. The most significant impact found was a reduction in alcohol-related traffic crashes for young drivers of from 5 to 28%, depending on the State (GAO 1987). They concluded that there was solid scientific evidence to support this measure. The maintenance of existing minimum legal drinking age restrictions where these are already 18 years or above should be defended on public health grounds. Where the drinking age is below 18 years, for any alcoholic beverages, consideration could be given to raising this limit.

- Participating countries reported worrying trends towards increased consumption and binge drinking in this vulnerable group. It is apparent that existing regulations could be better enforced in regard to the service of alcohol to adolescents. Research in Australia suggests that it relatively easy for teenagers to gain access to alcohol on licensed premises. While there is only modest community support for raising the legal drinking age above 18 years in Australia, there is strong support for

restricting access of minors to licensed premises and more active enforcement of current legislation (Makkai, 1998).

- In view of the overall responsibilities governments bear for promoting the health and well-being of children and young people, population health policies could be used to greater effect to protect children and adolescents from the pressure to drink, and from the consequential harm often borne by children in families where alcohol is a problem.

- In Korea, there has traditionally been a much lower level of drinking amongst young people than in the other countries studied. Changes in cultural and community values over time, combined with high-impact global marketing of alcohol to young people, would suggest that alcohol policy will need to be strengthened by including measures to restrict alcohol access.

Drink-driving counter measures are effective:

- Drink-driving legislation, when actively enforced, is a highly-effective policy (Homel, 1993) Deterrence and strict enforcement of drink-driving laws is of fundamental importance. Also, media campaigns in this area have been relatively successful, probably due to the clear nature of the message being conveyed.

School-based and community education strategies:

- Mass media campaigns urging moderate consumption are likely to increase awareness of drinking levels, but do not consistently demonstrate any impact on consumption. On the other hand, they are thought to provide a legitimising umbrella for community action aimed at preventing alcohol problems (Edwards *et al.*,). In view of the equivocal nature of the research in this area, they ought not to be the sole or major policy response, but are best utilised as part of a comprehensive portfolio of measures.

Server responsibility and training:

- Research suggests that training of establishment managers as well as staff increases the effectiveness of this strategy. Changes in server behaviour can produce differences in BAC of patrons leaving licensed premises, and thus reduce their risk of being involved in traffic crashes or other alcohol-related problems (Edwards, 1994).

- Studies in Australia and Sweden, however, suggest that licensed premises continue to serve alcohol to persons who are intoxicated at an unacceptable level (Rydon and Stockwell, 1993). In a Swedish study which used actors to simulate obviously drunken patrons, the actors were served at 95% of the establishments visited, indicating a very permissive interpretation of the existing law by staff at licensed premises (Andreasson *et al.* 2000). McKnight (1992) found that refusal to serve intoxicated patrons increased by 37% following visits and warnings by law enforcement. It would appear that further efforts to enforce existing regulations need to be taken. As part of the National Drug Strategy Surveys in Australia in 1995 and 1997 respondents were asked their opinion on 10 policy measures designed to reduce alcohol consumption. In 1997, 92% of respondents favoured stricter enforcement of existing laws against serving customers who are drunk (Makkai and McAllister, 1998).

Control over alcohol advertising and sponsorship:

- Alcohol is one of the world's most heavily advertised products. Evidence suggests that alcohol advertising bans decrease alcohol consumption (Saffer, 2000). A stronger role could be developed for community representatives in the monitoring and enforcement of industry-developed codes of practice for alcohol beverage advertising.

Treatment for alcohol problems is a sound investment:

- Treatment is a vital component of the total policy response to alcohol problems and there is ample evidence to show its value.

- Brief interventions in the primary care settings with problem drinkers have repeatedly demonstrated reduced levels of consumption. Long-term follow up studies in Sweden have shown that this reduction in consumption flows through to improved individual health outcomes (Kristenson *et al.*, 1983). These findings were confirmed in a major cross-national study in 10 countries in 1992 (Babor and Grant, 1992)

- Comprehensive reviews of the literature (Health Canada, 1992) conclude that more than half of the people receiving treatment for alcohol problems show improvement at follow-up, and about one half of these will have ceased all alcohol use or substantially reduced consumption. This review concluded that from an economic point of view alcohol treatment is a sound investment.

241. These interventions will be most effective if they are part of an integrated strategy on alcohol and will be of limited effectiveness if taken in isolation. Country experience demonstrates the importance of having in place an alcohol control policy, with clear and measurable objectives, supported by national governments and with strong co-ordination and integration of efforts across all levels of government. Continued support for basic infrastructure such as health research and information collection and analysis is essential if policies are to remain relevant and benefit from the latest evidence of effectiveness. Efforts to increase the cross-national comparability of periodic surveys undertaken in countries would be a useful resource to assist in the analysis of the impact of the various policy approaches adopted.

242. The policy options described above may well be supported by the research evidence, but as discussed in Section 2.1 how far governments are prepared to go in implementing these evidence-based initiatives depends on many things in addition to the science. In deciding whether and how to act, they will assess the level of political support, consider the possible impact on sectors other than health such as agriculture and trade, be subject to pressure from industry interests, and operate within their own personal and cultural value set.

243. Furthermore, the extent to which any of these interventions will be effective in particular social or cultural contexts depends, among other things, on the level of public support and compliance, and the level of enforcement of corresponding regulations.

244. While many of the policy interventions described require the action of sectors of government other than health, nevertheless there is a substantial role for health departments in addressing the issue of alcohol-related harm. In addition to the policy, information and research roles described above, there is a direct responsibility for the provision of prevention programs and treatment services to individuals. Enhanced investment in these areas, given the evidence of their effectiveness, may well be warranted.

245. The health sector also has an important role to play in generating greater awareness of the health related harm and health service impact of alcohol in the community in order to build support for public health policies of known effectiveness. As the primary "custodian" of the information, research and science

base around alcohol-related harm to health, the health sector has a clear role to play in advocating within government for the protection of health and identify alcohol-related policies and practices that harm health.

6. FALLS IN THE ELDERLY

246. This section begins with an overview of the literature regarding falls in the elderly and the impact of falls and related injuries on health at the individual and population level.

247. Section 6.2 examines the health impact and the flow on effect this has on health systems in participating countries, while section 6.3 looks in more detail at the policy responses countries have adopted and are developing to address this issue. A discussion of the issues and challenges identified is to be found in Section 6.4.

248. Countries have been active in the field of alcohol policy for over a century in many cases, however the need to address the growing burden of falls in the elderly has emerged much more recently as a matter of policy concern. For this reason, countries varied in the extent to which they were able to respond to the project survey or provide data and supporting policy documents on this issue. While the discussion and analysis below is therefore based mainly on information provided by Australia, Canada and Sweden, it is nevertheless likely to reflect the picture being experienced much more generally across the OECD countries.

6.1 Falls and falls-related injuries: scope and nature of the problem

249. Falls and fall-related injuries are among the most serious and common medical problems experienced by the elderly. Around one in three community dwelling older people will experience a fall at least once a year. Ten percent of people will have multiple falls. Of those who fall, a quarter will sustain a serious injury, and six percent will sustain a fracture (Tinetti, 1994).

250. People over 65 account for the majority of falls-related injuries in the population. The age specific distribution of fall injury shows that both the incidence and severity of fall injuries increases rapidly in the older population. The rate of fatalities associated with falls in 1996 in Australia, for example, was 13 per 100 000 among people aged 70-74, and over 200 per 100 000 among those aged 85 years and over (National Injury Surveillance Unit, 1999). The risk that hospital care will be needed following a fall is similarly age related.

251. In most western countries large increases in the number of people in the oldest age groups (over 85) are predicted for the coming decades. While it is not clear that the rate of falls being experienced is rising or rising consistently across counties, clearly the actual number of falls-related deaths, injury and hospitalisations is continuing to increase due to the increasing proportion of people aged greater than 65 years.

252. Studies throughout the world have identified a number of factors as being associated with an increased risk of falling amongst community dwelling older people. These risk factors fall broadly into two groups – *intrinsic* risk factors, such as those related to the individual's personal health, mobility and fitness; and *extrinsic* factors such as those relating to the individual's environment. It is important to remember, however, that falls are often caused by several interacting factors including social factors such as living alone, reduced personal mobility and poor health, and hazards in the environment. The reasons for most falls are complex, even if they may have one precipitating cause such as a tripping over an object. Many interacting factors need to be considered.

253. Major risk factors for falls and fall-related injuries include the following:

- A range of medication types may increase the likelihood of an older person having a fall. There are a number of ways drugs might increase the risk of falls; most important are sedation, impaired balance, and impaired reaction time.

- Taking 3 or more medications has been shown to increase the risk for recurrent falls (Campbell *et al.*, 1990).

- There is a consistent association between the use of most psychotropic medications and falls (Nygaard, 1998). Increased falls occur in patients taking more than one psychotropic drug (Yip, 1994, Leipzig, 1999).

- Poor nutritional status is a risk factor for falls. Vitamin D deficiency and low calcium intake commonly occur in elderly people living at home or in institutions. In a study of 119 consecutive patients with a hip fracture admitted to a trauma centre Maffulli (1999) found more than one tenth of the study population were classified as severely malnourished; low BMI is an independent risk factor for hip fractures.

- The direction of a fall is an important determinant of hip fracture occurrence (Cumming, 1994).

- Other risk factors include unsafe footwear, poor vision, balance or gait, insufficient exercise, and environmental hazards.

- Being female, and living alone also increase the risk (Wild, 1981). Studies from Sweden have shown that people who have a social network, and receive social support fall less often than do people living alone (National Institute of Public Health, 1992).

- Data from the National Injury Register in Norway show that for elderly women at home who were injured through a fall, the most common mechanisms causing injuries were loss of balance (46%), stumbling (19%) and sliding (12%) (Kopjar 1995). Tripping over something is a common cause of falls.

- Nursing home residents with a fall history are more than three times likely to fall during the follow-up period than residents without a fall history (Kiely, 1998).

- Hip weakness, poor balance, and number of prescribed medications are the factors most strongly associated with falling amongst institutionalised people (Robbins, 1989).

254. People who are frail and housebound are at risk of falling indoors, due principally to intrinsic factors such as dizziness. Older people who have some degree of activity, but may also be frail, are exposed both to intrinsic factors and external environmental hazards, such as obstacles and steps. External factors contribute to more falls than internal factors (Bath, 1999).

255. Each of these risk factors in isolation has been shown to be significantly associated with increased falls and injury risk among older people. However, individuals with multiple risk factors have an increased rate of falls compared with individuals with one falls risk factor (Cwikel *et al.*, 1998; Tinetti *et al.*, 1988).

256. Meanwhile, although the number of falls has been shown to increase with the number of risk factors, older people who have no identified risk factors (other than their age) still fall. The individuals first fall may be the one that results in serious injury. Therefore, history of previous falls, or evidence of balance problems, are likely to be of limited value in identifying risk of falls among older people who have no

obvious deficits. In a study of 110 healthy women over 70 years of age, in which the women kept detailed falls diaries for 12 months, Hill (1999) reported that 49% of the women fell in the 12 month period; 23% fell more than once. The accuracy of predicting fallers in community living healthy older women is low. As such, strategies aimed at reducing falls among community-dwelling healthy older women need to be directed broadly to this group, rather than targeting a sub-group such as people with impaired balance (Hill, 1999).

257. Even though only 10% of falls result in serious injury (Tinetti *et al.*, 1988) falls in elderly people are nevertheless a common presenting complaint to accident and emergency departments. It has been suggested that current practice in accident and emergency departments commonly focuses on the injury, with little systematic assessment of the underlying cause, functional consequences, and possibilities for future prevention (Close *et al.*, 1999).

258. Although few falls result in serious injuries, the psychological consequences are often severe with loss of confidence in the ability to cope, which may lead to an increased fear of falling, again resulting in restriction of physical activity of the elderly person, dependence on others, and social withdrawal (Poulstrup, 2000). Australian data indicates that approximately 30% of people aged 65 or older living in the community report some degree of fear of falling, and approximately 10% report severe levels of fear of falling (Kendig *et al.*, 1996). One in ten falls leaves the person unable to get up for at least 5 minutes (Nevitt, 1991) and a quarter of falls restrict activity because of injury or fear of further falls.

259. Hip fractures only occur in about 1% of falls. Despite this, hip fractures account for a large share of the disability, death and medical costs associated with falls. As measured by their frequency, influence on quality of life, and economic cost, hip fractures are a public health problem of serious proportions. Indeed, by the age of 80 years every fifth women, and by the age of 90 years almost every second women, has suffered a hip fracture (Kannus, 1996). About 20% of people who fracture their hips are dead within a year. Almost all hip fractures (98%) occur after a fall.

260. In an Australian quality of life/ time trade off survey of women aged 75 years and over, fully 80% reported that they would rather be dead than experience the loss of independence and quality of life that results from a "bad" hip fracture (described in the survey as one requiring permanent admission to a nursing home). These women felt they had lived long lives already, they were "living on borrowed time", death is expected at their age, and preferable to a state of health that meant losing their home and possessions, their independence, and their normal quality of life (Salkeld, 2000). Hip fractures are obviously perceived as a great threat to older women's quality of life.

261. Falls among community dwelling older people have also been shown to be a strong predictor of admission to residential aged care (Tinetti, 1997). Around one in five people who have broken their hip move to a nursing home within 12 months (National Centre for Injury Prevention and Control, www.cdc.gov).

262. For people living in institutional care settings the rate of falls is somewhat higher than that for community living elderly people. The bulk of the falls in institutional settings occur during the day, in the ward, and in most cases when no staff are present with the person.

6.2 Health consequences and health system impact in selected countries

263. Routine population based health surveys in Canada, Australia and Sweden provide one source of information on falls and fall related injury among elderly people. Topic specific surveys have also been undertaken in these three countries. Examples include the Portrait of Seniors in Canada, or the survey of falls in older people living in Queensland, Australia.

264. Each country also has a well established national injury surveillance and reporting system in place. Even so, it is not always possible from these sources to identify whether falls and injuries reported were experienced by elderly people living at home, in residential aged care, or hospital settings. Information is not available from Korea on the pattern of falls experienced by elderly people living in the community, however, data relating to the institutional setting has been included where possible.

265. Caution needs to be exercised when making comparison between participating countries on the prevalence of falls and related health consequences. Variations can be expected, for example, in how minor or serious injuries are defined and interpreted within each countries cultural context, and in the level of care sought and options available when experiencing a fall.

266. Box 5 presents an overview of data related to the pattern of falls in the elderly living in the community, while Box 6 describes the frequency and pattern of falls experienced by the elderly living in a variety of institutional settings. Data is also presented in Box 7 on falls mortality, and the number of falls-related hospital separations and bed-days for all elderly, regardless of the setting in which the fall and injury were sustained.

267. Common features across participating countries including the following:

- Around one third of elderly people sustain a fall each year, with many people having multiple falls;
- The incidence and severity of fall injuries increases rapidly in the older population;
- Case numbers are rising because of the increasing numbers of older people surviving into very old age;
- Falls result in significant long-term disability, restriction of activity and loss of independence;
- About two-thirds of injuries resulting from falls are bone fractures, with hip fractures having the greatest impact on quality of life; and
- Long average length of stay for elderly with fractures and other serious injury leads to very high health service usage and costs.

Box 5. Pattern of falls and fall-related injury in community-dwelling elderly

Australia	Around 30% of elderly report one or more falls in previous 12 months. 230 000 elderly likely to fall in a year. Forty-eight percent of people aged 65 and over surveyed in Victoria (Aust) who experienced a fall (in the preceding 12 month period) and sought medical attention were admitted to hospital. Case numbers are rising, but no clear trend in age-standardised rates. No seasonal pattern reported.
Canada	Approximately one million or 1 in every 3 seniors living in the community will experience at least one fall per year and up to 50% of these individuals experience repeated falls. Females aged 65+ fall twice as often as males. At age 90+ women were four times as likely to fall as men of the same age. Slipping, tripping and stumbling the most common causes of falls. Two-thirds of the reported falls occurred in the home or surrounding area. No change in the hip fracture rate was recorded between 1981 and 1992. Majority of falls occur in winter.
Sweden	The incidence of hip fractures in Sweden increased from 3.3 per 1 000 inhabitants in 1966 to 5.1 in 1986 for persons more than 50yrs old. The incidence almost doubled in persons more than 80yrs old, from 13.3 to 25.6 per 1 000 in that time. 75% of injuries to elderly occur at home. Slipping, tripping and stumbling the most common causes of falls. Majority of falls occur in winter

Box 6. Pattern of falls and fall-related injuries in institutionalised elderly

Australia	There are no Australian studies in this area, however fall rates among older people in residential aged-care setting are thought to be consistent with rates reported from overseas studies - varying from 30-50% of residents sustaining a fall in a 12 month period. The Australian Incident Monitoring Study estimated that in hospitals, 38% of all reported patient incidents involve a fall (Australian Patient Safety Foundation, 1998). Figures are not provided on the number of elderly people involved but they would be expected to feature prominently. A survey of 46 nursing homes in Sydney in 1995 found 58.9% of residents were taking one or more psychotropic medications.
Canada	24% of all institutional residents had been injured in a fall in the previous 12 month period. The most common reasons why older institutional residents had fallen were problems with balance (29%) and weakness or frailty (26%). The most serious injury suffered by the majority (62%) of those injured as the result of a fall was a bruise, scrape or cut, although 29% had broken a bone (National Population Health Survey) 40% of those aged of 80+ living in a nursing home have a fall each year. Falls are a precipitating factor in 40% of admissions to nursing homes and result in a 10% increase in home care services.
Korea	Surveys in 1995/95 showed the frequency of falls in long-term care facilities was in the range 29.6-43.6%. Among the elderly who fell in hospital or were admitted to hospital due to a fall, 22.1% were taking sedatives, hypnotics, anti-depressants or the like.
Sweden	Accidental falls have been reported as a major problem in geriatric care in Sweden. Incidence rates vary between different types of institutions. Study results show an incidence rate of falls per 10 000 patient days of psycho geriatric clinic at 171, compared with 92 at geriatric rehabilitation clinic, and 31 in the nursing home setting. Most falls (62%) did not result in injury, while major injuries occurred in 5%. The majority of the accidents in nursing homes studied occurred during daytime, in the patient's room and in many cases soon after admission. Most of the injuries were caused by falls and in more that 90% no staff was present. In the same study, two thirds of the severely injured nursing home residents had to be transferred to an emergency hospital for surgery or other treatment.

Box 7. Health service impact and health outcomes associated with falls

	Health service impact	Health outcomes
Australia	880 000 medical services 41 000 hospital episodes 48% who fell and sought medical help were admitted to a hospital. Estimated hospital separations (93/94) M - 10 200 F - 30 900 Estimated hospital bed-days (93/94) M - 124 600 F - 400 700 Estimated direct health care costs of treating elderly for falls injuries – AUD 406 million (93/94)	Accidental fall recorded as primary cause of death (1996) M 76, F 52 aged 65-74yrs M 292, F 497 aged 75+ Fractured hip/pelvis, 1996 M - 580 F - 246
Canada	For aged 65+ falls account for 84% of injury admissions. Age adjusted mean length of stay was 22.2 days in 1992. Estimated hospital admissions 95/96 M - 18 257 F - 45 896 Estimated hospital bed-days (95/96) Total - 691 746 Estimated direct health care costs of treating elderly for falls injuries - CAD 1 billion (1994)	Accidental fall recorded as primary cause of death (1996) M 152, F 87 aged 65-74yrs M 793, F 1 367 aged 75+ The unadjusted odds ratio of entry into care (by 96/7 survey) for people who reported having sustained an injurious fall in 94/5 was nearly triple (2.7) the odds for people who did not report a fall.
Korea		Accidental fall recorded as primary cause of death (1996) M 179, F 53 aged 65-74yrs M 122, F 207 aged 75+
Sweden	Estimated hospital admissions (96) M - 14 872 F - 39 095 Estimated hospital bed-days (93/94) M - 103 434 F - 206 994 Estimated direct health care costs (1996) of treating elderly for falls injuries – M - 479 mil SEK F - 931 mil SEK	Accidental fall recorded as primary cause of death (1996) M 194, F 97 aged 65-74yrs M 572, F 679 aged 75+ Fractured hip/pelvis, 1996 M - 556 F - 2 254 Falls account for 40% of the total number of injuries in Sweden: 88% of all fall related injuries are sustained by people aged 65+.

6.3 Policy approaches in participating countries

268. How then are countries responding to the growing problem of falls in the elderly? Have they developed a strategic approach to the prevention of falls and the reduction in the rate and severity of falls-related injuries among older people? The policy approaches adopted in Australia, Canada and Sweden are discussed in this section.

269. The checklist for the analysis of government policy developed in Section 5.4 has again been adopted.

6.3.1 Policy development and co-ordination

270. In Sweden the National Institute of Public Health has been designated by the national government as the body responsible for monitoring the implementation of health promotion and injury prevention programs for the elderly at the national, regional and local level.

271. The first broadly based program to promote safety and prevent injuries in a community was initiated in Falköping in Sweden in 1975. The program included information, education, monitoring high-risk groups, and environmental changes to address injuries in all age groups in the 32 000 member community. Among the lessons learned from this program was the need for cross-sectoral co-ordination and co-operation in injury prevention work.

272. Building on this experience the National Institute of Public Health has incorporated its falls prevention program into a community-based model for injury prevention work at the local level, the "Safe and Secure Community" initiative. This program was launched as key national program of the National Institute for Public Health in 1989.

273. Around 80 local communities participate in the program, which builds on the social, economic, and political structures and organisations that already exist in each local community. The program focuses on individual behaviour and risk as well as a broad environmental approach. All the "Safe and secure communities" in Sweden have created cross-sectoral groups working with safety for elderly. Every "Safe and secure community" submits an annual report to the National Institute of Public Health, and there has been a very active research and evaluation program built around the initiative.

274. Canada and Australia, like Sweden, have incorporated their evolving policy responses to falls in the elderly into a broader injury prevention framework.

275. In Canada the Federal, Provincial and Territorial (F/P/T) Deputy Ministers of Health have identified injuries as a serious public health problem that requires a coordinated, multi-sectoral, multi-jurisdictional response. A National Framework For Injury Prevention and Control is currently under development.

276. In a recent initiative Health Canada and Veteran Affairs Canada have established a community based health initiative to help identify falls prevention strategies for veterans and seniors. Veterans Affairs Canada has committed CAD 10m over a four-year period to pilot approved projects at the national level and in three regions. The project is targeted at community-dwelling seniors and veterans, and aims to reduce the number of falls and the severity of falls-related injuries through promoting best practices, program models and community settings that are effective in reducing the range of risk factors that contribute to falls.

277. In addition to this initiative at the national level, many preventative approaches have been implemented (although not necessarily evaluated) at the community and regional levels. Examples include

programs which include environmental modifications to remove potential indoor/outdoor hazards; fall prevention clinics and home safety assessments; regular medication reviews; exercise and strength training programs to improve balance and gait and enhance bone strength; and multidisciplinary team assessments.

278. The issue of falls in the elderly has been identified as one of four priority areas for action in a new National Injury Prevention Action Plan currently under development in Australia. Unlike the approaches adopted in Sweden and Canada, the Australian Plan proposes strategies to implement best practice in falls prevention in acute-care and residential aged-care settings as well as in the community. It also proposes a series of strategies to improve research and surveillance in falls prevention in order to improve the evidence base in relation to the different settings.

279. In 1999/2000 the Federal Government committed USD 6.6 million over four years towards a new program to prevent falls and falls injury in Australians aged 65 and over, the *National Falls Prevention in Older People Initiative*. The initial phase of this program includes an audit of research to identify best practice in falls prevention; a stocktaking of current practice; development of falls prevention resources for general practitioners and other health professionals; convening of a national falls forum; and development of a strategic action plan for the initiative.

280. As is the case in Canada, the Department of Veterans' Affairs is also active in this policy area in Australia. Under their HomeFront Initiative veterans have access to free home assessment to identify falls and accident hazards in and around the home such as uneven floor coverings, poor lighting, or unsafe steps. Recommended safety appliances are arranged and their cost subsidised.

281. The majority of State and Territory health departments in Australia have also developed falls prevention programs which aim to reduce falls and fall injury among older people. These generally include a range of interventions and incorporate elements of education, home modification and work with allied health professionals. Some States also operate falls clinics which target older people at greater risk of falling (having already experienced a fall) and these aim to introduce rehabilitative and preventive strategies to reduce the potential of repeat falling.

6.3.2 Taxation and pricing policies

282. The use of taxation and pricing as population health policy levers would appear to have less applicability in this policy field than in other areas such as alcohol or tobacco control policy.

283. In all three countries, however, a variety of programs are in place through community services departments, veterans affairs departments, and agencies responsible for seniors to provide free or subsidised minor items such as hand rails to assist with safety in the home. Subsidised loans against home equity are also provided in particular cases to assist with the cost of more substantial home maintenance and modifications necessary to promote safety and independent living. Through similar arrangements a variety of mobility aids are available to community dwelling older people free of charge or at subsidised rates.

284. As there is ample evidence that unsteady gait, poor balance, and slipping and tripping are major risk factors for falls, programs such as these appear to be a very useful element of a comprehensive falls prevention strategy.

6.3.3 Regulate and mandate activity

285. The extent to which countries use these levers as elements of a comprehensive approach to falls prevention has not been examined within the scope of this project. However, countries made mention of the

existence of various building codes and regulations that specifically apply to housing designed for elderly people.

286. Concern at the failure of housing developers to adequately account for the special needs of elderly residents lead to the construction of a full-scale laboratory in Lidköping, Sweden. The laboratory builds kitchens and bathrooms and tests them with elderly people to see how they function (National Institute of Public Health, 1994).

287. In Canada Federal/Provincial/Territorial Ministers responsible for seniors have in place a program involving communicating with key organisations to ensure that building codes and product standards address the safety needs of seniors.

288. It is also worth noting the high rate of falls and resultant injuries which occur within the acute and geriatric hospital settings, and the residential aged-care setting. A number of specific risk factors for falls have been identified in these various institutional settings, such as the use of patient restraints, the height of beds and tables, floor surfaces, medication management, and availability of staff for supervision at high-risk times such as toileting and bathing. Systems are in place in most countries for the licensing of such facilities; the extent to which such systems are used or could be used to mandate best practice or regulate poor performance in these areas may well be worth further investigation.

6.3.4 Finance health services

289. Governments finance much of the activity related to the prevention of falls at the population level. Initiatives include health promotion programs designed to raise the awareness of older people about the risks of falls, and how to minimise these risks, community group discussions on the issue, and balance and exercise training sessions for groups of older people.

290. Participating countries were not able to provide an estimate of the annual expenditure on programs targeted to preventing falls and fall-related injuries in the elderly. Fall prevention programs are individually funded through a wide variety of sources including federal, State/provincial and municipal governments, private foundations, and non-governmental organisations.

291. In Canada and Australia, the mechanism through which these type of population based prevention initiatives are financed is typical of the approach to financing population health more generally. Specific program funds are allocated for a limited period, for example 3-4 years, and often are awarded to non-government or other providers following a grant process. In Canada, contributions from the Federal government towards community-based projects are made through the Population Health Fund. In Australia, the Federal government has established and financed the National Falls Prevention in Older People Initiative as a four-year program.

292. The “Safe and Secure Community” initiative in Sweden appears to have enjoyed more sustainable financing, with many communities having had co-ordinated programs in place across their municipalities for more than ten years. An economic evaluation of the costs and benefits of the “Safe Seniors in Sundyberg” is currently underway. The evaluation will assess the total cost of implementing the comprehensive, community-wide falls prevention initiative and identify any possible savings in health and related community care outlays.(Stockholm County Council, 2000).

293. There have been other changes made in Australia to the method of financing individual health assessments, as a mechanism to promote health and well being in the elderly. Through the Enhanced Primary Care Package, a new Medicare Benefit Schedule item has been introduced to provide for annual voluntary health assessments by general practitioner of members of the community aged 75 years or over. This provides an opportunity for older people to undergo a full health examination including factors that

impact on falls risk such as medication regime, sensory factors, any mobility issues, management of chronic conditions, footwear and comprehensive falls history.

294. The role of governments in the financing of health services is well established in all three countries in relation to the treatment of falls-related injuries. Most of the inpatient treatment is likely to be provided through the general hospital system in each country, financed through the usual mechanisms. Similarly, financing arrangements for treatment in the primary care setting would not be expected to differ from the standard mechanism operating in each country.

295. National and/or sub-national governments also finance long-term residential aged care, as well as specialist geriatric and psychogeriatric services and rehabilitation services. Where there are different financing mechanisms in place in the acute, long-term care, and community sectors, these arrangements may either promote or hinder the adoption of falls prevention strategies within these settings. For example, it is possible that the costs of preventing falls in, say, the nursing home sector (*e.g.* through providing hip-protectors to residents, or improved non-slip floors) may be born by one level of government or private provider, whereas the potential savings from reducing falls injury might accrue in the acute sector, which may be financed by another level of government.

6.3.5 Service delivery role

296. In all participating countries national governments are directly involved in information development and collection, community-based education programs and prevention initiatives, workforce development and research and evaluation activity. The principal responsibility for individual client service delivery rests with the sub-national governments in each country, though national governments do play a role (to varying extents) in the financing of these services.

6.3.6 Information and education strategies

297. A variety of measures are in place in all countries to educate and inform older people, their carers, community organisations, health professionals and health care institutions and the wider public about falls and falls injury prevention strategies.

298. A wide range of resources are used in community based falls prevention programs. Examples include pamphlets and information sheets, environmental hazard check lists, posters and resource kits. Most information and education programs are developed and delivered at the local community or regional level. Mass media campaigns, commonly used in alcohol prevention programs, are not an approach favoured in relation to informing the community about the risks of falls and how to prevent injury from falls.

299. In Australia, Canada and Sweden governments at the national level play a complementary role in the development and dissemination of information and educational material related to falls prevention. This is often linked to their role in supporting research and evaluation, and identifying and disseminating best practice.

300. In Sweden, for example, the National Institute of Public Health and the National Board for Consumer Policies have collaborated with retirement organisations and with representatives of the “Safe and secure community” projects in the design of falls prevention support material for local projects. This material consists of a brochure entitled “Keep walking!” addressed to the elderly and intended to be handed over at personal contacts they may have with primary health care or geriatric health care providers, or through retirement organisations. A checklist for inspection of the home and its immediate environment for hazards is included with the material.

301. The Federal Government in Canada has also undertaken activities in a number of areas related to the prevention of falls in the elderly, addressing both the behavioural and environmental risk factors. The "Safe Living Guide" is an example of an educational resource intended for wide distribution. In co-operation with State/Provincial Ministers responsible for seniors, they have also developed the "Safety and Security for Seniors Resource Inventory" which addresses falls prevention.

302. In Australia, the Federal Government recently convened a national level stakeholders forum involving older people, retirement organisations, researchers specialising in falls in the elderly, health care providers, and others to educate and raise awareness of the issue, as well as consult widely on possible future policy and program priorities. The Federal government is also undertaking the development of falls prevention resources for general practitioners and other health professionals.

303. Governments at the national level in Australia, Canada and Sweden also play an active role in the surveillance and epidemiological analysis of injuries, including falls. Information is seen as a critical resource for the identification of emerging trends and the development of appropriate intervention strategies. As well as maintaining hospital based injury reporting systems, and analysing injury data from other official statistics, they also conduct local or regional community surveys from time to time.

304. In Sweden, the National Institute of Public Health maintains a database of all the injury prevention programs and measures undertaken under the "Safe and secure community" program. A stocktaking of all programs currently underway in Australia was also recently compiled for the Federal government, and a similar study and evaluation of current fall-prevention programs and practices and dissemination of their findings is currently underway in Canada.

6.3.7 Health research

305. There is strong support for research into the causes and consequences of falls, and into the effectiveness of falls prevention strategies in Australia, Canada and Sweden.

306. Many gaps in knowledge have been identified, and there is much ongoing work underway in these countries to further understand the issues. In an audit of research to identify best practice in falls prevention recently carried out in Australia, the National Ageing Research Institute (2000) identified significant knowledge gaps in the fields of residential aged care and acute care. The draft National Injury Prevention Action Plan in Australia proposes a series of strategies to improve research and surveillance in falls prevention in order to improve the evidence base in relation to different settings, to examine the cost-effectiveness of interventions and to develop performance indicators. The objective is to promote nationally consistent, evidence-based approaches to falls prevention.

307. Health Canada is also undertaking evaluations of the effectiveness of current falls prevention programs and will disseminate this information across a wide range of sectors.

308. In Sweden many scientific studies of the effects of the injury prevention measures have been undertaken in the local communities that have been designated as "A safe and secure community". Because of the size of their programs (*e.g.* communities of 30 000 residents or more) quasi-experimental study designs have often been used with pre- and post-implementation measurements in an intervention and a control area. Researchers have identified the methodological complexity associated with assessment of participatory community-based safety promotion programs, which simultaneously address multiple risk factors (Lindqvist K, Unpublished).

309. Other researchers have looked at the long-term impact of these community-wide programs. In his evaluation of the community safety program in Falun, Bjerre (2000) noted that there was still a reduction in injuries after seven years. However, it was possible to surmise a waning effect during the last two years of

the program. This observation suggests that a community-based injury prevention program must be continuously renewed and reinforced to maintain its impact in the long-term.

310. The need for further research in particular areas and setting has also been identified in Sweden. For example, it has been suggested that more needs to be learned about the effectiveness of physical environment modifications including in-home modifications as an intervention strategy. Within the acute and residential care settings in particular, further research needs to be undertaken into strategies to reduce the severity of falls-related injuries, through interventions such as the use of hip protectors by residents.

6.4 Where next with falls prevention policy? A discussion of evidence-based options.

311. Falls are a prime target for prevention, being the most common cause of injury for people aged over 65 years. Without any population level intervention the increasing trend in the number of injuries resulting from falls is likely to continue, largely because of an increasing number of older people.

312. Governments and the research community are actively engaged in evaluation of current preventive activities and other research in order to fill some of the gaps in knowledge on falls prevention and reduction in the severity of fall injuries. As further evidence accumulates on effective interventions, falls prevention programs may need to be reviewed.

313. Despite the current gaps in knowledge, there is considerable research evidence of the effectiveness of falls prevention programs among community-dwelling older people targeting single risk factors (National Ageing Research Institute, 2000). Population health interventions of proven effectiveness include:

- Overall the evidence strongly suggests a beneficial effect of exercise, especially if started in childhood and adolescence (Kannus, 1999). Exercise can improve gait, balance, co-ordination, reaction time and muscle strength – in addition to its role in increasing bone density.

- Targeted home exercise programs incorporating balance and strength exercises, and group exercise programs, such as Tai Chi have been effective in reducing falls (Campbell *et al.*, 1997, Stewart, 1998, Lord, 1995, Province *et al.*, 1995)

- Preventive home visits by a variety of health professionals or trained visitors are effective in reducing falls (Hendriksen, 1989). General practitioners may have considerable public health impact in promotion of health for elderly patients (Kerse *et al.*, 1999).

- Structured inter-disciplinary assessment of people who have fallen can reduce the likelihood of further falls. An interdisciplinary approach to this high-risk population can significantly decrease the risk of further falls and limit functional impairment (Close *et al.*, 1999).

- Withdrawal of psychotropic medication significantly reduces the risk of falling, but permanent withdrawal is very difficult to achieve (Campbell, 1999). Interventions will need to target policy, patients and physicians. Better information needs to be provided to physicians, and patients, about the risks and benefits of drug therapy.

- Inappropriate and unnecessary prescribing needs to be addressed (Tamblyn, 1996). Levels of psychotropic use by the elderly could be reduced by improved management of life crisis and insomnia. In a study which involved the clinical review of all prescription and billing records in a 12 month period for 63 000 elderly people, high-risk prescribing was most

prevalent for psychotropic drugs, and questionable prescribing was more frequent than rational prescribing for this group (Tamblyn, 1994).

- Bare feet and walking shoes maximise balance, whereas high-heeled shoes constitute a needless balance hazard for older women (Lord and Bashford, 1996).

- Vitamin D_3 and calcium supplementation have been shown through randomised control studies to reduce the risk of hip and other fractures (Chapuy *et al.*, 1992).

314. There is no clear evidence that provision of a safer environment, *by itself*, is of benefit in reducing falls and fall injuries. More definitive work in this area needed (Carter *et al.*, 1997). The prevalence of environmental hazards in the homes of elderly people has been reported to be high (Gill, 1999) and overall the homes of fallers are no more hazardous than the homes of non-fallers (Clemson, 1996). The usefulness of grab bars, however, appears to warrant further evaluation (Sattin, 1998). While there are difficulties in assessing the contribution of individual risk factors, reduction of environmental hazards has been part of most multi-strategy programs which have been effective in reducing falls.

315. Some of the strategies which have been shown to be effective in the community setting have also been validated for elderly people living in institutions. For example, multi-disciplinary assessment of high falls risk residents has been shown to be effective in reducing falls, as has diet supplementation. In addition, in a Danish RCT external hip protectors were found to significantly prevent hip fractures in nursing home residents. Severity of falls could also be decreased by an external hip protector (Lauritzen 1993).

316. The institutionalised older person generally has limited control over many of the risk factors that relate to falls: they will not be able to independently select and place furniture, or modify floor coverings; they have less control over their diet and medication management, or any physical activity they may wish to pursue. A population health approach in this setting will need to focus on the whole institutional environment, with prevention strategies being directed to the policies and practices of the institutions and not principally to individual behaviour change.

317. It is widely acknowledged that preventive activities which focus on multiple risk factors are more likely than a single intervention to reduce falls. Multi faceted intervention programs, including the provision of information/education, the review of drug treatment, modifications of the home environment, and exercise training can reduce falls and fall-related fractures considerably among the community dwelling elderly (Tinetti, 1994). Some examples of comprehensive community based programs which have been evaluated and have led to reduced falls incidence include the following:

- In Australia, a 4 year study which targeted 80 000 residents resulted in 22% lower incidence of falls in the intervention community compared with the control group (in a different State) and in 20% lower fall-related hospitalisations (Kempton *et al.*, 2000).

- The injury prevention program in Lidköping, Sweden shows a significant reduction of hip fractures among elderly women of 6.6% per year and 5.4% per year for elderly men during a five-year period. In Sweden as a whole an increase in hip fractures was observed during the same period (Svanström *et al.*, 1996).

- After two years of a comprehensive program targeting 23 000 elderly people in a Danish community there was a reduction of 46% in lower extremity fractures, and a high reduction in hip fractures among women; but not men. Interventions included home visits by community nurses and by GPs, removing physical hazards, treating psychiatric illness, dealing with inappropriate medication consumption, diet insufficiencies, and physical and

mental activity. The reductions were highest in last nine months, indicating the benefit of a long-term approach (Poulstrup, 2000)

318. As is the case in respect to alcohol control, these interventions to reduce falls are likely to be most effective if they form part of an integrated strategy on falls prevention, supported by national governments and with strong co-ordination and integration of efforts across all levels of government. A population health approach to this issue will address the complex mix of risk factors, both *intrinsic* and *extrinsic*, in the variety of settings in which falls occur - at home, in hospital, or in residential aged care.

319. Policy options open to governments in order to reduce the harm associated with alcohol are strongly influenced by factors such as cultural practices, the level of political support, the possible impact on industry and on agriculture and trade sectors. In the case of the prevention of falls in the elderly, the political landscape is not so contentious or complex.

320. Barriers to action include the difficulties inherent in working across the many sectors involved in health and social support services for the elderly in the community, patterns of clinical practice and management, and the existence of different mechanisms for financing preventive programs, acute care and long-term residential care.

321. As has been noted above, there is ample evidence, for example, that the level of psychotropic medication use in the elderly is a risk factor for falls. That leads to the suggestion that levels of psychotropic use by the elderly could be reduced by improved management of life crisis and insomnia, through, amongst other things, counselling and support services. Are both these care options financed in similar ways in terms of ease of access and cost to the client? Or do the financing mechanisms contribute to the imbalance in service provision?

322. Do current financing arrangements promote falls prevention initiatives targeted to individual clients considered at risk, such as through individual health assessments, over support for broadly based community level initiatives focussed on reducing the level of risk in the whole population of elderly?

323. As governments gear up their investment in interventions to prevent falls and reduce falls-related injuries, they will need to consider these broader system issues as well as focussing on the effectiveness of individual intervention strategies.

PART C. POPULATION HEALTH POLICY APPROACHES AND CHALLENGES

7.1 The strengths of a population health approach

324. It is important for health policy to assess the relative contributions of preventive and curative measures to health improvement. In particular, population health measures which tackle inappropriate lifestyles, physical hazards and even the underlying social, economic and physical determinants of health may be an important complement to medical care in promoting good health.

325. Indeed, there are many health problems that can only really be successfully controlled and prevented through a population health approach. For example, in most OECD countries the leading causes of death and preventable disability in children, adolescents and younger adults are motor vehicle trauma, suicide, injuries, violence and drug abuse, all of which are most appropriately tackled through preventive measures.

326. A population health approach offers potential gains in preventing early deaths amongst males, particularly in the areas of injury prevention, cardiovascular disease, cancer and suicide, where the mortality rate for men exceeds that of women by a wide margin. Harmful alcohol consumption is an important contributor to many of these causes of death, both accidental and intentional.

327. Where behavioural or other risk factors are normally distributed through a population there will be a small group of people at great risk, whether it be, for example, the heavy abusers of alcohol commonly referred to as alcoholics, or the small group of very frail elderly with an existing history of falls and other risk factors. Most of the illness and injury, though, related to either alcohol or falls, will arise from the much larger group of the population at low to moderate risk, simply because there are many more of them. Broadly-based population health approaches may be necessary in order to lower the average risk of this much larger group of people, who are otherwise not identified and, even if they were, are simply too numerous to target individually.

328. Despite the greater burden of illness experienced by people from lower socio-economic groups, they are less likely to act to prevent disease or detect it at an early stage. Effective population health action may need to address the social, economic and environmental circumstances that give rise to poorer health outcomes.

329. What may be required to tackle some disparities in health are policies which acknowledge the role of individual risk factors, but recognise that addressing them requires more than an individual behavioural modification approach. As many commentators such as Marmot (1998) have rightly said, the disparity in health-related lifestyle behaviours between rich and poor is insufficient to account for health inequalities. At the same time, though, they do make a substantial contribution. For example, alcohol-related mortality has been estimated to account for at least 24% of the difference in life expectancy between manual classes and upper professional classes in Finland (Kunst, 1998).

330. Comprehensive and sustained approaches to population health appear to work best, and include a balance of action at the population level complemented by targeted approaches to high- risk groups. They need to be underpinned by investment in the infrastructure for health promotion – research, education, job

training, surveillance, and information development. Co-ordinated action across government levels is most likely to be achieved in the context of an overall policy framework.

331. There are many population health interventions for which strong evidence of effectiveness exists. Failure to implement these evidenced-based interventions represents important missed opportunities for preventing disease and promoting health.

332. Australia, Canada, Korea, Sweden and Switzerland have emphasised the benefits of supporting a population health approach in policy documents and initiatives that have been developed in the past decade. Despite this increasing emphasis, population health measures do not appear to have increased their share of total health funding to any significant degree over the past twenty to thirty years.

333. The evidence and arguments put forward in this paper may help member countries to re-examine the question of whether the 2-5% of health expenditure currently devoted to population health measures is adequate.

7.2 Current approaches to population health – what seems to be working?

334. In Part B of this paper, the population health policy approaches adopted in Australia, Canada, Korea, Sweden and Switzerland towards alcohol-related harm and falls in the elderly were assessed. Government action in the areas of policy development and co-ordination, taxation and pricing, regulation, financing health systems, service delivery, information and education, and health research was considered.

335. It is possible to highlight a number of areas relevant to population health policy where government policies appear to be appropriate and effective.

- Country experience demonstrates the importance of having in place an agreed policy framework for population health measures, with clear and measurable objectives.

- Leadership and support from national governments can bring public health matters of concern to the fore and, with strong co-ordination and integration of efforts across all levels of government, help focus attention on the development of appropriate policies and interventions.

- Country population health systems vary in the degree of centralisation of decision-making relating to policy and financing issues. Whatever their local arrangements, the existence of intergovernmental mechanisms are an important structural measure to ensure that population health policy is both developed and implemented in a coordinated way across government.

- Government support to the basic infrastructure of a population health system, such as health research and information collection and analysis, is essential if policies are to benefit from the latest evidence about cost-effectiveness. The generation and dissemination of information - for example, on health status, service utilisation, total health spending, and government expenditures among different groups in a given country – is crucial.

- Taxation is a very useful lever for population health advancement, particularly in respect to goods such as alcohol or tobacco, where price influences consumption patterns markedly. The extent to which taxation measures are used as deliberate public health policy levers varies across countries.

- Many successful population health strategies and interventions are backed up by or include strong regulatory frameworks. Such fundamental health objectives as the provision of a safe food supply, a healthy environment, and ensuring that consumer products are safe, all rely on the establishment of an effective regulatory regime. Regulation of the advertising and marketing and sale of alcohol and tobacco are particularly desirable

- Structural and environmental measures, such as taxation policy and regulatory mechanisms, are likely to be more effective in meeting equity objectives than individual behavioural-based strategies. Children of all social classes benefit from the removal of lead from petrol; raising the price of alcohol reduces consumption across the whole population; where badly maintained footpaths are repaired, the benefit accrues to people regardless of their socio-economic status.

- While funding for key program initiatives is most often *ad hoc* and time-limited, nevertheless strong political support has often been gained for key national strategies and "new" funding allocated.

- Many successful community-based programs have been implemented. It is widely acknowledged that preventive activities which focus on multiple risk factors are more likely than a single intervention to be effective. Effective multi faceted intervention programs often include the provision of information, education, structural and environmental changes, regulation, assessment, monitoring and treatment of high-risk individuals. Among the lessons learned from this approach is the need for cross-sectoral co-ordination and co-operation in health promotion and illness and injury prevention programs.

7.3 Opportunities for further development of population health

336. Analysis of the two case studies in this project highlights a number of areas where further gains could be made. Steps which can be recommended to governments to strengthen and develop their population health systems in the future include the following:

- Develop national policy frameworks that acknowledge the social determinants of health and which co-ordinate action across sectors and regions;

- Ensure the appropriate balance between centralised priority-setting and local decision-making;

- Reduce the emphasis placed on single risk factors. An over-reliance on this approach reduces the ability of health planners to address the complex multi-causal nature of illness and injury and may lead to an over-emphasis in policy and research on individual choices and behaviour;

- Reformulate health policy goals, currently expressed as societal averages, to include goals relevant to reducing inequalities in health status for particular groups;

- Collect data necessary for measuring progress towards equity oriented objectives; for example, data may not be routinely available on the distribution of health conditions and health service use across social classes;

- Give full consideration to greater use of taxation and pricing policies as deliberate policy measures to improve population health;

- Ensure enforcement of existing health regulations, for example in regard to the sale of alcohol and tobacco to adolescents;

- Balance equity and efficiency objectives, particularly in circumstances where it may cost much more for an intervention to reach one group, rather than another, perhaps because of language, cultural or geographic barriers;

- Support action-oriented research which looks at what interventions to tackle inequalities and their effects are feasible and cost-effective;

- Increase the cross-national comparability of periodic health and household surveys undertaken in countries to assist in the analysis of the impact of the various policy approaches adopted; and

- Support the development of robust evaluation models and data collection and monitoring systems that allow for the effectiveness of population health programmes to be measured.

337. The funding of population health measures remains a vexed question. It is often the case that the funding of curative medical services is activity-related. Sometimes the funding is open-ended. Meanwhile, public health programmes are almost invariably funded by fixed budgets. Governments may like to consider whether biases such as these in their health system funding arrangements lead to persistent under spending on population health programmes.

338. Other considerations relevant to the funding of population health measures are as follows:

- There may be benefit in looking more closely at specific opportunities to raise revenue for population health. For example, models currently in use in the countries participating in this study include hypothecated taxation from tobacco products, the establishment of Health Promotion Foundations with various models of funding, allocation of levies from private health insurance contributions, and general taxation.

- Private health insurance may have further potential to cover population health interventions in some circumstances. The case of falls in the elderly may be one where such an issue could be further tested, given the very high treatment costs involved in major falls injuries. Also, the benefit gained (*i.e.* reduced falls incidence) can flow more quickly and directly from the intervention (say, installation of grab bars in bathrooms) than is the case with many population health preventive interventions which are subject to long time lags.

- As poorer people generally use preventive services less than people with greater resources, it is important to ensure that such services are priced so as to encourage utilisation. The use of government subsidies to lower the cost of these services or to fully meet the cost should be considered.

7.4 Barriers to effective population health policy and financing

339. Why is it, then, that despite the strong rhetoric in support of strengthening population health systems, there has been little substantive change in the proportion of health system resources allocated to population health for many years? What barriers are there to strengthening policy approaches and more broadly in implementing effective programs and strategies?

340. Although there is evidence of cost-effectiveness for many preventive measures (Box 1) there are many more for which such evidence is lacking. Lack of appropriate evidence is taken at times to mean

evidence of *ineffectiveness*; often, however, it is simply a reflection of the complexity of the issues involved in the evaluation of population health interventions. Studies are often too small to generate the degree of statistical "proof" being sought; they are evaluated too early in their lifecycle to demonstrate an effect, and spillover effects in community-based studies make attribution of change to any particular intervention very difficult.

341. While lack of evidence of effectiveness is not confined to population health interventions – it is true also of many medical procedures - the onus to demonstrate cost-effectiveness is generally greater on new programs than on well-established programs.

342. There can be long time lags between committing resources and realising an outcome. Medical treatment generally promises a relatively tangible and immediate outcome for the consumer - hip replacements offer relief of pain, and greater freedom of movement and independence. Population health initiatives on the other hand, might not lead to an outcome in terms of improved health for many years (such as: programmes to promote exercise and improved nutrition throughout adolescence; or an effective strategy for the prevention of falls and related injuries).

343. Medical care also has an obvious beneficiary, and hence a natural advocate (or advocates, including the patient, their family and their doctor). On the other hand, people are very often unaware of the benefits they gain from a strong population health system, at least until systems begin to break down. It is hard to value what any individual gains from a (possible) future reduction in their level of risk from, say, road trauma injuries due to population health interventions which reduce the number of alcohol-affected drivers on the road. Population health does not automatically generate advocacy for its continual growth. In the face of such strong advocacy for curative services, re-prioritisation of programs and resources towards prevention becomes extremely difficult.

344. It is important to acknowledge that, at least in the short term, public health programs may well result in increases in expenditure, rather than generate savings. Additional costs include the cost of initiating the program and the fact that raising awareness may generate flow on costs as people seek diagnostic testing and screening. Meanwhile, there is usually a time lag between the introduction of the program and the realisation of any positive outcomes, including savings.

345. Finally, as has been said earlier, the presence of sound evidence in support of a given approach does not guarantee its adoption. Many other factors must be considered including the existence of political will to address an issue, the weight of public opinion, the preferences of powerful interest groups, value judgements and ideological stances.

7.5 Population health system development - is there a role for the OECD?

346. At various points throughout this paper opportunities for further development have been identified which, if pursued, could contribute to a strengthening of the contribution of population health measures. In many cases the policy response or intervention highlighted is one which falls to governments to pursue either through initiatives within their health sector, or as part of a whole-of-government response to health and broader social issues of concern. The establishment of effective mechanisms to co-ordinate the development and implementation of population health policy across levels of government, and strengthening local implementation of regulations which restrict the sale of alcohol to minors are two examples.

347. There are other issues, however, which may well benefit from further analysis and cross-country comparison of approaches. In particular, levels and methods of population health system financing, evidence of cost-effectiveness, and current and potential contribution to whole of health system performance in meeting health outcome objectives could all benefit from further work at the international level.

348. The following specific options for further work by the OECD on matters related to population health are suggested for inclusion within the existing and planned work programmes on health data and health policy:

- Funding for population health activity is diverse, with sources of funds from national and sub-national governments, the private sector, and individual fees and contributions. Differences in definitions and categorisations of activity also make international comparisons of expenditure extremely difficult. There is no reliable international comparative data on expenditure on prevention and health promotion. Ongoing work on the *System of Health Accounts* provides an opportunity to gain a better understanding of expenditure on prevention and health promotion, and to develop more robust data for the purposes of international comparison.

- Assembling, if possible, additional data for *OECD Health Data* on non-medical determinants of health, including income inequality;

- Making use of these data as control variables in econometric analyses of mortality and health expenditure planned under Part D of the new Health Project;

- Broadening work on equity of access to include access to preventive programs.

7.6 Conclusion

349. This paper concludes that a wide range of policy options for investment in population health are legitimate for governments to adopt. Examples of good practice include legislation, health education, targeted individual preventive services and assessments, structural and environmental reforms, taxation and pricing policies, and community participation. Co-ordination and co-operation across levels of government in the context of agreed policy objectives is a critical factor. So also is reliable and up-to-date information on the cost-effectiveness of population health measures.

350. This paper has suggested areas in which governments could strengthen their population health approach, in line with their expressed intention to do so. However, a number of difficulties and barriers to adopting a more preventive approach have also been identified. In particular, separation of the mechanisms through which treatment and care, on the one hand, and investment in population health, on the other hand, has been identified as a particular barrier to shifting resources towards prevention. Developing an appropriate financing mechanism in order to achieve the desired priority for funding and support for population health remains a major challenge.

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GLOSSARY

Admissions to hospital
Number of admissions (or discharges including people who have died during their stay) to in-patient or acute-care institutions. An admission is the administrative process by which an in-patient commences an episode of care.

Bed-days
A bed-day is a day during which a person is confined to a bed and in which the patient stays overnight in a hospital. Day cases (patients admitted for a medical procedure or surgery in the morning and released before the evening) should be excluded.

Burden of Disease
A comprehensive assessment of the amount of ill health and disability in a population, derived from estimates of the contribution of fatal and non-fatal health outcomes such as disability and impairment, illness and injury.

Collaboration
Collaboration is a sustained joint effort to achieve a common outcome.

Co-ordination
Co-ordination focuses on bringing different parts of a system or operation into a harmonious and effective working relationship.

Disability Adjusted Life Year (DALY)
The DALY is a summary measure of health status which is designed to include the impact of both premature death and health problems amongst the population. DALYs 'lost' for a disease or health condition are calculated as the sum of the years of life lost due to premature mortality (YLL) in the population and the years lost due to disability for incident cases of the condition.

Effectiveness
The extent to which preventive or clinical interventions achieve the health outcomes intended.

Evaluation
Evaluation of public health programs involves observing and collecting measures about how a program operates and the effects it appears to be having, and comparing this to predetermined objectives.

Evidence
A fact or a data set that is used (or could be used) in making a decision.

Evidence-based practice
The practice of making decisions based on a systematic appraisal of the current best evidence available (Evidence-based practice can apply to decision making in respect of the care of individual patient's or the development and application of broader population health strategies and interventions for whole populations or groups)

Harmful consumption of alcohol
A pattern of alcohol consumption that has adverse social, physical, psychological, legal or other consequences for the drinker, their family, or people otherwise affected by their actions.

Health education
Activities designed to inform and facilitate changes in health-related behaviour and attitudes to health.

Health inequality
Refers to differences in health status associated with population attributes such as age, gender, income and race.

Health outcome
A change in the health status of an individual or population, due to a preventive or clinical intervention. *e.g.* increase in average life expectancy, reduction in disease, attributable to public health or medical care activities.

Health promotion
Activities to improve health and prevent disease and injury after focussing on behaviour and lifestyle determinants of health through, for example, health education or safety measures. Health promotion recognises the social, economic and political context in which people make lifestyle choices although it does not promote action in these sectors.

Health status
An individual or population's overall level of health at a particular point in time, taking account of various aspects such as life expectancy, amount of disability, levels of disease risk factors etc.

High-risk drinking
Indicators of high-risk consumption include prevalence of drinking above recommended maximum daily benchmarks and frequency of drinking leading to intoxication.

Intergovernmental collaboration
Refers to the collaboration between governments at various levels within a country (national, state/provincial, local) to achieve agreed outcomes.

Meta -analysis
A systematic review of the evidence about the effectiveness of a preventive or curative procedure obtained by combining the findings or the raw data of multiple randomised trials

Primary health care
Local first contact care that is accessed by self-referral. It comprises a range of services, delivered by a range of health practitioners, designed to keep people well and out of hospital, from promotion of health and screening for disease to diagnosis and treatment of medical conditions.

Policy
The position adopted by an organisation/government in relation to specific issues. Includes statements of intent and plans of action to address identified issues.

Population Health Approach
A Population health approach is one that aims to improve the health of the entire population and to reduce health inequities among population groups. In order to reach these objectives, it looks at and acts upon the broad range of factors such as socio-economic conditions and the physical environment, and the interactions among them that determine health. Population health interventions may well be multi-sectoral.

Potential Years of Life Lost
The gap in years between age at death and some arbitrary standard age before which death is considered "premature". In this report the number of potential years of life lost in a population as a result of premature death is defined as death before age 65 years.

Public health
Public health is the organised response by society to protect and promote health, and to prevent illness, injury and disability. The scope of public health covers three broad areas:

Public Health Intelligence
-gathering and analysing information about the determinants of health, the causes of ill health and patterns and trends in health status.

Public Health Interventions
- developing policy, setting priorities for action, developing plans, implementing and co-ordinating services, strategies and interventions aimed at prevention, protection and promotion of the health of the community.

Public Health Infrastructure
- identifying the foundations for a public health strategy including workforce training and development, information systems and appropriate legislative and regulatory frameworks.

Public health strategy
A public health strategy represents a comprehensive bundle of policies and specified interventions to protect the health of a population. Ideally a public health strategy includes action and implementation plans (at the national, state/provincial or regional level) which are consistent with the strategy.

Quality Adjusted Life Year
A QALY is a unit measurement that attempts to compare different health states during one year, with regard to their quality. Perfect health for a year is denoted by 1 QALY. Time spent during the year in pain or disability would lead to a QALY of less than 1.

Randomised controlled trial
A study design which involves randomly allocating subjects to either an intervention or control group, and evaluating both groups for outcomes of interest (for example, improvement in symptoms or disability, cure or death following a preventive or curative intervention).

Risk factor
A determinant of health status (*e.g.* smoking) that is associated with an increased probability of an adverse outcome, such as the occurrence of a disease (*e.g.* lung cancer).

Social determinants of health
The range of social, economic and environmental factors which influence the health status of individuals and populations. Includes factors such as income and social status, education, employment, housing, and the physical environment.

Summary measures of health
Summary measures of population health are measures that combine information on mortality and non-fatal health outcomes to represent population health in a single number (such as a DALY).

Systematic review
A study that combines the results of several smaller studies to produce one larger, hopefully more robust result. In addition, authors of systematic reviews have comprehensively searched the literature to ensure that all the best quality smaller studies have been included in the systematic review.

PART 1: TABLES AND FIGURES

Table 1. Life expectancy at birth, male and female, 1971 – 1997

		1971	1981	1991	1997	Gain
AUSTRALIA	F	74.9	78.4	80.4	81.3	6.4
	M	68.3	71.4	74.4	75.6	7.3
	Gap	6.6	7.0	6.0	5.7	
CANADA	F	76.4	79.1	80.9	81.4	5.0
	M	69.3	71.9	74.6	75.8	6.5
	Gap	7.1	7.2	6.3	5.6	
KOREA	F	66.1	70.5	75.9	78.1	12.0
	M	59.0	62.3	67.7	70.6	11.6
	Gap	7.1	8.2	8.2	7.5	
SWEDEN	F	77.3	79.1	80.5	81.8	4.5
	M	72.0	73.1	74.9	76.7	4.7
	Gap	5.3	6.0	5.6	5.1	
SWITZERLAND	F	76.6	79.0	80.9	82.3	5.7
	M	70.1	72.4	74.1	76.2	6.1
	Gap	6.5	6.6	6.8	6.1	
OECD MEAN	F	73.4	76.1	78.3	79.7	6.3
	M	67.0	69.2	71.6	73.4	6.4
	Gap	6.4	6.8	6.7	6.2	

Source: *OECD HEALTH DATA 2000*
Note: OECD mean is the mean of the 23 countries for which data is available in all 4 reference years: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, Turkey, UK, USA

Table 2. Life expectancy at age 65 years, male and female, 1971 – 1997

		1971	1981	1991	1997
AUSTRALIA	F	16.1	18.1	19.1	19.8
	M	12.5	13.9	15.4	16.1
	Gap	3.6	4.2	3.7	3.7
CANADA	F	17.5	14.6	19.7	20.1
	M	13.8	14.6	15.6	16.3
	Gap	3.7		4.1	3.8
KOREA	F	14.6	15.1	16.4	17.3
	M	10.2	10.6	12.6	13.6
	Gap	4.4	4.5	3.8	3.7
SWEDEN	F	16.9	18.0	19.2	19.9
	M	14.0	14.3	15.4	16.2
	Gap	2.9	3.7	3.8	3.7
SWITZERLAND	F			19.6	20.6
	M			15.5	16.6
	Gap			4.1	4.0
OECD MEAN	F	15.7	16.8	19.1	19.9
	M	12.6	13.4	15.2	16.1
	Gap	3.1	3.4	3.9	3.8

Source: *OECD HEALTH DATA 2000*

Note: OECD mean is the mean of the 20 countries for which data is available in all 4 reference years: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Sweden, Turkey, USA.

Table 3. Potential Years of Life Lost (PYLL) all causes, 1971 – 1995

Females, PYLL from all causes - <70 years /100 000					
	1971	**1981**	**1991**	**1993**	**1995**
AUSTRALIA	6289.0	4312.6	3331.6	3088.9	3031.6
CANADA	5586.0	4444.7	3462.2	3316.6	3239.1
KOREA			4301.1	4002.1	3736.9
SWEDEN	4163.0	3506.4	3178.7	2861.7	2614.9
SWITZERLAND	4855.0	3751.6	3241.3	3167.1	
Males, PYLL from all causes - <70 year,/100 000					
	1971	**1981**	**1991**	**1993**	**1995**
AUSTRALIA	10519.0	8099.0	5959.6	5601.1	5428.7
CANADA	9896.0	8219.1	6253.3	5919.2	5687.2
KOREA			9832.7	9065.7	8776.1
SWEDEN	7133.0	6430.2	5344.9	4853.7	4441.8
SWITZERLAND	8618.0	7252.4	6543.3	5880.7	

Source: *OECD HEALTH DATA 2000*

Table 4. PYLL, significant causes of death, OECD M/F, 1971-1995

		1971	1981	1991	1995
Cause of death	**Female, male < 70 years, rate per 100 000**				
Ischaemic heart disease	Female	278.3	275.9	204.8	181.0
	Male	1155.0	1231.0	873.5	746.0
External causes/ injury and poisoning	Female	825.1	710.4	596.7	554.7
	Male	2672.3	2344.0	2068.9	1818.4
Malignant neoplasm, lung	Female	8.2	13.2	17.3	19.2
	Male	54.9	71.5	71.0	68.43

Source: *OECD HealthData 2000*

Table 5. Total expenditure on health,% gross domestic product, selected countries, 1995 – 1998

	1995	1996	1997	1998
Australia	8.2	8.3	8.3	8.5
Canada	9.5	9.4	9.3	9.5
Korea	4.6	4.9	5.0	5.0
Sweden	8.4	8.7	8.5	8.4
Switzerland	9.6	10.1	10.3	10.4
OECD mean	7.8	7.9	7.8	8.3

Source: *OECD Health Data 2000*
Note: OECD mean does not include data for Mexico and Turkey.

Table 6. Total expenditure prevention and public health,% GDP, 1995-1998

	1995	1996	1997	1998
AUSTRALIA	**0.1**	**0.1**	**0.1**	
AUSTRIA				
BELGIUM				
CANADA	**0.5**	**0.5**	**0.5**	**0.6**
CZECH REPUBLIC				
DENMARK				
FINLAND				
FRANCE	**0.2**	**0.2**	**0.2**	**0.2**
GERMANY	**0.4**	**0.4**	**0.4**	
GREECE				
HUNGARY				
ICELAND				
IRELAND				
ITALI				
JAPAN				
KOREA	**0.2**	**0.2**	**0.2**	**0.2**
LUXEMBOURG				
MEXICO				
NETHERLANDS	**0.3**	**0.3**	**0.3**	**0.3**
NEW ZEALAND				
NORWAY				
POLAND				
PORTUGAL				
SWEDEN				
SWITZERLAND				
TURKEY	**2.4**	**2.7**		
UNITED KINGDOM				
UNITED STATES	**0.5**	**0.5**	**0.5**	**0.5**
OECD MEAN	**0.3**	**0.3**	**0.3**	**n.a.**

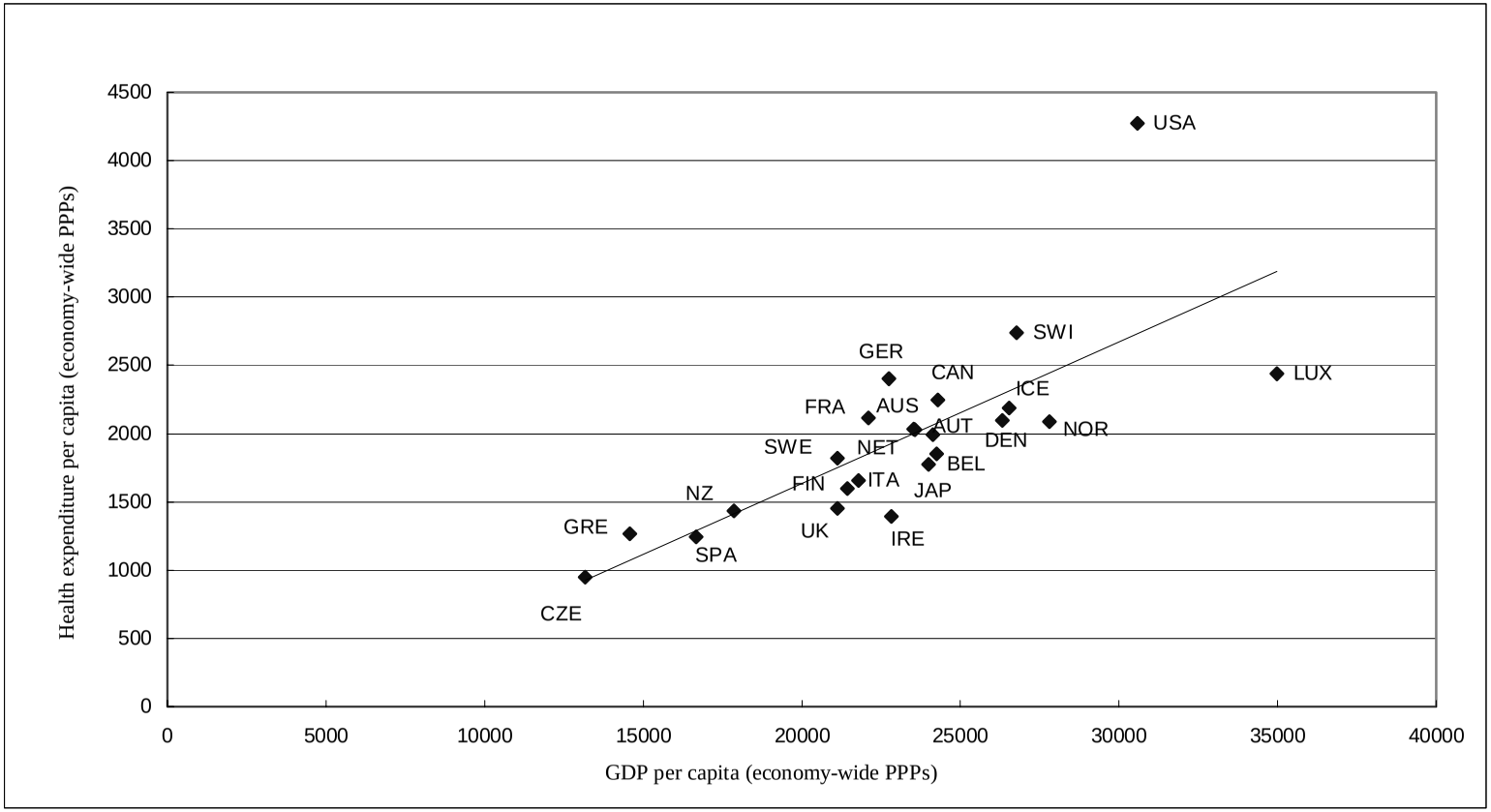
Source: *OECD HEALTH DATA 2000*
OECD MEAN does not include data for Turkey.

Table 7. Total expenditure, prevention and public health per capita, USD PPP, selected countries, 1995-1998.

	1995	1996	1997	1998
AUSTRALIA	28	28	28	
CANADA	124	124	129	136
KOREA	24	24	25	25
SWEDEN				
SWITZERLAND				
OECD MEAN	81.4	87.5	79.4	90.8

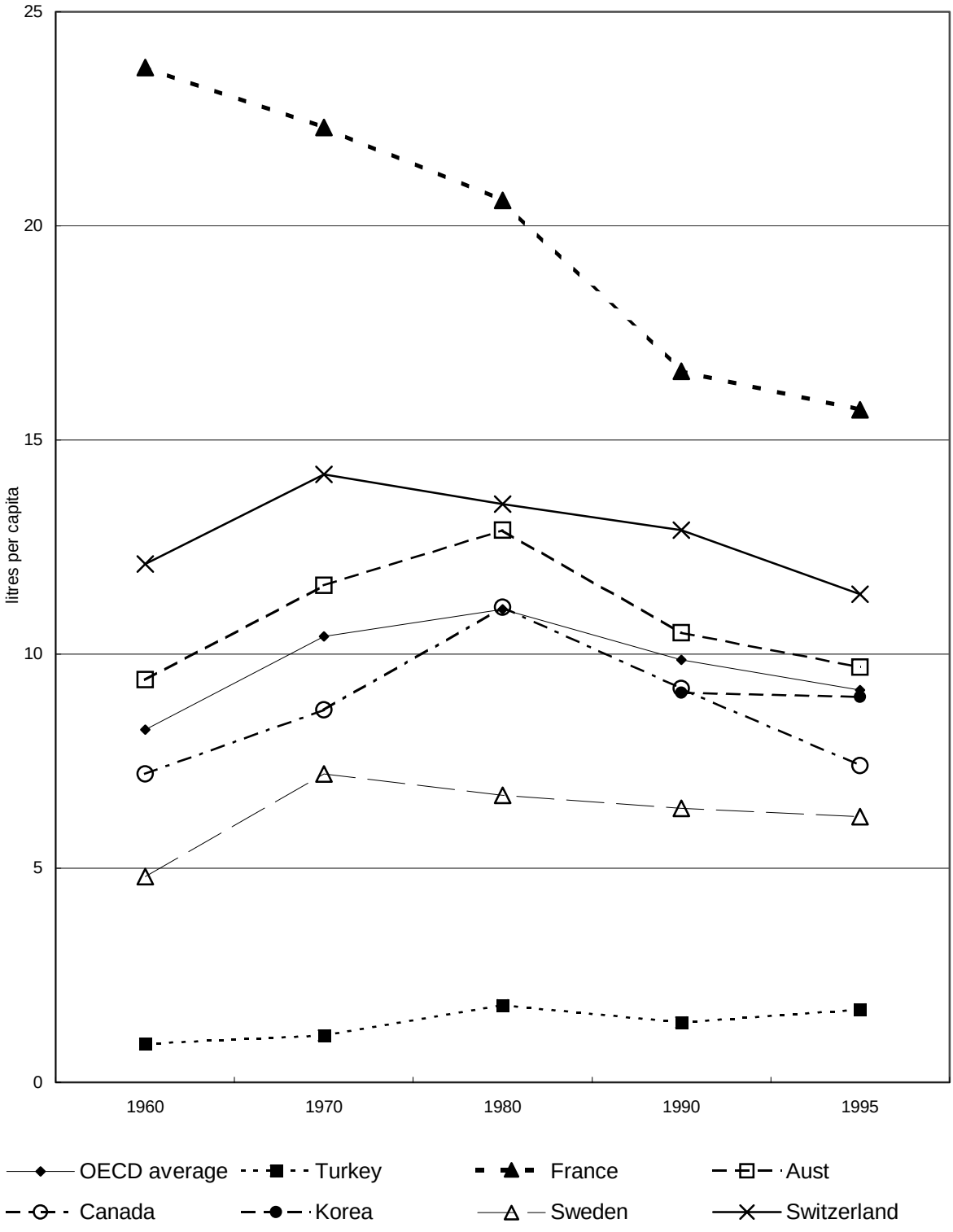
Source: *OECD HEALTH DATA 2000*
Note: OECD mean includes data for the following countries only- Australia, Canada, France, Germany, Korea, Netherlands and USA.

Figure 1: GDP per capita (economy-wide PPPs) *vs* health expenditure per capita (economy-wide PPPs), 1998



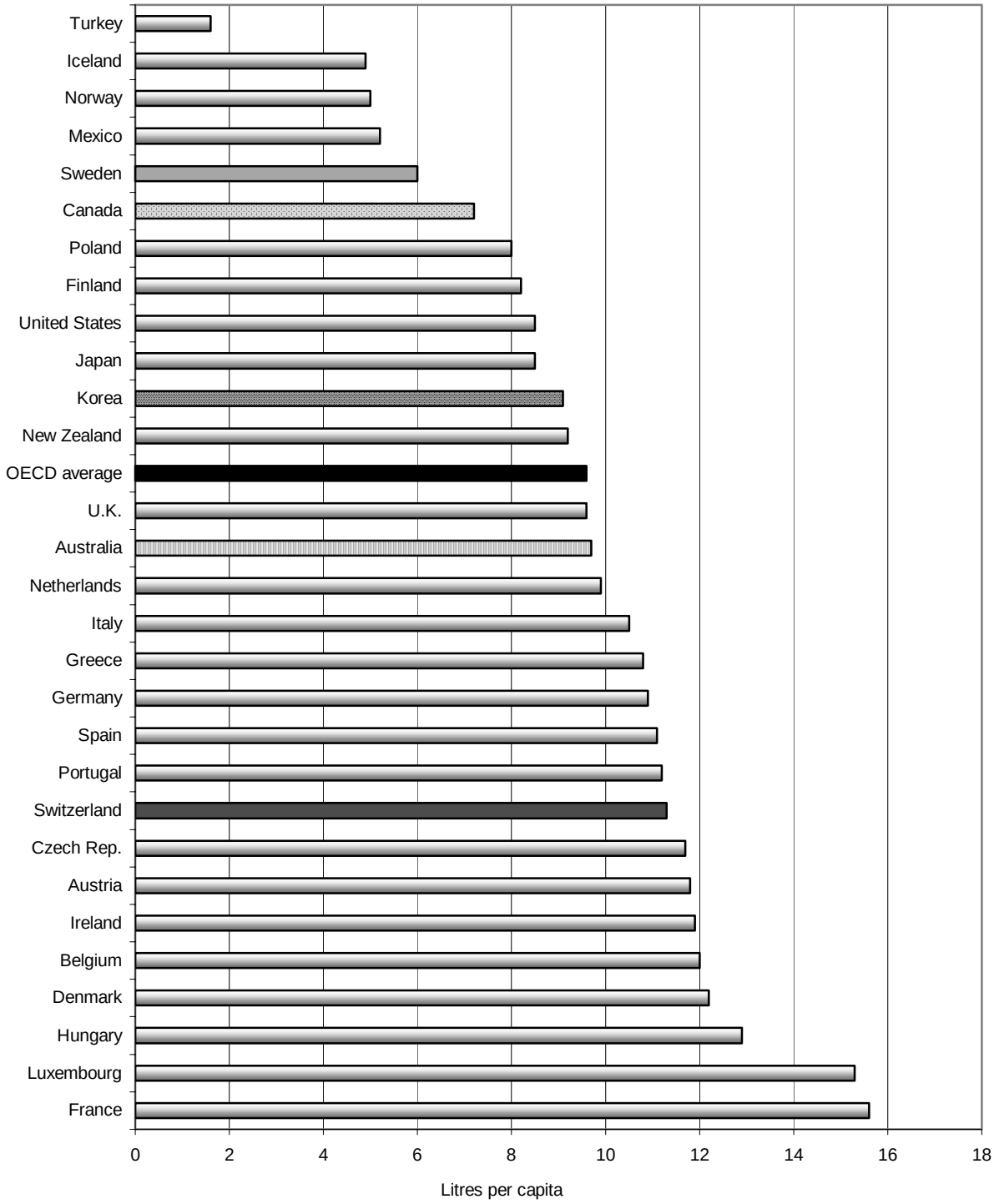
Source: *OECD HEALTH DATA 2000*.Figure 2: Alcohol consumption, litres per capita, population aged 15 plus, 1960-1996

Figure 2: Alcohol consumption per capita (litres, 15+), selected countries, 1960-1995



Source: *OECD HEALTH DATA 2000*.

Figure 3: Alcohol consumption, litres per capita, population aged 15 plus, 1996.



Source: *OECD HEALTH DATA 2000.*

Box 1. A sample of effective population health interventions

The Center for Disease Control and Prevention in the United States highlights the following practical interventions that exist for controlling and preventing many chronic diseases:

Proven clinical smoking cessation interventions would cost USD 2 321 for each year of life saved.

Each USD 1 spent on diabetes outpatient education saves USD 2-3 in hospitalisation costs.

The cost of preventing one cavity through fluoridation is USD 3, far below the average USD 55 cost of a dental restoration.

Mammography screening, when performed every 2 years for women aged 50-69 years, costs between USD 8 280-USD 9 890 per year of life saved. This cost compares favourably with other widely used clinical preventive services.

Cervical cancer screening among low-income elderly women is estimated to save 3.7 years of life and USD 5 907 for every 100 Pap tests performed.

For every USD 1 spent on preconception care programs for women with pre-existing diabetes, USD 1.86 can be saved by preventing birth defects.

Participants in the arthritis self-help course experienced an 18% reduction in pain at a per-person saving of USD 267 in health care system costs over a four-year period.

The World Bank, in its 1993 World Development Report raises the idea of a minimum package of essential interventions which are both effective and cost effective to provide. Amongst the package are a variety of public health interventions such as immunisations, micronutrient supplementation, deworming, and health education and promotion; as well as the control of tuberculosis, sexually-transmitted diseases and a cluster of childhood diseases, prenatal and delivery care, family planning and treatment for pain, other infections and minor traumas.

Teng *et al.* (1995) have assessed 500 life saving interventions and their cost-effectiveness. Many population health interventions were found to be highly cost-effective (eg seat belts laws and use, reduced lead in petrol, pre-natal care, breast and cervical cancer screening, immunisation).

A study by the US Public Health Service in 1994 estimated that population–based strategies in six areas – heart disease, stroke, fatal and non-fatal occupational injuries, motor vehicle related injuries, low birth weight and gunshot wounds – would reduce medical spending by USD 69 billion by 2000, or 11% of medical spending on those conditions.

In Australia, Segal assessed the relative cost-effectiveness of six interventions to reduce the burden of diabetes (NIDDM) and found investment in workplace based programs for overweight men to be highly effective in terms of life years saved and net savings to the health system.

Box 2. Patterns of alcohol consumption

	Consumption, (litres /capita, 15+)	Drinking prevalence	Youth drinking Behaviour
Australia	9.8 (1997)[1]	84% M, 77% F current drinkers [2] 70% M, 15% F drink at least weekly [2] 13.9%M, 6.4% F daily drinkers [2] 83% of alcohol is consumed by 20% of the population [2]	52%M, 46%F are weekly drinkers[2] Boys drink double the amount of girls[2] 26.1%M, 26.3%F regularly drink at harmful levels[2] 35% of 17year olds binge drink[2] Highest consumption at M 14-24yrs, F20-24 yrs[2]
Canada	7.2 (1996)[3]	81.6% M, 72.2% F current drinkers 42.1% of drinkers had 5 or more on single occasion 23.4% exceed *low-risk* guidelines 2.5% drink at levels that are indicative of clinical depend [4]	60% M, 57.6 F school children drank in past year 31% of 13year olds drank alcohol in past year 19.7% youth drink weekly, with 42.4% drinking heavily 29.1% prevalence of *high-risk* drinking among youth risky drinking peaks at ages 20-24 years [5]
Korea	8.9 (1997)[6]	83%M and 44%F are current drinkers 12%M and 2%F are daily drinkers Of the population as a whole, 5.8%M, 1.6%F drink at harmful levels Of drinkers, 50.8%M an d 13.5% F drink at harmful levels [7]	Estimated prevalence of *high-risk* drinking among young people is 4%[8]
Sweden	5.9 (1997) [9]	90%M and 75%F are current drinkers 1% of adults are daily drinkers 23% drink once or twice week 10% of M account for 33% of total M consumption 10% of F account for 50% of total F consumption [9]	82% 15/16 yr olds have drunk alcohol 63% have drunk to intoxication 19% boys, 11.3% girls (15 yrs) drink weekly 27%M, 22%F had been drunk twice or more [10]
Switzerland	11.2 (1997) [11]	89% of the population are current drinkers [12] 40% of drinkers drink at harmful levels [13]	40%M, 25%F aged 15-19yrs drink at least weekly 5% boys this age drink daily [14]

Sources: Box 2 Patterns of Alcohol Consumption

Australia

1) ABS: *Apparent Consumption* (Cat. No. 4315.0).

2) AIHW,
1998 National Drug Strategy Household Survey: First results. Canberra: Australian Institute of Health and Welfare; 1999.

Canada

3) Canadian Centre on Substance Abuse and Centre for Addiction and Mental Health (1999), *Canadian Profile: Alcohol, Tobacco and Other Drugs*. CSSA: Ottawa.

4) "% of Canadians aged 15+ who had a drink of alcohol in the past year",
National Population Health Survey, 1996/97.

5) Adalf *et al.*, 1999, Ontario Student Drug use Survey.

Korea

6) Korea Alcohol and Liquor Industry Association.

7) 1995, one month prevalence.
Global status report on Alcohol (1999) World Health Organisation, Geneva.

8) Population Health Survey, 1995. Korea Institute of Health and Social Affairs.

Sweden

9) All data from National Institute of Public Health, *Report 99;* and Swedish Council for Information on Alcohol and Other Drugs.

10) *Global status report on Alcohol* (1999) World Health Organisation, Geneva.

Switzerland

11) "Chiffres et donnes 1999", p.2 (*Regie federale des alcohols*, 1999).

12) "Chiffres et donnes 1999", p5 (*Regie federale des alcohols*, 1999) Data for 1997-98.

13) "Risikoreichs Alkoholtrinken in der Schweiz", Table 1.

14) 1994 data from population survey carried out by Swiss Institute for Prevention of Alcoholism and Other Drug Problems, *Global status report on Alcohol* (1999) World Health Organisation, Geneva.

Box 3. Alcohol and health outcomes

	Alcohol-related deaths	Alcohol dependence	Alcohol – related road trauma	Hospital patients and bed-days
Australia	Total deaths – 3.4% M +F M – 2296 (7% of male deaths) F - 994 (4% of female deaths) Cirrhosis: M –539 F – 144 Suicide: M- 246 F- 41 [1]	727 820 people alcohol depend Estimated 1% of total population [2] Deaths from alcohol depend = 254M, 67F [1]	Alcohol-related road fatalities = 343 M, 75F [1] 30% 0f fatally injured drivers over legal BAC Alcohol implicated in 42% of deaths of pedestrians [3]	M 49 499 F 22 803 hospital separations (= 2% of M, 0.76%F separations) M 276 640 F 127 155 hospital bed-days (= 2.6%M, 1.01%F of all bed-days [4]
Canada	Total deaths = 6701 (3.1% of all deaths) Cirrhosis: M –788 F – 261 Suicide: M- 821 F- 134 [5]	438 000 people alcohol dependent 2.6% of males, 1% of females [6] Deaths from alcohol depend = 521M, 171F [5]	Alcohol-related road fatalities = 790 M, 358 F [5] 34% fatally injured drivers are over legal BAC [7] Road fatalities = 22% of all alcohol-related deaths; 33% of PYLL [8]	86 076 hospital separations. This = 2% of al l separations [8] 1 149 106 bed-days (= 3% of all bed-days) [8]
Korea	Cirrhosis M –7808 (hepatitis impact) F – 1948 Suicide: M- 4041 F- 1815 (Total deaths, not PAF)[9]	M 43%, F 2% life prevalence [10] M 19.2% F 0.90% prevalence, adults, in 1994 [10] 7-8% psychiatric hospital admission [11] Deaths from alcohol depend = 1121 MandF [9]	18% of all road crashes attributed to drunk driving [11]	27 013 admissions 538 209 bed-days for alcohol depend. [9] 30 561 admissions 420 342 bed-days for cirrhosis [9]
Sweden	Cirrhosis: M –381 F –185 Suicide: M- 872 F- 381 [12]	3-4 per 100 000 300 000 problem drinkers 10% adult M, 3-6% adult F are heavy drinkers Deaths from alcohol depend = M230 andF55 [12]	Alcohol-related road fatalities = 345 M, 176 F 4.8% of all traffic accident fatalities [12]	M 4.4%,F 1.1% Total = 2.6% of all hosp. Admissions are alcohol related 5.9% of all psych. Hospital patients have alcohol-related diagnosis [12]
Switzerland	Total of 3000 deaths attributed to alcohol [13]	300 000 people estimated to be alcohol dependent 8-13% of males [14]	40.2 road crashes involving alcohol per 100 000 popn 10% of all crashes are alcohol related Over 50% of traffic offences are for drunkenness [15]	8-13% of male hospital patients aged 30-59 yrs had a diagnosis of alcohol dependence [16]

Sources: Box 3 Alcohol and health outcomes

Australia

1) English, *et al.* (1995),
for PAFs; (English D., Holman C., Milne E., Winter M., Hulse G., Codde J., *et al.*
The quantification of drug caused morbidity and mortality in Australia. Canberra: Australian Government Publishing Service; 1995.) AIHW Hospital Morbidity Database.
2) Mathers C, Vos T, Stevenson C (1999)
The Burden of Disease and Injury in Australia. AIHW. Canberra
3) Federal Office of Road Safety. *Alcohol and road fatalities in Australia 1997*. Canberra: Federal Office of Road Safety; 1999. Report No.: Monograph 29.
4) "Alcohol-caused deaths and hospitalisations in Australia, 1990-1997". *National Alcohol Indicators Bulletin No. 1* National Drug Research Institute, Curtin University, Perth.

Canada

5) Canadian Centre on Substance Abuse and Centre for Addiction and Mental Health (1999),
Canadian Profile: Alcohol, Tobacco and Other Drugs, CSSA: Ottawa.
6) Statistics Canada (1998),
National Population Health Survey Overview (Catalogue No. 82-567). Ottawa: Statistics Canada.
7) "% of Canadians aged 15+ who had a drink of alcohol in the past year", *National Population Health Survey, 1996/97*.
8) Single *et al.*,
Horizons 1994: Alcohol and Other Drug Use in Canada.

Korea

9) National Statistics Office. Total deaths; no estimation for attribution fraction. Note: most liver cirrhosis in Korea is related to Hepatitis B and Hepatitis C in Korea.
10) Source: Lee J.K. and Lee K.H.
"Prevalence of mental illness in Korea", *Soeul Journal of Neuropsychiatry* 1994:33(4)
11) *Global status report on Alcohol* (1999) World Health Organisation. Geneva

Sweden

12) All data from National Institute of Public Health, *Report 99*; and Swedish Council for Information on Alcohol and Other Drugs.

Switzerland

13) *Alcohol, Tobacco and Illegal Drugs in Switzerland, 1994-1996.*
14) *Alcohol, Tobacco and Illegal Drugs in Switzerland, 1994-1996.*
15) 1992 data. *Global status report on Alcohol* (1999) World Health Organisation, Geneva.
16) *Global status report on Alcohol* (1999) World Health Organisation, Geneva.

Box 4. Selected alcohol control measures

	Minimum legal drinking age	Blood Alcohol Content (mg/100ml)
Australia	18 years in all States and Territories	0. 02mg/100ml for drivers under 25 years; for all drivers within first 3 years of obtaining licence; and for all heavy vehicle drivers 0.05 for all other drivers Random Breath Testing
Canada	19 years in Quebec, Manitoba and Alberta 19 years in all other provinces	0.08
Korea	21 years	0.08
Sweden	Low-alcohol beer - 18years Medium/ high strength products - 20 years for take-home purchase - 18 years in restaurants	0.02 Random Breath Testing
Switzerland	Fermented beverages - 16 years Distilled beverages - 18 years	0.08

Source: *Global Status Report on Alcohol*, World Health Organistation, 1999

Box 5. Pattern of falls and fall-related injury in community-dwelling elderly

Australia	Around 30% of elderly report one or more falls in previous 12 months. 230 000 elderly likely to fall in a year. [1] Forty-eight percent of people aged 65 and over surveyed in Victoria (Aust) who experienced a fall (in the preceding 12 month period) and sought medical attention were admitted to hospital. [2] Case numbers are rising, but no clear trend in age-standardised rates. [3] No seasonal pattern reported. [3]
Canada	Approximately one million or 1 in every 3 seniors living in the community will experience at least one fall per year and up to 50% of these individuals experience repeated falls. [4] Females aged 65+ fall twice as often as males. [5] At age 90+ women were four times as likely to fall as men of the same age. [6] Slipping, tripping and stumbling the most common causes of falls. [7] Two-thirds of the reported falls occurred in the home or surrounding area. [6] No change in the hip fracture rate was recorded between 1981 and 1992. [6] Majority of falls occur in winter. [8]
Sweden	The incidence of hip fractures in Sweden increased from 3.3 per 1000 inhabitants in 1966 to 5.1 in 1986 for persons more than 50yrs old. The incidence almost doubled in persons more than 80yrs old, from 13.3 to 25.6 per 1000 in that time. [9] 75% of injuries to elderly occur at home. [10] Slipping, tripping and stumbling the most common causes of falls. [11] Majority of falls occur in winter [12]

Sources: Box 5 Pattern of falls and Falls-related injury in community-dwelling elderly

Australia

1) ABS 1995 *National Health Survey*

2) "Injuries Among Older People", in *Hazard*, No. 19 June 1994, Victorian Injury Surveillance System, Monash University Accident Research Centre.

3) *Australian Injury Prevention Bulletin, Issues* 20/1999, 17/1998, 17/1997, 13/1994, 10/1993. National Injury Surveillance Unit, research Centre for Injury Studies, Flinders University.

Canada

4) Moyer, A., Aminzadeh, F., and Edward, N.
Falls in later life (University of Ottawa: CHRU Publication No. M98-2, Community Health Research Unit, 1998.)

5) Scott, V., and Gallagher, E. (1999)
"Mortality and Morbidity Related to Injuries from Falls in British Columbia", *Canadian Journal of Public Health*, Vol 90, No 5, 1999: 343-34

6) Wilkins, K.
"Health Care Consequences of Seniors", Statistics Canada Catalogue 82-003. *Health Reports Spring 1999*, Vol 10, No. 4: 47 – 55

7) Gallagher, E. (1995)
"Falls and the Elderly", Community Papers on Ageing, Paper 3, Centre on Ageing, University of Victoria, Victoria.

8) Scott, V. and Gallager, E. (1999).

Sweden

9) National Institute of Public Health (1994)
Strategies for Success, National and local strategies for the prevention of accidents and injuries.

10) Svanström, L., Ader, M., Schelp, L., Lindström, Å.
Preventing femoral fractures among elderly: The community safety approach. National Institute of Public Health. Injury Prevention Program. 4/96

11) Svanström *et al.* (1996)

12) Svensson, M-L., Rundgren, Å., Larsson, M., Landahl, S.
Accidents in Institutionalised elderly: Injuries and Consequences, Theses. 1991. Göteborg University, Sweden.

Box 6. Pattern of falls and fall-related injuries in institutionalised elderly

Australia	There are no Australian studies in this area, however fall rates among older people in residential aged care setting are thought to be consistent with rates reported from overseas studies - varying from 30-50% of residents sustaining a fall in a 12 month period. The Australian Incident Monitoring Study estimated that in hospitals,38% of all reported patient incidents involve a fall (Australian Patient Safety Foundation, 1998). Figures are not provided on the number of elderly people involved but they would be expected to feature prominetly. [1] A survey of 46 nursing homes in Sydney in 1995 found 58.9% of residents were taking one or more psychotropic medications. [2]
Canada	24% of all institutional residents had been injured in a fall in the previous 12 month period. [3] The most common reasons why older institutional residents had fallen were problems with balance (29%) and weakness or frailty (26%). The most serious injury suffered by the majority (62%) of those injured as the result of a fall was a bruise, scrape or cut, although 29% had broken a bone (National Population Health Survey) [3] 40% of those aged of 80+ living in a nursing home have a fall each year. [4] Falls are a precipitating factor in 40% of admissions to nursing homes and result in a 10% increase in home care services. [5]
Korea	Surveys in 1995/95 showed the frequency of falls in long-term care facilities was in the range 29.6-43.6%. [6] Among the elderly who fell in hospital or were admitted to hospital due to a fall, 22.1% were taking sedatives, hypnotics, anti-depressants or the like. [7]
Sweden	Accidental falls have been reported as a major problem in geriatric care in Sweden. Incidence rates vary between different types of institutions. Study results show an incidence rate of falls per 10 000 patient days of psycho geriatric clinic at 171, compared with 92 at geriatric rehabilitation clinic, and 31 in the nursing home setting. Most falls (62%) did not result in injury, while major injuries occurred in 5%. [8] The majority of the accidents in nursing homes studied occurred during daytime, in the patient's room and in many cases soon after admission. Most of the injuries were caused by falls and in more that 90% no staff was present. In the same study, two thirds of the severely injured nursing home residents had to be transferred to an emergency hospital for surgery or other treatment. [9]

Sources: Box 6. Pattern of falls and falls-related injuries in institutionalized elderly

Australia

1) *The Australian Incident Monitoring Study*, Australian Patient Safety Foundation, 1998.

2) Snowdon, J., Vaughan, R., Miller, R., Burgess, E.E., Tremlett, P.
"Psychotropic drug use in Sydney Nursing Homes", *Medical Journal of Australia* (1995) Jul 17; 163(2): 70-2

Canada

3) *National Population Health Survey*, 1995 data.

4) Angus, D., *et al. The Economic Burden of Unintentional Injuries in Canada* (Smartrisk, 1998).

5) Moyer, A., Aminzadeh, F., and Edward, N.
Falls in later life (University of Ottawa: CHRU Publication No. M98-2, Community Health Research Unit, 1998.)

Korea

6) Data from surveys from 1995-96; reported in Project questionnaire.

7) Data provided in Project Questionnaire.

Sweden

8) Nyberg, L., Gustafson, Y., Jansson, A., Sandman, P-O., Eriksson, S.
Incidence of Falls in three different types of geriatric care, Thesis 1996. Umeå University, Sweden.

9) Svensson, M-L., Rundgren, Å., Larsson, M., Landahl, S.
Accidents in Institutionalised elderly: Injuries and Consequences, Theses. 1991. Göteborg University, Sweden.

Box 7. Health service impact and health outcomes associated with falls

	Health service impact	Health outcomes
Australia	880 000 medical services 41 000 hospital episodes [1] 48% who fell and sought medical help were admitted to a hospital. [2] Estimated hospital separations (93/94) M – 10 200 F - 30 900 Estimated hospital bed-days (93/94) M – 124 600 F - 400 700 [3] Estimated direct health care costs of treating elderly for falls injuries – AUD 406 million (93/94) [4]	Accidental fall recorded as primary cause of death (1996) M 76, F 52 aged 65-74yrs M 292, F 497 aged 75+ [5] Fractured hip/pelvis, 1996 M – 580 F - 246 [6]
Canada	For aged 65+ falls account for 84% of injury admissions. [7] Age adjusted mean length of stay was 22.2 days in 1992. [8] Estimated hospital admissions 95/96 M – 18 257 F - 45 896 [8] Estimated hospital bed-days (95/96) Total – 691 746 [8] Estimated direct health care costs of treating elderly for falls injuries – CAD 1 billion (1994) [9]	Accidental fall recorded as primary cause of death (1996) M 152, F 87 aged 65-74yrs M 793, F 1367 aged 75+ [10] The unadjusted odds ratio of entry into care (by 96/7 survey) for people who reported having sustained an injurious fall in 94/5 was nearly triple (2.7) the odds for people who did not report a fall. [11]
Korea		Accidental fall recorded as primary cause of death (1996) M 179, F 53 aged 65-74yrs M 122, F 207 aged 75+ [12]
Sweden	Estimated hospital admissions (96) M – 14 872 F - 39 095 [13] Estimated hospital bed-days (93/94) M – 103 434 F - 206 994 [13] Estimated direct health care costs (1996) of treating elderly for falls injuries – M – 479 mil SEK F - 931 mil SEK [14]	Accidental fall recorded as primary cause of death (1996) M 194, F 97 aged 65-74yrs M 572, F 679 aged 75+ [15] Fractured hip/pelvis, 1996 M – 556 F - 2 254 [15] Falls account for 40% of the total number of injuries in Sweden: 88% of all fall related injuries are sustained by people aged 65+. [16]

Sources: Box 7 Health service impact and health outcomes associated with Falls

Australia

Mathers, C. and Penm. *Disease costing reports, for period 1993-94*. AIHW.

"Injuries Among Older People", in *Hazard*, No. 19 June 1994, Victorian Injury Surveillance System, Monash University Accident Research Centre.

Mathers, C. and Penm. *Disease costing reports, for period 1993-94*. AIHW.

Mathers, C. and Penm. *Disease costing reports, for period 1993-94*. AIHW.

AIHW, Hospital Morbidity Database.

AIHW, Hospital Morbidity database.

Canada

Moyer, A., Aminzadeh, F., and Edward, N.
Falls in later life (University of Ottawa: CHRU Publication No. M98-2, Community Health Research Unit, 1998.)

Statistics Canada, Health Statistics Division (*Vital Statistics Register*)

Data from National Trauma Registry *Annual Report* (1995/6 Data) and Discharge Abstract Database.

Statistics Canada, Health Statistics Division (*Vital Statistics Register*)

Wilkins, K.
Health Care Consequences of Seniors. Statistics Canada Catalogue 82-003. Health Reports Spring 1999, Vol 10, No. 4: 47 –55.

Korea

National Statistics Office, Korea

Sweden

Hospital Morbidity data

Federation of county councils expenditure data, 1996, acute health system (*i.e.*, does not include rehabilitation or outpatients care.)

Hospital morbidity data, provided in project questionnaire

National Institute of Public Health (1994)
Strategies for Success, National and local strategies for the prevention of accidents and injuries.

PART 2:
POPULATION HEALTH SYSTEMS,
AUSTRALIA'S POPULATION HEALTH SYSTEM

Introduction

351. Australia is a large continent between the Indian Ocean and South Pacific Ocean with a land area of around 8 million square km.[1] Australia is a highly urbanised country, with around 70% of people living in the capital cities or major urban centres. Three percent of people live in remote areas of Australia, while the remainder (27%) live in rural centres and other rural areas.[2]

352. The estimated total population of Australia was 18 967 000 million in 1999. Life expectancy at birth of Australians is 81.5 years for women and 75.9 years for men in 1996-98.[3] Aboriginal and Torres Strait Islanders in Australia have lower life expectancy and experience higher rates of morbidity and mortality.

353. Australia has an estimated per capita gross domestic product (GDP) of 25 141 in 1999 (USD PPP).[4]

354. Australia's federal system of government comprising six states and two territories was established by the Australian constitution in 1901. The Commonwealth Government operates under the Westminster system with two political houses: the House of Representatives and the Senate. Commonwealth governments serve for three successive years after which there is a general election.

Health services financing and delivery

355. For most health matters, the roles and responsibilities of the Commonwealth and States/Territories have developed over the years, building by convention on the text of the Australian Constitution. In general terms, the Commonwealth has developed a broad policy leadership and financing role in health matters, while the States and Territories are largely responsible for the delivery of public hospital and community services.

356. Australia has a national compulsory tax-based system of public health insurance, graduated on the basis of income and general taxation. The universal health insurance scheme, Medicare, provides access to medical and hospital services for all Australians. General practitioner and specialist medical care, as well as subsidised access to pharmaceuticals, are included under Medicare.

357. Commonwealth government expenditure for medical services and pharmaceuticals is uncapped and the level of expenditure for these services in Australia is increasing. Safety nets are also in place for both medical services and pharmaceuticals, thus ensuring that unreasonable costs are not placed on vulnerable individuals or groups.

1 *The World Fact Book, 2000.*

2 *Australia's Health, 1998.*

3 *OECD Health Data, 2000.*

4 *ibid.*

358. The Australian public health system, including specialist services, is funded by the Commonwealth under agreements with the State and Territory governments. Under the Australian Health Care Agreements (ACHAs), the Commonwealth provides substantial financial assistance to meet the cost of public hospital services amounting to around 75% of total funding. State and Territory governments have responsibility for ensuring the provision of public hospital services, including admitted and non-admitted services to public patients (free of charge) on the basis of clinical need.

359. Private health insurance is also available and this can cover private and public hospital charges, and a portion of medical fees for inpatient services. Private insurance can also cover allied health/paramedical services. The Commonwealth Government has recently introduced a number of key policy initiatives to increase participation in private health insurance.

Population health system – priorities, programs and governance

360. Population health in Australia concentrates on the objectives of protection, prevention and promotion of public health underpinned by sound epidemiological analysis and informed by multi-disciplinary research.

361. The Australian Health Minister's Conference (AHMC) is the primary mechanism for Commonwealth, State and Territory Governments to discuss matters of mutual interest concerning public health policy, community services and other programs.

362. Over the last twenty years, the Commonwealth has developed in conjunction with the States and Territories, national strategies to address major health priorities including HIV/AIDS, drugs, immunisation, breast screening, birthing programs, cervical screening and several other women's health programs. The national development of population health policy also takes into account Australia's involvement in international population health through treaty obligations.

363. The Commonwealth also provides leadership and coordinates surveillance, prevention, management and control of communicable diseases; regulation with respect to food; and the regulation of therapeutic goods and chemicals.

364. Joint public health activities conducted by the Commonwealth and State/Territories are coordinated through the National Public Health Partnership (NPHP), which is a subcommittee of AHMC, was established in 1996. Program priorities for the NPHP include:

- improving public health practice;
- developing public health information systems;
- reviewing and harmonising public health legislation;
- implementing public health workforce initiatives;
- strengthening national public health research and development capacity;
- improving the coordination of national public health strategies;
- developing standards for the delivery of core public health functions; and
- improving Aboriginal and Torres Strait Islander health.

365. States and Territories in Australia provide primary health care and community services to deliver population health programs and support health promotion foundations, along with industry, to develop programs such as injury prevention, healthy eating, sun protection, responsible drinking and tobacco control.

366. Considerable efforts are being made to integrate the work of general practitioners with other primary care services and community services. In particular, the NPHP is working with the General Practice Advisory Committee (GPAC) to improve the adoption of preventive and early intervention approaches by general practitioners.

367. Research on population health issues and epidemiological study is supported at the Commonwealth level through two mechanisms. The National Health and Medical Research Council provides independent, expert advice to government in health issues and research grants. It has also fostered and encouraged the development of a number of evidence-based clinical practice guidelines. A major priority for the new triennium of the NHMRC is to increase the focus of research in regard to population health approaches and interventions. The Public Health Education and Research Program (PHERP) provides funding to Australian tertiary institutions to strengthen postgraduate education and training including research training in population health.

Population health financing

368. Funding for population health activity is diverse and comprises contributions from the Commonwealth, States/Territories and local government, non-government organisations and, in some cases, industry.

369. The Commonwealth government contributes towards the capacity of States and Territories to improve population health through the Public Health Outcome Funding Agreements (PHOFAs). Base funding is provided for the major national health priorities listed in paragraph 351 above. PHOFAs incorporate annual performance reporting requirements for key outcomes and outputs for each of the component programs. Additional Commonwealth funding is provided for infrastructure development for public health activities.

370. States and Territories fund and support a range of population health activities through their own resources including public health promotion and education programs, health promotion foundations and public health regulation in the areas of poisons and access to dangerous substances. Local government provides support for sanitation and hygiene, food safety and water quality monitoring.

371. Whilst recent analysis of data on health expenditure suggests that the cost of population health programs over the past 30 years amount to around 2-3% of total health expenditure per year, this figure is indicative, only relying on narrow and variable definitions of population health outlays over time.[5] For example, this does not include money spent by general practitioners on population health programs like immunisation.

372. Population health encompasses such a broad range of activities and products that it is unlikely that any single financing mechanism will be effective in all circumstances. A variety of financing mechanisms are currently being studied in Australia in order to develop an effective financing model.

5 Deeble (1999), *Resource Allocation in Public Health: An Economic Approach* – Background paper for the NPHP, Melbourne.

Population health policy issues and challenges

373. Considerable progress has been made in the past ten years in development and coordination of population health policy and program activities. However, significant challenges remain in establishing a sound evidence base to support population health, identifying appropriate resource allocation mechanisms, addressing health inequalities and program planning, implementation and evaluation.

374. The capacity of the research and evaluation sector to demonstrate that population health yields significant health gains is a major methodological challenge. Population health interventions, by nature, are complex requiring the interaction of multiple factors and some require a long time lag between intervention and effect. This can make it difficult to establish the relative importance of the intervention in relation to a positive outcome. Due to the long lead times involved in any demonstration of a positive outcome in population health, there are few examples of where government investment reaps rewards within the period of a three-year government term. Immunisation and vaccination programs and some cancer screenings programs, are good examples which can demonstrate early health gains and returns on investment.

375. A related issue is that there are significant differences between the funding of population health and hospital and medical services. Individual curative services are largely funded on the basis of individual demand through the universal Medicare scheme while population level programs rely on specific budget allocations. Currently, there is no funding mechanism to ensure that population health receives an appropriate level of resources in relation to its longer term objectives and the wider health system. There is also no mechanism to determine appropriate level of funding for population health programs.

376. Within Australia, there is an unequal burden of disease for some population groups, most notably Indigenous Australians and Australians living in rural communities. Evidence from population health research clearly shows that the health status of the population and health inequalities are the result of multiple factors including social and economic circumstances largely outside the health system. Whole-of-government responses to these structural determinants of health are difficult to design and implement compared to single sector programs. However within the health sector a major increase in funding has been allocated to improve access to comprehensive primary health care which encompasses health education and promotion, disease prevention and clinical services.

377. Population health agencies face a tension between doing what is feasible, but less important in achieving major gains in health status, and dedicating scarce resources to longer-term strategies that are more difficult to implement. Moreover, it is technically difficult to design a planning framework that combines information on the economics of population health investments, with epidemiological analysis of different diseases, the needs of sub-groups and program design and delivery issues.

378. In Australia, all the above issues have implications for priority setting, program planning and resource allocation in population health.

CANADA'S POPULATION HEALTH SYSTEM

Introduction

379. Canada is the largest OECD country and the second largest country in the world, with a land area of about 10 million km.[6] Over 60% of Canadians live in urban areas and three out of four live within 150 km of the Canada-United States border. The country is ethnically diverse and has two official languages: English and French.

380. Canada had an estimated per capita gross domestic product (GDP) of Canadian dollars (CAD) 29 751 in 1999 (25 428 USD PPP). The estimated total population was 30.49 million people in 1999. Life expectancy at birth was 81.4 years for women and 75.8 years for men in 1997.[1]

381. Canada is a confederation of ten provinces and, as of 1 April 1999, three territories. Municipal councils exist to govern at the level of the community, town and city. The division of power between the federal and provincial levels of government was established in the founding constitution of the country at the time of Confederation in 1867.

Health services financing and delivery

382. Canada has a predominantly publicly financed health system that comprises ten provincial and three territorial health insurance plans. Under the Canada Health Act, the national system "Medicare" provides access to universal, comprehensive coverage for medically necessary hospital, in-patient and out-patient physician services. All provincial/territorial hospital and medical insurance plans are linked through adherence to national principles set at the federal level.

383. These principles are:

- *Universality*: this requires that the plan must entitle 100% of the insured population to insured services on uniform terms and conditions;
- *Comprehensiveness*: this requires that all insured health services provided by hospitals and medical practitioners be covered by the plan;
- *Accessibility:* means that health services must be provided on uniform terms and conditions without barriers, such as additional charges to insured patients;
- *Portability:* ensures health coverage for insured persons when they move within Canada or when they travel within Canada or abroad; and
- *Public administration*: requires the plan to be administered and operated on a non-profit basis by an accountable public authority appointed or designated by the provincial government.

384. Canada's health care system relies extensively on primary care physicians (*e.g.*, general practitioners) and Canadians are free to choose their own physician. Access to most specialists, many allied

6 *OECD Health Data, 2000.*

health providers, hospital admissions, diagnostic testing and prescription drug therapy is usually through referral from a primary care physician. Private practitioners are generally paid on a fee-for-service basis and submit their service claims directly to the provincial health insurance plan for payment. There are no deductibles, co-payments or dollar limits on coverage for insured services.

385. Provincial and territorial governments are responsible for the delivery of Canada's health care and hospital services. Provinces and territories plan, finance, and evaluate the provision of hospital care, physician and allied health care services, some aspects of prescription care and public health.

386. The federal government shares in the cost of these services through the annual Canada Health and Social Transfer (CHST), which since 1996-97 has consolidated the federal government's contribution to provincial health and social programs and post-secondary education into a single block transfer.

387. In the 1990s, all of the provinces and territories underwent health-care reform. Certain trends emerged over time, including a shift from centralised governing bodies to regional health authorities, a shift in emphasis from institutionally focussed care to community-based care, decision making on need and the best available evidence, and funding of health services at sustainable levels.

Population health system - priorities, programs, and governance

388. In partnership with provincial and territorial governments, the federal government, through Health Canada, provides national leadership to develop health policy, enforce health regulations, promote disease prevention and health promotion strategies. The federal department is responsible for the delivery of supplementary health services to Canada's Aboriginal population.

389. The governments of Canada have a number of mechanisms in place to ensure that social policy objectives pursued at different levels of government are coordinated. Conferences of Federal-Provincial-Territorial Ministers occur at least annually, and more regularly at the level of Deputy Minister or Assistant Deputy Minister. The Advisory Committee on Population Health (ACPH) is a federal-provincial-territorial committee that reports to and advises the FPT Deputy Ministers of Health on national and inter-provincial strategies to improve the health status of the Canadian population and to provide a more integrated approach to health. Governments work closely to support initiatives to redress health inequalities, improve knowledge management and research dissemination; and create innovative and effective health programs.

390. Through its Health Intelligence Network, the federal department works with other levels of government and the health care system in the surveillance, prevention, control and research of disease outbreaks. It also monitors health and safety risks related to the sale and use of drugs, food, chemicals, pesticides, medical devices and certain consumer products.

391. The federal government, through Health Canada, has constitutional responsibility for developing and enforcing regulations to ensure under consumer and environmental protection such through the Food and Drugs Act, the Tobacco Act, the Canadian Environmental Protection Act, the Canadian Centre on Substance Abuse Act, Narcotic Control Act, and Quarantine Act.

392. Research on population health issues is supported through a number of research centres: the Canadian Institute for Advanced Research; the Canadian Population Health Initiative, a recently funded federal government program with a mandate to carry out policy oriented population health research, undertake analyses, provide policy options; and in the future, the Canadian Institutes for Health research.

393. The Federal government has long supported a determinants of health framework which recognises that people's health is influenced by a broad range of factors, including income and social status, social-support networks, education, employment and working conditions, physical environments, biology and genetic endowment, personal health practices and coping skills, healthy child development,

health services, gender and culture. This approach, which began with the Lalonde report in 1974, was furthered at the federal-provincial-territorial level through the development of *Strategies for Population Health: Investing in the Health of Canadians*, a report prepared for the Minister of Health in 1994 by the Federal, Provincial and Territorial Advisory Committee on Population Health (ACPH). This emphasis on a "population health approach" has continued in the report of the ACPH *Toward a Healthy Future: Second Report on the Health of Canadians (1999)*, which reports on health status and the determinants of health and points to three broad priorities for action:

- *Renewing and reorienting the health sector* to address challenges in health promotion, injury and disease prevention, and treatment services, to act a catalyst for change in sectors outside health and to increase accountability of health services;

- *Investing in the health and well-being of key population groups* (children, youth and Aboriginal people) to address lower than optimal developmental opportunities; and

- *Improving health by reducing inequities* in literacy, education and the distribution of income.

394. Priorities to improve the health of target populations supported through this approach include:

- Early child development, prenatal nutrition, Aboriginal "Head Start", diabetes control, a tobacco strategy, HIV/AIDS, HEP C and a number of other strategies.

Population health financing

395. Public health services in Canada are provided separately from the main components of health care and are administered through local or regional health units.

396. Population health related funding is characterised by both ongoing support for core programs and time-limited resource allocations to provide an enhanced emphasis on key priorities. These latter allocations are normally funded by means of strategies approved by the federal Cabinet, such as the HIV/AIDS strategy. The provinces and territories may also add their own funds in support of a nationally agreed strategy. There are no block transfers of funds specifically for population health initiatives. The federal government along with the provinces and territories work collaboratively on initiatives, often through joint management committees.

397. In 1998, total health expenditures in Canada (in current dollars) were CAD 81.82 billion or CAD 2 700 per capita. Health expenditures accounted for 9.2% of per capita gross domestic product (GDP) in 1999.[7]

398. Public sector funding represented about 69.6% in 1998 of total health expenditures. The remaining 30.4% is financed privately through supplementary insurance, employer-sponsored benefits or directly out-of pocket costs.[8]

399. While provinces have, in principle, embraced the need for shifting the system emphasis, efforts are often frustrated by deeply entrenched interests within the health care system. Thus, while budgets in many provinces have shifted to some degree, the preponderance of funding continues to support the traditional medical model of care.

7 *Canadian Institute for Health Information, National Expenditure Database, 1999.*

8 *ibid.*

Population health policy issues and challenges

400. Developing the appropriate priority for funding and support for population health initiatives remains a major challenge.

401. Further development of the population health evidence base is underway and will assist with the appropriation of resources for evidence-based initiatives. There has to date been insufficient attention paid to developing evidence of what works and what doesn't work in health promotion and disease prevention. Better information on the cost-effectiveness of approaches is needed. Further research on a range of indicators of health (in contrast to illness indicators) and 'community health indicators' will help to improve the evidence base. Integrated program evaluation needs to be given a higher priority in order to further develop the evidence base in population health. While many programs have been evaluated, there are insufficient or national-level data collection, which limits comparability. In addition, there are inadequate resources dedicated to synthesising results of evaluations in a way that is useful to policy makers and practitioners.

402. Population health policy makers in Canada, like their colleagues in other countries, continue to grapple with the issue of how the health sector, whose traditional role is treating the sick, can influence the root causes of health and help to reduce inequities in health status. Since many of the determinants of health are outside the traditional system, building alliances with other sectors is a primary strategy for improving the health of the population. Developing collaborations supporting healthy public policies in a variety of sectors, as well as in the health sector itself, while at the same time not rigidly imposing a health agenda on other sectors remains a challenge.

403. While Canadians enjoy good health status overall, inequalities continue to exist in the health status of different groups within the population. The Second Report on the Health of Canadians documented that those with low incomes and education levels suffer more illnesses and die earlier than those with higher incomes and education levels; there are clear signs that some children and youth are vulnerable to developmental problems, and Aboriginal Canadians are especially at risk for poor health.

404. Traditionally, decision-making in health care has relied heavily on medical expertise. The evolution of Medicare established specific stakeholders – most prominently, physician and hospital associations – as central to the policy development process. Current reforms are refocusing the health care system towards primary care, health promotion, home care, and community-based services. This is causing some inevitable tension as other perspectives, including those of allied health professionals, policy makers, citizens and community-based groups, must be integrated. Better co-ordination and integration between the treatment and care system and the population based health strategies and programs is now a priority in Canada.

KOREA'S POPULATION HEALTH SYSTEM

Introduction

405. The Republic of Korea consists of the Korean peninsular and adjacent islands, and comprises a total land area of around 99 thousand km.[9]The Republic comprises a national Government, 16 Provincial and 232 local government authorities.

406. The population of Korea was estimated to be 46.85 million in 1999. Life expectancy at birth has increased markedly from just over 50 years for men and women in 1960 to be 78.1 years for women and 70.6 years for men in 1996.[10] Like other countries, Korea has seen a decline in the incidence of infectious diseases over this period, and a rise in the incidence and prevalence of chronic non-communicable diseases.

407. Korea had an estimated per capita gross domestic product (GDP) of Korean won (WON) 10.4 million in 1999 (15 863 USD PPP).

Health services financing and delivery

408. The first social health insurance was introduced in Korea in 1977. Initially coverage was limited to employees in large industries employing over 500 people. Changes introduced throughout the 1970s and 1980s, principally to extend coverage to progressively smaller industries. For the first time insurance coverage was extended to self-employed people in 1988. By July 1989 coverage had been extended nationwide to all employees, including the self-employed.

409. In addition to the Medical Insurance Program there is a Medical Aid Program which is a form of public assistance providing medical care services for low-income people. In 2000 around 1.9 million people (3.7% of the population) are eligible for assistance through this program.

410. The government of Korea established the Special Committee on Health Insurance reform in 1994 in response to a number of emerging problems with the system of health insurance, such as wide variation between services and benefits provided by insurance funds, and dissatisfaction amongst consumers about the high level of co-payments.

411. As a result, further changes to the system of Medical Insurance were implemented throughout the 1990s. These extended the range of treatments and care for which benefits may be claimed, as well as extending the treatment period for which benefits may be claimed. The rate of employee insurance contribution, and of patient copayments applying to various treatments and pharmaceuticals, was also reduced in the 1990s. By July 2000 the limit on benefit days is expected to be abolished. Patient contributions to health insurance expenditures are expected to decrease from 50% to 30% by 2010. In order to strengthen the viability of the many small insurance funds, these will be integrated into a single fund health insurance system, and were due to come into operation in July 2000.[11]

412. The health care system is financed through a mixture of public and private sources, but the provision of care is principally through the private sector. Private clinics and hospitals make up more than

9 *OECD Health Data 2000.*

10 Ministry of Health and Welfare, *Health Vision 2010,* May, 2000.

11 Ministry of Health and Welfare, *Health Vision 2010,* May, 2000.

90% of all medical facilities. Doctors and hospitals are paid on a fee for service basis; for items on the agreed reimbursement schedule, payment is a mix of insurance payment and patient co-payment. In general patients have to make substantial copayments towards their care. In the case of hospitalisation (in any category of hospital) patients generally are required to contribute 20% of the cost of care. For outpatient services copayments vary from 30% where the service is provided in clinics or a pharmacy, to between 40% to 55% if the service is provided as an outpatient at a hospital.

413. There is a skewed distribution of private clinics and hospitals towards the urban areas, which makes it difficult for the rural populations to have access to medical care. In 1981 the Government began establishing a network of primary health care services and facilities throughout the rural and fishery areas to address this imbalance. By 1996 Primary Health Posts (PHP) had been setup in over 2000 localities with more than 500 residents. The PHPs provide basic medical care, including preventive health activities. A local community management committee operates the PHP, which is staffed by qualified nurses and midwives, with regular supervision and support from the doctor at the larger Health centres.[12]

414. In order to help address the persistent shortage of doctors in rural and remote areas, Korea has enacted a special law in 1980 which created the position of "Public Health Doctors". Under this scheme Doctors can elect to work in one of the rural areas for a three-year period instead of undertaking compulsory military service. In general the doctors are assigned to work at one of the Primary Health Care posts, and since the first 1505 doctors were assigned in 1983 the number of doctors, specialists and dentists taking part in the scheme has grown to 3000 by 1996.

Population health system - priorities, programs, and governance

415. The Population health system in Korea is largely centralised. The national Ministry of Health and Welfare provides leadership and guidance to local authorities. A number of national institutes are in place to support research, policy and program development, and to provide technical support to local authorities. These include the National Institute of Health, Korea Institute of Health and Social Affairs, Korea Health Industry Development as well as centres specialising in particular diseases such as the National Cancer Centre and the Korea Tuberculosis Association.

416. The Ministry is responsible for the administration of important supportive legislation, such as the Communicable Diseases Prevention Act (revised 1994), Mental Health Act (1995) and the National Health Promotion Act (1995). Key features of the National Health Promotion Act include a requirement for central and local government to develop health promotion plans, introduction of restrictions on cigarette and alcohol advertising, promotion of health education approaches, introduction of programs to improve nutrition and dental health, and establishment of the National Health Promotion Fund. The National Health Promotion Fund is discussed further in Attachment A.

417. The Ministry of Health and welfare also has responsibility for setting priorities and goals, service planning, performance monitoring, inspection and evaluation, education and training of health personnel, and providing guidelines and technical support. Priority at the national level has been given to controlling the impact of five major diseases - hypertension, cancer, diabetes, hepatitis and tuberculosis. A Disease Control centre is being established at the National Institute of Health in order to provide a focus for this work.

12 OECD, *Health Reform and Policy in Korea*, October, 1998.

National targets have been established for a number of key health status indicators.[13] For example:

Indicator	1995	2005	2010
Average life expectancy	73.5	76.1	77
Infant mortality rate	7.7	7.0	4.8
Chronic disease prevalence rate	41.0	41.0	40
Adult smoking rate	35.1	30.0	25.0
Adult daily alcohol intake	6.6	6.0	5.0
Adult obesity ratio	20.6	21.0	19.0

Source: *Health Vision 2010*, Ministry of Health and Welfare

418. At the Provincial level, the role of government is less clear and it has in the past been seen as a conduit between national and local authorities. There is little service planning at Provincial level, and a limited, but increasing, role in service inspection and evaluation.

419. Local government authorities are responsible for setting local goals and program objectives, as well as implementing programs in their local areas. Most population health programs implemented locally are based on program guidelines issued at the national Ministry level. Programs are usually "match-funded" between the local authority and the national government. Central Technical Advisory Boards have recently been established by the central government to provide local authorities with new skill and knowledge in several priority program areas. Local authorities are also responsible for collaborating with the private sector, through which most service delivery takes place.

Population health financing

420. The population health system is primarily financed through the regular system of budget appropriation and allocation. Programs are often jointly financed by the national, provincial and local governments. While funding is not provided on a set ratio between federal and provincial levels of government, the greater share is contributed by Provincial governments.

421. Population health programs operate within a set, capped budget, and funding is often time-limited. This differs from the system of funding in the acute and primary care treatment sectors, which is essentially uncapped, not subject to limited period of budget approval and mainly dependent on National Health Insurance.

422. Under the National Health Promotion Act a Health Promotion Fund has been established as a mechanism for raising funds specifically dedicated to health promotion related research and to policy and program development. Funds are raised from tobacco companies by levying a tax of 2 won per pack of cigarettes sold. A levy equivalent to 5% of their preventive health care expenditure is also imposed on health insurance companies. The fund raised 15.4 billion won in 1998 (around USD 15.8 billion).[14]

Population health policy issues and challenges

423. While investment in community and population based health promotion has been increasing in recent years a number of challenges remain.

13 Ministry of Health and Welfare, *Health Vision 2010,* May, 2000.

14 OECD, *Health Reform and Policy in Korea*, October, 1998.

424. Public sector provision of health advancement and illness prevention services remains relatively weak. Illness prevention measures such as screening and early detection of disease are almost entirely dependent on private sector provision. As discussed below in relation to Health Insurance arrangements, such services are subject to significant patient co-payments. This is likely to limit access to preventive services by lower income groups.

425. Information systems and infrastructure to support the collection and analysis of epidemiological data are being strengthened, but are still in the early stages of development. The research base underpinning population health is also poor, though again, research funding is likely to increase with support for initiatives through the National Health Promotion Fund. The lack of valid surveillance and epidemiological data is a limiting factor in relation to the application of evidence-based approaches to population health policy development and service implementation.

426. The lack of evidence of effectiveness and/or cost-effectiveness of interventions hampers priority setting both between possible priority issues for attention, and between potential interventions to address them. There is little investment in population health program evaluation. Lack of long-term planning and priority setting makes the strategic allocation of resources raised through the Health Promotion Fund more problematic. At times this is thought to result in the diversion of funds raised for health promotion to other initiatives, such as for programmes in Public Health Centres.

427. The conventional approach of government in Korea has been to see the provision of health care, and of illness prevention and health promotion approaches, as being the responsibility of the individual and of the private sector. Coordination between the public and the private sectors in population health service provision is therefore not well developed. The private sector plays the most significant role in service delivery in Korea with up to 85% of services delivered in the private sector. Interest in health promotion and prevention approaches, as well as experience and expertise in this field, is thought to be very low in the private sector.

ATTACHMENT A
NATIONAL HEALTH PROMOTION ACT 1995

428. The National Health Promotion Act, through which the Health Promotion Fund is established, was promulgated by the government in 1995 to support and strengthen national health activities that have traditionally been carried out by various health agencies, voluntary groups and the general public. These initiatives are expected to lead to improvements in the health and well being of the population.

429. Major initiatives introduced through the Health Promotion Act are as follows:

1) The Ministry of Health and Welfare is required to develop and implement basic policies regarding health promotion of the people, and the heads of Local Administrative Units accordingly have to develop detailed plans and implement health promotion programmes for their own communities.
2) An Advisory Commission for Health Policy will be established to act as an advisory body to the Minister of Health and Welfare on health promotion activities. Up to 30 members could be appointed to the Commission.
3) Heads of the county and local governments are required to undertake active educational campaigns to reduce smoking and alcohol use. Health warning messages are to be printed on both sides of cigarettes package and liquor containers.
4) In order to provide an environment that supports non-smoking behaviour, provisions were made to prohibit or limit cigarette advertising through mass media. Advertising of cigarettes and alcoholic beverages during regular public broadcasting hours will be prohibited by the Ministry of Health and Welfare. Cigarette vending machines are permitted only in adult-only premises. Sales of cigarettes are prohibited to people less than 19 years old. Non-smoking and smoking areas are to be designated in public facilities.
5) In order to encourage healthy living, a Council for Healthy Community Life consisting of community leaders and representatives of various agencies, both official and voluntary, will be established to lead an active health life movement in their community.
6) Certain institutions including companies employing more than 500 regular workers, government invested institutions employing more than 300 staff, general hospitals, and health insurance societies are required to conduct health education activities for their staff.
7) National as well as local governments are required to conduct a national nutrition survey, and various programmes including nutrition education. Fluoridation of drinking water will be encouraged.
8) In order to acquire the necessary funds for health promotion activities, a national health promotion fund will be established with contributions to be levied on tobacco companies and medical insurance funds. The fund has been mainly raised from tobacco companies in the form of fixed amount, not related with price, of money for every pack sold. Currently, the fixed amount is 2 Korean Won (about 0.17 US cents) per pack.

430. The Health Promotion Fund is directly managed by the central government with assistance from an advisory committee. The Ministry of Finance and Economy takes an active monitoring role in the management of the Fund.

431. Basically the fund is allocated to each programme area annually by the government, advised by the committee. Main areas for funding are health education, support to related private organisations, research, and aid to local governments.

SWEDEN'S POPULATION HEALTH SYSTEM

Introduction

432. Sweden is located in Northern Europe bordering the Baltic Sea between Finland and Norway and covers a total land area of 410 934 km. The country is mostly flat with a temperate climate in the south and a subarctic climate in the north. The coast line covers a distance of 3 218 km.[15]

433. Sweden had an estimated population of 8 860 000 million people in 1999.[16]

434. The population is diverse comprising an indigenous population of Sammi minorities (Swedes, Finnish and Lapp) and foreign born or first generation immigrants: Finns, Yugoslavs, Danes, Norwegians, Greeks and Turks. The official language is Swedish.[17]

435. Generally, there is a high level of health in Sweden as well as relatively small gaps between different social groups. Life expectancy for women is 81.9 years and for men is 76.9 years.[18]

436. The government is a constitutional monarchy with a chief of state and a prime minister who is elected by Parliament. The Parliament of 349 seats is elected by popular vote on a proportional basis and members serve a four-year term.

437. Sweden has an estimated per capita gross domestic product of USD 21 930 (USD PPP 1999).[19]

Health services financing and delivery

438. The provision of health care takes place within the framework of national legislation. Under the Swedish Health and Medical Services Act (1982) which came into force in 1983, the health care system was decentralised with responsibility for the financing and provision of health services being devolved to the County Councils. Councils plan and organise health services with respect to the aggregate need of the county population. Responsibility for financing and delivering long-term care for the elderly, the disabled and long-term psychiatric patients has been devolved to the local municipalities.

439. Health care is predominantly (75%-80%) funded by payroll taxes levied by the County Councils and municipalities with some matched central government contributions. Grants from the national government account for around 12% of total health care costs. Patient contributions such as user charges are low (around 5%) but are generally increasing as part of the ongoing cost-containment strategies. A system of social security provides universal benefits for sickness, maternity and unemployment, children, the elderly and the disabled.

440. Over the past 20 years, the proportion of GDP allocated to health has reduced from around 9.7% to around 8%. Structural reforms have included the introduction of purchaser-provider systems in 1990-

15 *The World Fact Book 2000.*

16 *OECD Health data, 2000.*

17 World Fact book, 2000

18 OECD Health data, 2000

19 *ibid*

1994 and hospital mergers and restructuring commencing in 1994. There have also been mergers of County Councils into larger regions. Regional planning has emphasised reductions in duplication for high cost technology and quality standards of medical care.

441. The County Councils are responsible for planning health services for the population in the geographical region. Within the Councils, there are number of different funding arrangements. Some Councils purchase services at the level of local units of specific catchment populations. District health authorities are paid on the basis of weighted capitation and expected to manage the total costs of care for their populations. Other Councils have established central agencies to act as collective purchasers of health care. Service-based reimbursement has been introduced in some Councils.

442. Doctors are funded publicly and closely monitored by the national government and/or local authorities. Patients have a legal right to enrol with a specific family doctor. Capitation-based payments are adjusted according to the number of enrolled patients.

443. Largely in response to a need to manage health resource constraints, a National Priority Setting Commission was established in 1992 and completed its work in 1995 with a report entitled: "Priorities in Health Care – Ethics, Economy, Implementation". A second Commission tabled a later report in 1997.

Population health system – priorities, programs and governance

444. The overall objective of the Swedish Health and Medical Services Act of 1982 is the provision of "good health care on equal conditions for the entire population". Under this legislation, County Councils are responsible not only for providing health care but for promoting health and disease prevention. The Act requires County Councils to promote health, offer equal access to good medical care and undertake needs-based planning. About 3% of total health expenditure, excluding drugs and dentistry, is devoted to health promotion.

445. Recently, a National Public Health Committee was commissioned by the Government to develop national public health objectives and strategies and handed over its final report to the Minister for Health and Social Affairs in September this year. Prior to the final report being delivered, two official preliminary reports were presented covering a range of issues including debates surrounding anti-tobacco and anti-alcohol legislation, stress related diagnoses and other public health issues. Ten debate pamphlets and some twenty scientific papers were published as part of a broad-ranging consultation process with stakeholders.

446. The Committee proposes eighteen health policy objectives based on a health determinants perspective within a time frame until 2010. A strong co-ordination role for public health agencies is recommended to the Cabinet. In principal, responsibility for implementation is integrated in the remit of national agencies and their sectoral missions. The Committee's findings, in the "green paper", will be presented as a bill to Parliament for final consideration in the autumn of 2001.

447. The work of the Committee builds on previous work in 1991 when a national strategy for health was published with guidelines for future work to improve the health of populations, particularly disadvantaged groups. This strategy included recommendations on cooperation, emphasis on activities at the local and regional levels, and research and training.

448. The National Board of Health and Welfare (NBHW) is the central administrative body for matters concerning health care and social welfare policy. The role of the Board is to supervise, follow-up and evaluate developments in all areas of social policy, including health care and population health. In 1992, the National Institute of Public Health was established to manage national and intersectoral health promotion and disease prevention programs. These programs focus on: alcohol, other drugs, injuries, children, youth and women. This organisation is currently being restructured but will soon have the role of assisting the government in population health policy development as a centre of excellence.

449. Apart from national policy development, population health services are developed through the County Councils and organised in primary health care districts. There are regional cooperation bodies, established by the County Council, to implement a population based public health approach. In this system, both general practitioners and specialists work as public practitioners. Apart from medical services and consultations, they provide preventive care. Health screening, vaccination services, child and maternity health and nurse and midwife services also take place in primary health care districts.

Population health financing

450. A priority for population health funding in Sweden is the development of systems to demonstrate cost-effectiveness and appropriate cost containment. Current estimates of the cost of population health vary within an range of up to 5% of total health expenditure per annum, depending on the definition used for measurement. In some Counties, there is a special per capita allocation for population health.

451. Most population health, like medical care, is funded through the tax system. Funds are allocated by County Councils according to identified local and regional needs. In 1985, the Dagmar Reform was introduced which changed the basis of health insurance reimbursement for ambulatory care to the number of inhabitants and social criteria of specific Counties. Other financing arrangements include weighted capitation payments for services, collective purchasing across Counties to user pays. In addition to County level funding, national grants are provided for national programs.

Population health policy issues and challenges

452. The population health system in Sweden is progressive in its legislative requirements whereby planning and financing of non-hospital care is done on the basis of the needs of a population in particular regions. However there are a number of outstanding issues and challenges: how to enhance decision making and priority setting in population health; the need for improved research, evaluation and information systems; maintaining equality in population health coverage; and achieving coordination and integration with the curative system.

453. In Sweden, the national, regional and local levels of government, which are of major importance in population health, are managed by different players in the political system. For instance, the County Councils and municipalities are constitutionally independent with their own taxation rights. The restructuring of the Councils into regions, and the concomitant greater shift towards local-level responsibility for health services funding and delivery, inevitably affects the opportunities for implementing national criteria and priority setting. To what extent this is an issue for Sweden, in particular, is difficult to assess as there are national and sub-national processes in place to synchronise activity.

454. Given the autonomy of the County Councils in financing and delivering health care, there is the challenge of how to continue to maintain equality in health across Sweden. Despite high levels of equality in health care, there is evidence that the gaps between social groups may be widening. To address this issue properly requires more emphasis on research and evaluation across regions and efficient information systems to identify common public health issues. More work may also be required, for example, to understand what triggers other sectors to initiate health promoting initiatives and how health impact assessment can be regularised.

455. A further challenge is how to shift the health care system from a disease orientation to a health orientation. At present, there is lack of parity between curative services and population health and lack of evidence to support funding the latter. As population health is delivered according to the needs of regional populations, it is difficult to develop a common system for demonstrating cost-effectiveness and appropriate cost containment across regions. Public health institutions need to address the difficulties in developing a case for effectiveness and providing evidence supporting population health approaches.

SWITZERLAND'S POPULATION HEALTH SYSTEM

Introduction

456. Switzerland, officially known as the Swiss Confederation, is a federal republic made up of 26 cantons and numerous municipalities. It lies in central Europe and is bordered by France to the west and north west, Germany to the north, Austria and Liechtenstein to the east and Italy to the south. It covers a total land area of 41 287 km.[20]

457. Most of the population of Switzerland estimated at 7 142 000 million in 1999 live in the Swiss plateau, a narrow, hilly region between the Jura mountains in the northwest and the Alps in the south. Life expectancy at birth for women is 82.5 years and for men is 76.5 years.[21] The population comprises four language communities: German, French, Italian, and Romansch (Rhaeto-Roman dialect).

458. Switzerland has an estimated per capita gross domestic product of USD 27 407 (USD PPP - 1999).[22]

459. The Swiss Confederation was founded as an independent state in 1291 and the constitution formed in 1848. The senior executive body of the Swiss Confederation is the Federal Council consisting of seven ministers of equal rank. The Parliament elects them individually for a four-year term. The Parliament consists of two chambers: The National Council representing the population as a whole with two hundred members elected for four-year terms and the Council of States with forty-six members representing the cantons.

Health services financing and delivery

460. Switzerland's health care system is largely financed through compulsory health insurance premiums. The regulatory powers of the federal government over the health care system have increased considerably in recent decades. The most fundamental change has been the enactment of the new federal health insurance law in 1996. Since the revised health insurance law came into force, all permanent residents in Switzerland are legally obliged to purchase compulsory health insurance policies. Individuals or their legal representatives purchase insurance policies for which premiums are community rated.

461. The federal health insurance law has altered the development of structures for delivering health care and how the cantons finance health care services. The funding and provision of health care is traditionally one of the main areas of government responsibility in which the cantons have a high degree of independence. Cantonal activities can be divided into the following areas:

- Regulation of health matters;
- Provision of health care;
- Disease prevention and health education; and

20 The World Fact book, 2000

21 OECD Health data, 2000

22 *ibid.*

- Implementation of federal laws.

462. The health insurance law requires the cantons to plan hospital provision and to limit the range of providers who will be reimbursed. Most cantons operate their own hospitals and some also subsidise private hospitals. Global budgets for publicly subsidised hospitals were introduced in five cantons in 1994 and have since been introduced in other cantons. The current health insurance law requires cantons to pay at least half the costs of operating general wards in public and publicly subsidised hospitals.

463. Compulsory health insurance covers a broad range of services, as defined in the revised health insurance law, including hospital coverage and ambulatory care. The services not covered by compulsory health insurance can be funded by supplementary health insurance policies which are risk related and include: choice of doctor, superior in-patient accommodation, optional dental care and drugs, and optional pharmaceuticals.

464. Complementary sources of financing for health care comes from federal, cantonal, and municipal tax revenues covering: subsidies for health insurance premiums; subsidies to both private and public hospitals; subsidies for nursing homes and home care providers; military health insurance and population health expenditure (defined as disease prevention and health care administration). Health insurance financing including supplementary health insurance has increased from 33.4% of total expenditure in 1980 to 37.5% of the total in 1997.

465. Direct payments or “out-of-pocket-costs” amounted to about 27.6% of total health expenditure in 1997. This results from a high level of co-payment under compulsory health insurance and direct out-of-pocket payments for services not covered.

466. Health expenditure has continued to grow over the last two decades with spending in 1996 reaching 10.1% of GDP. Switzerland has the highest hospital density, a concentration on high technology equipment and one of the highest doctor-patient ratios in Europe.

Population health system – priorities, programs and governance

467. Population health in Switzerland is managed through a variety of programs, projects and activities at different levels of government, in the private sector and the non-government sectors.

468. The federal government plays a significant role in prevention and promotion of health by funding the development, management, coordination of disease prevention and health promotion programs in population health. Funding is provided at the federal level to address issues of national importance such as: alcohol, tobacco, other drugs and HIV/AIDS. These national campaigns and programs are developed in line with the recommendations and principles of the World Health Organisation (in particular, the Ottawa Charter for Health Promotion) and UNAIDS (the Joint United Nations Programme on HIV/AIDS).

469. The federal government is also responsible for regulation with respect to the control of communicable diseases and environmental health. The promotion of exercise and sport is also a federal priority with legislation to support, among other things, exercise in schools, research on sport, and gymnastics. Other legislation covers foodstuffs, poisons, HIV/AIDS, drugs and immuniobiolgical products.

470. There are several advisory commissions on population health matters such as the Federal Commission on Poisons, the Codex Alimentarius Commission and the Federal Commission on the Question of AIDS, the Federal Commission of the Question of Alcohol and the Federal Commission on the Question of Immunisation.

471. The cantons support numerous diverse health promotion and disease prevention projects supported at the local and regional levels. These vary widely in both scope and nature, and in some cases,

lack specific cantonal objectives. In addition, there are a large number of private organisations which concentrate on specific diseases such as the Swiss Cancer League. Many municipalities have healthy living centres offering a variety of health promoting activities that vary from one municipality to the next. Some offer family planning services, women's health clinics or other services.

472. As well as supporting local or regional activities the cantons, municipalities and non-government organisations have responsibility for implementing federal programs and strategies. Up until 1989, there were no strategic cantonal objectives covering the whole of Switzerland and no means of implementing national projects. The Swiss Foundation for Health Promotion was set up partly to remedy this situation. The Foundation, established in 1989, is funded by revenue from compulsory health insurance premiums and develops programs to promote population health and prevent disease. The Foundation is also the national instrument for initiating, coordinating and evaluating population health programs.

Population health financing

473. Population health in Switzerland is funded from multiple sources at different levels of government, the private sector and by health consumers.

474. The structure of the new health financing arrangements are such that there are few legislative provisions concerning investment in population health. The overall proportion of population health care funded through public financing is low relative to other western European countries because a large proportion of this health care is financed directly by patients and by supplementary income. Compulsory health insurance pays for a limited number of interventions such as the early detection of diseases in defined risk groups and for examination carried out in connection with pregnancy and childbirth. The Swiss Foundation for Health Promotion, which is the central coordinating body for population health, is funded by revenue from compulsory health premiums.

475. At the federal level, decisions about the funding of population health campaigns and programs are made by the Federal Council. The programs are conducted through the Federal Office for Public Health. Funding is provided for a finite period of three to five years.

476. Much of the responsibility for financing, organising and delivering health care has fallen to the cantons, municipalities, private insurance companies and private providers. As a result, funding at these levels is typically project based, *ad hoc* and time limited with the private providers making a significant financial contribution in the form of contributions towards the formation of associations and clubs.

Population health policy issues and challenges

477. In Switzerland, the lack of an agreed policy mandate for population health, coordination between the federal and cantonal systems and the development of information systems present major challenges for the funding and support of population health activities.

478. A new attempt is currently underway to forge a comprehensive approach to policy development by the federal government, cantons and other actors. Health policy, in this new approach, encompasses not only policy on health care but also policy areas that affect the health of the population, including economic policy, environmental policy and social policy.

479. The development of relevant evaluation and information systems in population health to support policy development is another challenge. At present, there is no specific legislation or other central mechanism for the planning of non-hospital services. The statistics law requires federal governments to compile data on health and the health care system. The health insurance law contains additional regulations that empower the Federal Council to collect data on utilisation and expenditure. These current systems do

not adequately address the information needs in population health, in particular, to assist with monitoring and evaluating population health activity.

480. Various attempts at developing national and regional evaluation strategies for population health have been made in the past. In 1988, the Swiss Federal Office for Public Health produced its first evaluation report on the *WHO Health For All Strategy in the European region*. Since then there have been two further reports. These evaluations were hampered by the lack of reliable and appropriate data.

481. A prominent element in the new health policy approach currently under discussion is the creation of a Swiss Health Observatory to address the information deficits that hamper the development of population health policy and strategies.

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