Supporting public policy and action on the social determinants of health by providing evidence through the Social Health Atlases of Australia

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Executive Summary
Within Australia, effective governance for action on the SDOH requires an evidence base indicating the extent of the problems of inequalities (both absolute and relative) in health and in the SDOH, and for measuring and monitoring trends over time and the effectiveness of any action taken.

The Public Health Information Development Unit (PHIDU):-

- funded by Australian Government Department of Health and Ageing from 1999 to develop public health data, data systems and indicators nationally;
- provides information on a broad range of health determinants across the life course: online and in publications (with no cost to users);
- publishes small-area statistics for describing and monitoring inequality in health and wellbeing;
- physically located at The University of Adelaide, in Adelaide, South Australia.

Seminal work has included:

- development of the national Social Health Atlas of Australia series, first published in 1992 and now an online atlas, updated annually;
- national Indigenous atlases;
- national atlases of potentially avoidable mortality (with New Zealand) and hospitalisations from ambulatory care-sensitive conditions;
- South Australian atlases of the determinants of early childhood development and educational outcomes; compensable injury; mental health etc.;
- population health profiles for all General Practice Divisions (primary health care delivery) across Australia;
- South Australian cross-government report on inequality, and the development of the Monitoring Inequality website to highlight inequalities within the targets of the State’s Strategic Plan, which guides policy action by the South Australian Government;
• contributions to national reports on the health and wellbeing of the Australian population, highlighting socioeconomic inequalities in health and in their determinants. All data and the analyses of inequality undertaken are freely available via the PHIDU website at www.publichealth.gov.au. These products are accessed by a wide range of people across Australia and internationally.

Via this work, PHIDU has contributed to extending the Australian evidence base around:

• the factors that determine health, development and wellbeing;
• the notions of ‘inequality’, ‘inequalities in health’ and ‘inequalities in the determinants of health’;
• the relationship between socioeconomic status/position and health across the life course for populations; and
• examples of the impact of social and economic inequalities on health.

The overall aim of this work has been to direct attention to areas where we might better address our ameliorative efforts. Key lessons include the need for:

• dedicated funding to support PHIDU’s specialised work;
• access to good quality data across a wide range of domains, and extending beyond the more traditional health measures;
• enlightened champions within federal and state bureaucracies to support the use of PHIDU products; and
• well-trained staff with a range of skills, and use of new technologies and innovative software to increase accessibility by policy-makers, planners, practitioners, civil society groups, and community members.
Description of the Problem

Within Australia, effective governance for action on the SDOH requires an evidence base indicating the extent of the problems of inequalities (both absolute and relative) in health and in the SDOH, and for measuring and monitoring trends over time and the effectiveness of any action taken.

Significant inequalities in health and its determinants have been analysed for Australia as a whole, and for some individual States and Territories, for at least the last three decades. Australian studies confirmed that factors such as socioeconomic position, employment status, gender, Aboriginality and ethnicity were important determinants of health and mortality. Of particular concern were the continuing high levels of socioeconomic disadvantage, and the far poorer health and lower life expectancies (estimated to be 18 to 20 years less, in 1994) of Aboriginal and Torres Strait Islander peoples compared to other Australians.

For example, the proportion of babies in Australia’s major urban centres born with a low birthweight over the period 2006 to 2008 increases with increasing socioeconomic disadvantage, to be 32% higher for the most disadvantaged populations (those living in the lowest SES areas) when compared with the least disadvantaged populations (those living in the highest SES areas). This represents an increase from the period 1985 to 1989 when the differential was 25% (Figure 1(a)).

Low birthweight is substantially higher among the Aboriginal and Torres Strait Islander population. Over the period 2006 to 2008 the proportion of babies born with a low birthweight in South Australia and the Northern Territory was 14.2% for Indigenous births compared with 6.5% for non-Indigenous births, a differential of 2.17. The higher overall proportion with a low birthweight is evident in each quintile of socioeconomic disadvantage, with a differential between the low SES and high SES areas of 18%. This is a smaller differential than is evident for non-Indigenous births, of 37%.
Figure 1: Low birthweight babies

(a) over time (major urban centres)*

<table>
<thead>
<tr>
<th>Quintile of socioeconomic status of disadvantage</th>
<th>1985-89</th>
<th>2006-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest SES 1st</td>
<td>4.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Highest SES 2nd</td>
<td>4.1%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Highest SES 3rd</td>
<td>4.0%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Highest SES 4th</td>
<td>3.9%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Lowest SES 5th</td>
<td>3.7%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

RR = 1.25

(b) by Indigenous status (SA and NT), 2006-08

<table>
<thead>
<tr>
<th>Quintile of socioeconomic status of disadvantage</th>
<th>Indigenous</th>
<th>non-Indigenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest SES 1st</td>
<td>5.2%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Highest SES 2nd</td>
<td>5.1%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Highest SES 3rd</td>
<td>5.0%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Highest SES 4th</td>
<td>4.9%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Lowest SES 5th</td>
<td>4.6%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

RR = 1.18
RR = 1.37

*Major urban centres (urban centres with populations of 100,000, or greater) other than Brisbane

Source: Produced in PHIDU on data supplied by the States and Territories from their Midwives’ Collections

Premature mortality rates (deaths before 75 years of age per 100,000 population) in Australia over the 19 years from 1987 to 2007 have declined by 40.0%. The decline is evident in each year, other than in 2002 when rates increased by 0.8%.

However, this good news masks a worrying trend when the data are examined by socioeconomic status (SES). For example, in absolute terms, the difference in standardised mortality rates (SMRs) between the most and least disadvantaged populations\(^1\) for premature deaths from all causes in

\(^1\) SMRs for the most and least disadvantaged populations in South Australia and Australia were determined by allocating deaths, using the Statistical Local Area of the usual address of the deceased, to one of five groups (quintiles, each comprising approximately 20% of the population); groups were based on the ABS Index of Relative Socio-economic Disadvantage from the 1986, 1991, 1996, 2001 or 2006 Censuses.
Australia declined by 34.1 % over this period (Figure 2). The decline was not uniform, with the largest declines between 1988 and 1990, and again from 1992 to 1996. From 1996 to 2004 the trend line is relatively flat, and movements were generally smaller, and although the gap in 2005 was the smallest of any of these twenty years, by 2007 it had returned to a level last seen in 1994. The lines on the graph show the two separate, broad trends, before and after the mid-point of 1997.

**Figure 2:** Difference in SMRs (0-74 years) between low and high SES areas, Australia, 1987 to 2007

In relative terms, the gap in premature death rates between the lowest and highest SES areas reduced, from being just over 60% in 1987 and 1988 to around 50% in the mid-1990s, before increasing to over 60% again in the latter years of this analysis, and 73% in 2007 (Figure 3). Again, the lines show the two main trends, the first across the years to 1996 and the second from 1996 to 2007.
The actual SMRs, shown in Table 1, highlight the extent of this health inequality. The mortality rate achieved by the most advantaged group in 1987 wasn’t recorded for the most disadvantaged fifth of the Australian population until 2005, some 18 years later. This is not to deny that rates improved for those in the lowest SES areas, but it still highlights a substantial inequality. Of note is that both South Australia and the Northern Territory have yet to achieve even this level of ‘equality’, and in South Australia the gap is widening again. Others (Queensland, Western Australia and, possibly Victoria) having achieved it are seeing widening gaps in the most recent years.
**Table 1:** SMRs (0-74 years) in lowest and highest SES areas*, Australia, 1987 to 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Highest SES</th>
<th>Lowest SES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>303</td>
<td>494</td>
</tr>
<tr>
<td>1988</td>
<td>299</td>
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<td>1989</td>
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<td>1991</td>
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<td>1992</td>
<td>278</td>
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<td>361</td>
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<td>2003</td>
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<td>2006</td>
<td>179</td>
<td>294</td>
</tr>
<tr>
<td>2007</td>
<td>172</td>
<td>298</td>
</tr>
</tbody>
</table>

*Only first and last quintiles are shown*
Context for the development of the Social Health Atlases, from 1988-2011

In 1988, in response to an increasing awareness in Australia of the role of social inequality as a key to health inequality, the Social Health Office within the South Australian Health Commission (SAHC) proposed the adoption of a social health strategy. The social health strategy outlined an approach to improving health for all South Australians through a recognition that policies in areas outside of the health sector, such as housing, education, transport etc. can have substantial impact on the health of the general community, and in particular on disadvantaged groups. This is often referred to as a ‘social view of health’. This (public policy) approach recognises the need to coordinate the development and implementation of a wide range of public policies on housing, education, technology, agriculture etc. (not just health policy) for the maximum positive effect on the health of the South Australian public, particularly disadvantaged groups such as the unemployed and Aboriginal people.

Information was seen as playing an important part in this strategy, by describing the socioeconomic and health status profiles of the population. The approach chosen to presenting information was through mapping. Maps present data in a way that is accessible to a wide audience, not only those charged with setting policy and undertaking strategic planning, but to consumers and other community advocates who may have limited skills in handling statistical information presented in more traditional ways. The maps describe the geographic distribution of the population by a range of socioeconomic indicators, together with maps showing health status and use of health services, thereby highlighting the relationships between the indicators of socioeconomic inequality and inequality in health status. These reports have been titled ‘social health atlases’. The aims of the first South Australian Social Health Atlas (SHA) (published by John Glover and Tony Woollacott in 1990) were for the atlas ‘to be a source of information for health providers (e.g., specialist clinicians, community health service workers, and general medical practitioners), managers of health and welfare agencies, community groups, researchers, educators and students’.

At the national level, the Health for all Australians: Report of the Health Targets and Implementation (Health for all) Committee to Australian Health Ministers was published in 1988, and contained a
major focus on the issue of health inequalities and equity. The report also cited international work including *The Health Divide* (Whitehead 1987) in Britain. By the early 1990s, as the result of research studies, information and data analysis (such as the SHAs) and policy advice, governments began to acknowledge the importance of the SDOH on the wellbeing of the population and subgroups. National reports such as *Enough to make you sick: how income and environment affect health* (1992) and *Better Health Outcomes for Australians: National goals, targets and strategies for better health into the next century* (1994) also clearly identified that ‘the importance of social and environmental factors affecting health must be incorporated as an integral part of the health system’. The importance of the responsibilities of other non-health sectors such as employment, education, housing and community services was also acknowledged, because ‘socio-economic factors are so clearly associated with health that structural changes must be made outside the health system.’

The first national SHA, published in 1992 (again by Glover and Woollacott), provided information on the distribution of key population groups, illnesses, causes of death and risk factors, and presented them in a way that highlighted the role of social and economic factors in relation to health and illness. In keeping with a public policy approach, it sought to integrate information on health, education, welfare and housing, in a way that could enable more informed debates on resource allocation and policy and program directions, both within and beyond the health system.

In 1999, the head of the Public Health Division of the (then) Commonwealth Department of Health and Aged Care established the Public Health Information Development Unit (PHIDU) at the University of Adelaide, with John Glover as its Director. The role of PHIDU is to assist in the development of public health data, data systems and indicators, with a commitment to the development of an integrated health information system in Australia that could provide information on a broad range of health determinants across the life course. A major emphasis was on the development and publication of small area statistics for monitoring inequality in health and wellbeing.

PHIDU’s first task was to produce the second edition of the national atlas (1999), which continued the theme of providing information with which to identify and address ‘the linkages which exist between socioeconomic disadvantage and health status; the implications of these patterns and linkages for the provision of appropriate health services, in particular health services which address
inequalities in health outcomes; and to broaden the use and understanding of data on health status
and health outcomes beyond the health system into areas where decisions are made which impact
on the health of the population’. This second edition also drew attention to variations in the patterns
of distribution of the socioeconomic and health status profiles of the population over the period
between the two editions. This theme of monitoring the health divide has been a major focus of later
versions. While the atlases do not provide the answer to addressing inequalities, they allow for
monitoring the gap in social inequality and health inequality - the health divide - between population
groups, and to ascertain whether it is growing or shrinking, and to identify trends over time in
absolute and relative inequality for a large number of indicators.

SHAs have been published on a wide range of topics since 1999, all of which are available for
downloading at www.publichealth.gov.au. A selection is listed below:

- A Social Health Atlas of Australia, Second Edition: A series of nine atlases covering each
State and Territory, and Australia (1999)


- Inequality in South Australia: Key determinants of wellbeing (Volume 1: The Evidence) (2004)


- Mental Health Atlas of South Australia (2006)

- Understanding Educational Opportunities and Outcomes: A South Australian Atlas (2010)

- Aboriginal and Torres Strait Islander Social Health Atlas, Australia (2010)

- Social Health Atlas of South Australia – online atlas updated annually (2011)


Many other atlases and datasets are available online, as well as a mapping package for the mapping of a researcher’s own data.

**Implementation, challenges and evaluation of impact**

Since the first social health atlas was released in 1990, the range and quality of datasets has improved, allowing for a better understanding of the impact of socioeconomic influences on health. It has also been possible to address changes in the overall levels, and patterns in the distribution, of socioeconomic status and health status and to assess the extent to which the health divide has been addressed. Ongoing funding from the Australian Government Department of Health and Ageing and other organisations has been essential for this work to continue.

Challenges related to the production of the SHAs have included timely access to existing good quality administrative and other datasets; the lack of a standard area, at the national level, of a size useful for the presentation of data for policy and planning purposes, that can be held constant over time (even for relatively short periods); the lack of datasets pertaining to unique individuals rather than to events, and the ability to link them; and the under-identification of the Indigenous population in the five-yearly Population Census, in most administrative collections and in death registrations. A number of solutions have been employed by PHIDU to improve the quality of the data in order to map them, and the use of innovative software has improved the technical production and display of the maps, graphs, tables and data access online. Demonstrating that the publication of data highlighting gaps in service delivery and variations in health status and outcomes was widely accepted and the data used in many areas of public policy has assisted in freeing up previously unavailable datasets.

The first South Australian atlas was generally well received, not the least because it was launched in a setting where there was a good understanding of a primary health care approach which the atlas, with its local level data, was able to inform. This is not to say that it was universally accepted, with the ‘social view of health’ concept not accepted by many in the bureaucracy in the early 1990s.
Some researchers and policy-makers contend that this is still the case. In discussing the view that ‘the population health approach may be of increasing significance to health researchers and practitioners, but the window of opportunity to translate it into a major policy change has not even begun to open in Australia’ (Lewis & Leeder 2001, p.47), Raftery cites the example of the Generational Health Review, a review of the South Australian health system commissioned by the South Australian government in 2002 and reporting in 2003. Of the Review, Raftery says:

*Despite the fact that its aim was to deliver “a plan . . . that provides effective strategies for health system reform, which ensures that all South Australians enjoy the best possible health and have access to high standards of health care”, the Generational Health Review failed to take seriously the social determinants and health inequalities research, the Acheson Report, or even, except in a token fashion, the information yielded by the social health atlas.*

The information in the atlases adds to a convincing body of evidence built up over a number of years in Australia as to the striking disparities in health that exist between groups in the population. In addition, by presenting data for groups of areas of similar socioeconomic status, the atlases demonstrate that significant health inequalities exist not just between the most and least advantaged groups, but are evident at each of the intervening levels of socioeconomic status as well. In other words, a social gradient of health exists in Australia, as it does elsewhere in the world.

While it is difficult to determine accurately the impact of the development of the SHAs on policy, planning and service design to address inequality, the atlases certainly represent a significant initiative in strengthening the public health information infrastructure in Australia and have been described by others as ‘an important policy tool with which to address health inequality arising from social inequality’. In an evaluation of the second edition of the national atlas, a number of informants called for the atlas to become a permanent feature of Australia’s public health information infrastructure. They argued that Australia had a paucity of time series data for monitoring long term trends in health status and health service use and saw that the atlas had a key role to play in this regard. In addition, some informants pointed out that the atlas’ analysis of the social determinants of health and the distribution of health and illness was becoming more important in the context of an increased emphasis on whole of government planning. At the federal, state and local government
levels, public policy is being driven by an increased understanding that social and health disadvantage is place-related. Some stakeholders saw the Social Health Atlas as an important analytical tool in supporting this sharper focus on sub-regional or small area (‘place’) planning and service integration.

In 2008, the development of the SHAs was identified as a social innovation by Geoff Mulgan, founder of DEMOS (known as the UK’s most influential think tank), and former Head of Policy for British Prime Minister Tony Blair.

PHIDU’s website ([www.publichealth.gov.au](http://www.publichealth.gov.au)) continues to receive considerable Australian and international interest. For example, from January to May 2011, the website has been accessed by 45,415 visitors from over 90 countries, looking at over 357,000 pages online.

Each month, over 4,000 individuals view around 200 indicators on more than 30 topics in interactive atlases and charts, and download datasets for small areas across Australia. A selection follows.

**Population demographics:**
- Age/sex distribution
- Population projections: whole and Indigenous
- Ethnicity - birthplace, non-English speaking residents, recent arrivals.

**Social indicators:**
- Early childhood development – domains of physical, social emotional, cognitive etc development
- Education – participation in pre-school, primary, secondary, post-school vocational training
- Learning or earning – at ages 15 to 19
- Families – single parent, low income, jobless with children under 15 years
- Rent assistance, public housing, housing and mortgage stress, no motor vehicle
- Income support – age and disability pensions, unemployment (long-term and youth), single parent, health care/ pensioner cardholders, children in low income families
• Internet access at home
• Labour force – unemployment, labour force participation including female, unskilled and semi-skilled workers, managers& administrators, and professionals
• Summary measure of disadvantage
• Child care – unpaid
• Community strength – voluntary work, help available from family, friends or neighbours, member of organised group, actively involved in school activities

Health status:
• Mothers and babies – low birthweight, smoking in pregnancy
• Child health – immunisation, infant deaths, deaths at ages 1-4 years
• Self-assessed health
• Risk factor prevalence – smoking, harmful use of alcohol, physical inactivity, overweight/obesity, fruit consumption
• Chronic disease prevalence – type 2 diabetes, mental health disorder, respiratory disease, heart disease, arthritis, osteoporosis
• Disability (profound or severe)
• Premature mortality – by sex, for selected causes
• Avoidable mortality – for selected causes
• Service use – general practitioners, health assessments, aboriginal health workers etc
• Private health insurance
• Residential aged care places and community outreach service places
• Cancer screening services – participation in and outcomes of breast, cervical screening
• Hospital admissions – for a range of conditions

Health and welfare workforce:
• General and specialist medical practitioners, nurses, dentists, psychologists, pharmacists etc.