Background for users of burden of disease estimates for Local Government Areas of Victoria 2001

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1. Introduction

Health services planning requires information regarding the health status of populations. Traditionally this information has been largely based on causes of death (mortality) and health service utilisation statistics such as hospital admissions. It has also more often been available at the national or state level, rather than the specific geographic area for which the planning is to be carried out, such as the local government area level in the case of Municipal Public Health planning, or combinations of these, for instance, Primary Care Partnerships, or Divisions of General Practice or Metropolitan Health Services. Health status information at the smaller geographic level is difficult to find, expensive to collect and often inaccurate or unreliable.
The first Victorian Burden of Disease study (1996) and the more recently completed study revision (2001), addressed the first of these issues by combining mortality based assessments with estimates of non-fatal diseases (morbidity data), as well as identifying major risk factors such as smoking, obesity and lack of physical exercise that contribute to the burden of disease and injury in the population. This is a major improvement in the nature and scope of health status assessments of populations.
The second problem remaining for local planners was to access pertinent information on the relevant Local Government Area (LGA) population. Burden of disease estimates have now been produced twice for the 78 LGAs in Victoria. These LGAs can be aggregated into Alliances or Health Regions depending on the geographic unit being planned for.

These background notes explain how to interpret the small area estimates of burden of disease, and explain how they were calculated. Sincere acknowledgement is given to Dr Theo Vos and Stephen Begg of the University of Queensland for their vision, guidance and encouragement in the completion of this project.

2. Methods

2.1 The DALY

The Disability Adjusted Life Year (DALY) is a measure of the disease burden in a population combining the loss of years of life due to premature mortality with the loss of healthy years of life due to disease or injury. DALYs are the sum of years of life lost to premature death (YLL) and years lived with disability (YLD) adjusted for severity.

DALY = YLL + YLD

One DALY can be thought of as one lost year of healthy life. The DALY is a so-called health gap measure. This means that the burden of disease is measured as the gap between the current health status of the population and an ideal where everyone lives into old age, free of disease or injury. The term disability is used quite broadly, in this sense, to include all departures from complete health due to disease or injury.
To calculate the DALYs for a given disease or injury in the population for a particular year, the years of life lost (YLL) through premature death due to that condition are estimated and added to the estimated years of life lived with disability (YLD) due to non-fatal new cases of the condition. The inclusion of the non-fatal health outcomes component provides a substantially different picture from that of traditional mortality based assessments of population health. It allows for the impact of mental disorders, hearing loss, arthritis and other painful or disabling but non-fatal conditions to be

included. The importance of these diseases to the population, which has been hidden in earlier health status measures, is now made more explicit.

2.2 Data Sources

The burden of disease estimates are based on a critical examination of existing data sources to identify the pieces of information that best describe the health status of people in Victoria. Table 1 summarises the main sources of data. A complete list of sources and an assessment of their limitations is included in the *Victorian Burden of Disease Study: Mortality and Morbidity in 2001* Department of Human Services 2005, Chapter 2

Table 1: Burden of disease study data sources

Population	Deaths	Illness and disability
Australian Bureau of Statistics: Estimated Resident Population 2001 Australian Bureau of Statistics: Socioeconomic Indices For Areas	ABS Deaths 1997–2001	Disease registers, surveillance systems and notification systems Population health surveys Specific epidemiological studies Health service utilisation data Expert opinion

2.3 Problems with small area data

These burden of disease results are an improved and consistently measured health status assessment combining mortality and morbidity data for LGAs. However, the reporting and use of statistical information at the LGA level is to be approached with some caution. There were many occasions where in a particular age group the number of cases with a particular condition was zero or close to it. Deaths and incident cases of disease or injury in an LGA for the numerous causes of disease and injury, can vary greatly from year to year. The same estimates in a second time period could be different simply due to random variation. Such variations in small numbers over time or between LGAs may appear as large proportional changes and cause unnecessary concern.

The methods used to estimate the Victorian burden of disease were adapted where necessary to overcome the difficulties inherent in reporting small numbers. Where possible we made use of health information collected at the GA level. For many important diseases, LGA estimates have been based on what is known about socioeconomic and urban/rural differences in their occurrence at the state or national level. For a number of mostly minor conditions, information on socioeconomic and urban/rural differences was not available and by default the assumption was made that the rate of occurrence in each LGA is similar to Victoria's overall estimates. Thus, not all the estimates presented are an exact reflection of the true occurrence of disease in each LGA. However, given the available information sources, these are the 'best' estimates possible and in most instances are believed to come close to the disease experience in each LGA.

The following sections describe the measures taken to overcome the problems of dealing with small numbers.

2.4 Mortality

Mortality data for a single year at LGA level are highly volatile in total numbers as well as by the multitude of causes of death. The smaller the population within an LGA the larger the variation can be from one year to the next. Five years of mortality data were used in the estimation of deaths and Years of Life Lost (YLL) for 2001, in order to reduce the problem that the numbers of deaths for many causes in each LGA can fluctuate from year to year. The Australian Bureau of Statistics provided death data for the years 1997–2001. All deaths were included that occurred anywhere in Australia to people who had their usual place of residence in Victoria.

Total Victorian deaths for five years were aggregated from SLA level, by sex, 10-year age groups, cause, SEIFA and urban/rurality status. For each cause of death, we calculated the mortality rate by age group, sex, SEIFA and urban/rurality status, to compare with the State rates by age and sex. These cause specific mortality rates were then age-standardised to the Victorian population in 2001. We calculated relative rate ratios for each cause of death and sex by dividing the 10 SEIFA and urban/Rurality rates by the sex and cause-specific Victorian rate. The sex-specific rate ratios were then multiplied by the population of each LGA to determine total number of deaths for each cause and each LGA. Thus, the resulting number of deaths reflect the expected number and cause of death pattern at LGA level in 2001 that has been observed over a five–year period, given the socioeconomic and rurality status of the SLAs that make up each LGA. Hence the numbers of deaths reported in this study, for a particular disease, in an area, may differ somewhat from the reported ABS 2001 death statistics. The resulting deaths can be described as what would be expected to have occurred in 2001, given the small area's status on the SEIFA/Rurality variables and population size.

Deaths data are reported by Victoria and region only, so that there is no opportunity to compromise individual privacy, in accordance with Privacy legislation recently introduced in Victoria.

For a death at each age, the YLL are determined by the remaining life expectancy. People at all ages have a life expectancy. The older a person is, the fewer remaining years of life expectancy that person has. Deaths at all ages contribute years to the total YLL since every age has a life expectancy. In contrast to deaths, YLLs are reported at LGA level since they represent years lost and are not people.

2.5 Disability (YLD)

The methods used to assign YLD to each disease varied depending on the disease and the availability of local data. Three approaches were utilised.

2.5.1 Synthetic estimates

The first approach of synthetic estimation was adopted for cancers, some mental disorders and a variety of diseases for which survey data or appropriate health service utilisation data were available, for which geographic data were also recorded Table 2.

Table 2: Conditions and their data sources for which synthetic estimates were made

Data Source	Condition
Victorian Cancer Registry, 2001	all cancers
National Survey of Mental Health and Wellbeing, 1997	Depression, heroin or polydrug use and dependence, benzodiazepine dependence and harmful use, cannabis dependence and harmful use, stimulant dependence, Bipolar affective disorder, Borderline personality disorder, Alcohol dependence and harmful use.
National Health Survey (ABS), 2001	Asthma, osteoarthritis, diabetes, peptic ulcer, skin disorders (eczema, psoriasis), urinary incontinence, epilepsy, glaucoma, refraction errors, age-related macular degeneration, other causes of vision loss.
Victorian Admitted Episodes Dataset (VAED), 2001	Septicaemia, maternal haemorrhage, maternal sepsis, hypertension in pregnancy, obstructed labour, abortion, cataracts, birth trauma and asphyxia, neonatal infections, ischaemic heart disease, stroke, aortic aneurysm, peripheral vascular disease, cirrhosis of the liver, appendicitis, intestinal obstruction, diverticulitis, gallbladder and bile duct disease, pancreatitis, inflammatory bowel disease, vascular insufficiency bowel, benign prostatic hypertrophy, other neoplasms.
National Injuries database, 2002	All injuries (intentional and unintentional)

Information on the socioeconomic and urban/rural differences in Australia was used to predict the likely occurrence of these conditions in LGAs of Victoria. Statistical Local Areas (SLA), several of which may make up an LGA, were classified into two categories of rurality (ARIA+ scale metropolitan, rural) and five socioeconomic groupings of equal population size (quintiles) ranging from the most disadvantaged to the most affluent. The socioeconomic classification of SLAs is based on their Socio-Economic Index For Areas (SEIFA),IRSED ranking, an index of relative disadvantage comprising factors such as income, education, employment, family structure, dwellings, house ownership, marital status and ethnicity, measured in the 2001 Census. Every Victorian SLA has thus been allocated to one of 10 possible cells in the matrix in Table 3.

The LGA estimates are the addition of the burden estimates estimated for each of the SLAs in the LGA.

Table 3: Geographical Classification of Statistical Local Areas in Victoria

SEIFA (IRSED Quintile)	Urban	Rural
1 (most disadvantaged)	10	8
2	5	16
3	14	47
4	21	40
5 (least disadvantaged)	25	11

Cancer disability estimates

The Victorian Cancer registry provided local area data of incident tumours by type. The data for 2001, were considered subject to variability of small numbers (similar to the arguments presented above, concerning LGA deaths). It was therefore decided to use a method of synthetic estimation rather than reporting observed numbers of cancer cases in each LGA. The same estimation technique used for deaths was used for cancer. The effect was to raise (compared to the State rate) some of the cancer YLD rates in rural areas and/or where socioeconomic status of the LGA was low, and to lower some cancer rates in urban areas and/or where socioeconomic status ranking was high (for example lung cancer in males). Prostate cancer in men showed the opposite effect of being more common in urban areas where SEIFA ranking is high. A similar picture existed for females, with breast cancer incidence higher in areas of higher socioeconomic status and especially in urban areas.

Mental Health Disability Estimates

The National Mental Health and Wellbeing Survey (1997) surveyed the prevalence (the number of people with a condition regardless of when it first occurred) of the most common mental disorders together with age, sex, SEIFA and rurality variables. Again socioeconomic status and rurality have been examined to explain some of the variability in the distribution of mental illness across Australia. In the absence of Victoria specific information, nor any more recent mental health survey data, Australian estimates of prevalence in 1997 were assumed to reflect the mental health status of Victorians in 2001. YLD were thus estimated for the following mental conditions: alcohol abuse/dependence and depression. Socioeconomic status alone was available to explain variation in less prevalent conditions of drug dependence, bipolar and borderline personality disorders. The effect was to raise some of the mental illness YLD rates in LGAs where SEIFA ranking was low (the most disadvantaged areas), and lower some YLD rates in LGAs where SEIFA ranking was high (the least disadvantaged areas).

National Health Survey Estimates

The National Health Survey (2001) ascertained the prevalence (the number of people with a condition regardless of when it first occurred) of several conditions together with age, sex, SEIFA and rurality variables. Again socioeconomic status and rurality were used to explain some of the variability in the national distribution of several conditions including asthma, osteoarthritis, diabetes, peptic ulcer, skin disorders, urinary incontinence, epilepsy, glaucoma, refraction errors, age-related macular degeneration, and other causes of vision loss. The effect was to raise the YLD rates compared to the state rate, for diabetes in LGAs where SEIFA ranking was low (the most disadvantaged areas) and/or rurality was least remote, and lower the diabetes YLD rates in LGAs where SEIFA ranking was high (the least disadvantaged), and/or

areas were rural. The effect was to raise the YLD rates for asthma in urban LGAs and lower the YLD rates in rural areas. The influence of SEIFA ranking was less clear especially in females. The effect was to raise the YLD rates compared to the Victorian state rate, for osteoarthritis in rural LGAs and lower the YLD rates in urban areas, while the impact of socioeconomic status was not clear.

VAED (Victorian Admitted Episodes Database for the 2001 financial year)

Hospital admissions do not reflect incident cases of disease because the individual concerned may be readmitted to the same hospital, or transferred to a different hospital for the same condition. To identify new cases of diseases, patient matching across all public and private hospitals in Victoria was undertaken using probability based matching techniques. This reduced the possibility of over-counting incident cases when an individual is admitted on a second occasion, for the same condition. Socioeconomic status (SEIFA quintiles) and rurality were examined to explain some of the variability in the distribution of conditions requiring hospitalisation within the State. The effect on the distribution of YLDs was dependent on the hospitalised condition. For example admission for stroke was lower in rural areas compared to urban LGAs across the majority of SEIFA quintiles.

Disability from injuries

Socioeconomic status (SEIFA quintiles) and rurality were examined to explain some of the variability in the distribution of injuries requiring hospitalisation within Australia for 2002. The effect was condition specific but largely raised the YLD rate compared to the state rate particularly in rural areas and areas of socioeconomic disadvantage. Accidental falls in women show a contrasting pattern of elevated hospitalisation rate ratios in areas of relative socioeconomic advantage.

2.5.2 Extrapolation of differences in mortality to estimate disability

The second approach to disability modelling took into account previously estimated variation in the distribution of deaths and YLL across LGAs. This method assumes that in areas where deaths and YLL have been traced, so too must disability from the same conditions. For those diseases where the total burden calculation is largely determined by deaths, the local disability estimates were modified to take account of higher or lower local deaths experience, by using the previously determined cause-specific mortality rate ratios. Hence LGAs with higher YLL rates were estimated to have higher rates of disability than Victoria. LGAs with lower YLL rates were estimated to have lower rates of disability for these conditions. The list of diseases modelled this way is presented in

Table 4

Table 4: Diseases estimated by Victorian experience modified by local mortality experience

Condition
Dementia
HIV/AIDS
Hypertensive heart disease
COPD
Nephritis/nephrosis
Conditions not elsewhere specified including — Other infectious and parasitic diseases, Other nutritional deficiencies, Other endocrine and metabolic disorders, Other mental disorders, Other nervous system and sense organ disorders, Other cardiovascular disease, Other chronic respiratory diseases, Other digestive diseases

2.5.4 Applying Victorian rates to LGAs

The last and most simplistic approach, in the absence of any local disability data, was to apply the age and sex specific Victorian rates of YLD per 1,000 population to the relevant LGA population. This assumes that the disease condition occurs at the same rate throughout the State. The disease conditions which were unsuitable for other estimation methods, in each LGA, were treated in this way. The disease list calculated this way is presented in Table 5.

Table 5: Diseases estimated at Victorian age and sex specific YLD rates

Condition
Infectious diseases (excluding STD,HIV/AIDS and septicaemia)
Respiratory infections
Low birth weight
Nutritional disorders
Benign neoplasms
Neurological and sense organ disorders (excluding dementia and cataract related blindness)
Psychosis, anxiety disorders, childhood disorders
Rheumatic heart disease, inflammatory heart disease, non rheumatic valvular disease
Infertility
Congenital abnormalities
Oral health

2.6 Regional estimates

Regional and subregional estimates of burden are simply the addition of the aggregated YLL and YLD for each of their component LGAs.

2.7 Burden attributable to risk factors

The contribution of several risk factors to the total burden of disease was analysed for the whole of Victoria. These included tobacco use, alcohol consumption, physical inactivity, low fruit and vegetable intake, obesity, illicit drugs, occupation, unsafe sex, high blood cholesterol and high blood pressure, intimate partner violence (in females)

and air pollution. The proportion of a population who have the risk factor together with the likelihood of dying or becoming ill for those exposed to the risk factor, determine the disease burden caused by that risk factor. Data about the prevalence of risk factors by LGA were not available. Therefore, we only present estimates of the burden attributable to risk factors calculated for DHS regions. In the absence of region specific differentials on the prevalence of exposure to risk factors we assume that the attributable fractions calculated for the state apply similarly to the regions. These attributable fractions were then applied to the regions' burden estimates for each of the conditions linked with the risk factor. Thus, differences in the absolute size of the burden of the conditions linked with the risk factors analysed determine the differences in the findings between DHS regions. Part of the explanation of the increased importance of risk factors in rural areas is due to the higher proportion of the elderly in the population of those rural areas.

2.8 Incidence and prevalence estimates

Incident cases are defined as those people who developed a condition for the first time in 2001. Prevalent cases are those people who at any point in time (during the year 2001) had the condition regardless of when it first affected the individual. Incident and prevalent cases for 2001 have been estimated for LGAs by assuming the same relative rate ratios used to determine the YLDs as described above are valid to distribute to each LGA its share of the total Victorian incident and prevalent cases. The total Victorian incident and prevalent cases were estimated for the Victorian Burden of Disease Study 2001, after examining for each condition the internal consistency between available estimates of prevalence, deaths, remission and or incidence.

3. Quality of estimates

In judging the quality of the LGA burden of disease estimates there are two important issues to take into account. The first concerns the quality of the Victorian estimates and the second the accuracy of the methods used for estimating the LGA results. Table 6 gives a rating of quality of the estimates for the top 50 conditions and a brief explanation for each rating.

4. Uses of the information

4.1 Priority setting

There is considerable variation in the nature and size of the burden of disease between LGAs in Victoria. These LGA burden of disease results reveal important areas of inequality in health status, by gender, place of residence, socio-economic and rurality status. Such findings are important to support resource allocation decisions that aim to redress these inequalities.

For service planning, we expect the estimates of disease incidence and prevalence to prove valuable, as these reflect persons rather than years of life lost due to disease. When coupled with the disease projections, forecast to 2016, in the Victorian Morbidity Report 2000, the potential service demand into the future, can be estimated at the LGA, regional and subregional level.

The DALY estimates provide valuable insight into the potential for further health gain at the population level. However, the burden of disease is an estimate of health status, which cannot be divorced from past and present efforts to address the health

needs of the population. The burden attributable to many diseases is small, due to the continuing successful health programs to contain and address these conditions. This is particularly true of maternal and early childhood conditions, along with certain infectious diseases. Other diseases such as cardiovascular disease, cancer and mental disorders, continue to be the major contributors to the overall burden of disease while efforts to prevent and treat them are ongoing.

The total burden estimates clearly portray the relative ranking of the importance of the major diseases confronting the populations in LGAs. Cancers, cardiovascular disease, mental disorders, neurological and sense disorders and chronic respiratory disease are the major causes of burden (DALYs) identified. The relative contribution of premature death compared to years spent living with disability, for each disease is also evident. The difference between cardiovascular disease and mental disorders is particularly noteworthy in this regard. The burden of cardiovascular disease is predominantly premature death while the disability experienced with mental disorders is largely ongoing and rarely leads to premature death.

The top 50 disease conditions which contribute to the burden of disease, is not synonymous with the top 50 causes of health service utilization. It also includes those disabilities which do not make demands on the acute health sector. The large contribution to the burden of disease by risk factors such as tobacco use, alcohol harm, obesity, physical inactivity and high blood pressure indicate that there is a potential for large health gains from interventions directed at reducing the exposure to these risk factors in the population.

Policies and strategies aimed at reducing the burden of disease require more than knowledge about the size of health problems and how health problems are distributed among LGAs. Additional information is required to determine what can be done about conditions that cause a large burden and at what cost. Cost-effectiveness analyses are needed to provide this information and to determine the mix of services that has the greatest impact on health outcomes for the resources invested. Studies of this nature have been completed and published for interventions in the major areas of cancer, mental disorders and cardiovascular diseases. Similar work is nearing completion in childhood/adolescent obesity preventive interventions, and is currently under way for a number of public health preventive interventions.

4.2 Caveats around comparisons with previous estimates

The health status of Victorians on many indicators is improving. Reduced mortality rates for major causes of death are leading to longer life expectancies everywhere. Before comparing the calculated burden in DALYs between LGAs or regions, it is important to remember some important factors that have changed between 1996 and 2001.

1. the population is older and larger and more likely to contribute more DALYs other things being equal
2. the methods for counting YLDs at the Victorian level have changed and improved for some important diseases (notably diabetes, cardiovascular disease, dementia and oral health)
3. the methods for distributing the burden around the State to LGAs has been simplified to fewer/consistent techniques. No actual data at LGA level for a single year has been used due to the inherent volatility of small numbers. This

has directly reduced the degree of inequality (DALY rates) reported between LGAs.

The comparisons that can safely be made address the changes in the ranking of diseases as they contribute to the total Burden of disease and injury (DALYs) and changes in the ranking of DHS regions and LGAs, both within and between studies. Important factors that explain the change in rankings of LGAs include:

1. Changes in socioeconomic status of individual LGAs between 1996 and 2001 census (gentrification of inner city areas)
2. The flow on effect of changes in other LGAs (there will always be a 1st rank and a 78th rank, but positions held by each LGA can and do vary in each year of study)
3. While health status improvement is occurring across the state, some LGAs may be experiencing more rapid improvements than others

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5. Outputs 2001 Victorian Burden of disease Search estimates website

Health Outcome Measure	Geographical level reported	Comments
DALYs	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
YLDs	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
YLLs	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
DALY rates standardised to Victoria 2001	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
YLD rates standardised to Victoria 2001	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
YLL rates standardised to Victoria 2001	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
Incidence	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	Cases <5 at LGA level are not displayed to protect individual privacy
Prevalence	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	Cases <5 at LGA level are not displayed to protect individual privacy
DALYS top 50 ranked	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
YLDS top 50 ranked	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
YLLS top 50 ranked	Victoria Urban and Rural Victoria 9 DHS Regions 78 LGAs	
Deaths top 50 ranked	Victoria Urban and Rural Victoria 9 DHS Regions	Cases at LGA level are not displayed to protect individual privacy

Table 6: Assessment of accuracy of Victorian and LGA estimates of Burden of disease

Disease Condition	Victoria	LGA	Disease Comment
Deaths (all conditions)	excellent	excellent	Good vital registration data. Use of five years of death data improves accuracy of LGA estimates.
Infectious Disease			
Lower respiratory infections	good	fair	Victorian estimates based on hospital admissions. LGA estimates use state rates by age and sex.
Neonatal conditions	excellent	excellent	Good data on neonatal conditions as almost all babies born in hospital.
Cancers	excellent	excellent	Good data from cancer registry, LGA estimates based on SEIFA and rurality determined from the registry.
Diabetes	good	good	State estimates based on measurement survey AusDiab 2002. LGA differentials based on SEIFA and rurality self reported in National Health Survey 2001.
Other endocrine and metabolic disorders	fair	reasonable	Victorian estimates based on mortality data and SEIFA and rurality mortality differentials for LGA level estimates
Mental disorders			
Alcohol dependence, depression, anxiety + personality disorders	fair	fair	Derived from old but good quality survey data for whole of Australia 1997. LGA differentials based on SEIFA and rurality in same survey.
Heroin abuse/dependance	fair	fair	Reasonable data sources (NDARC 2004) due to difficulty in collecting information on a group of people often not included in 'normal' surveys. LGA estimates based on SEIFA in the NMHWB survey 1997. Estimates are more than 'ball park' figures.
Bipolar disorder	fair	reasonable	Derived from international prevalence estimates. LGA estimates based on SEIFA in the NMHWB survey 1997.

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Table 7: Assessment of accuracy of Victorian and LGA estimates of Burden of disease (continued)

Disease Condition	Victoria	LGA	Disease Comment
Schizophrenia	good	no information	Estimates of prevalence confirmed by "Low Prevalence Study", part of the mental health survey which specifically measured psychotic disorders.
Neurological and Sense disorders			
Dementia	good	fair	Based on overseas data but prevalence by age stable across many countries. Mortality data for dementia may be prone to differences in coding practices , but differentials in mortality by SEIFA and rurality have been used to identify LGA differences.
Epilepsy	fair	reasonable	Victorian estimates based on overseas data. LGA information based on SEIFA and rurality differentials self reported in the NHS 2001.
Parkinsons	good	no information	Based on overseas data, no local let alone LGA information.
Vision loss correctable by spectacles	good	fair	Based on local survey data of good quality. LGA estimates based on SEIFA and rurality differentials self reported in the NHS 2001.
Hearing loss	good	fair	Based on good SA survey, probably applies to Victoria; LGA estimates based on SEIFA and rurality differentials self reported in the NHS 2001.
Other nervous system disorders	fair	fair	Victorian estimates based on mortality data and SEIFA and rurality mortality differentials for LGA level estimates
Cardiovascular disease			
Ischaemic heart disease	good	good	Based on hospital data for infarction and survey data for angina. LGA estimates based on SEIFA and rurality differentials in hospitalisation data

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Table 8: Assessment of accuracy of Victorian and LGA estimates of Burden of disease (continued)

Disease Condition	Victoria	LGA	Disease Comment
Stroke	good	good	Good data from hospitals with some adjustments based on epidemiological studies for non-hospitalised cases, number of first-ever stroke cases and level of severity. LGA estimates based on SEIFA and rurality differentials in hospitalisation data
Inflammatory heart disease	good	good	Based on hospitalisations.
Other CVD	fair	reasonable	Extrapolated from hospitalised cases. LGA estimates based on SEIFA and rurality differentials in mortality data for 2001.
Chronic respiratory disease			
COPD	fair	reasonable	Based on community study from WA. Reasonable assumption of LGA variation according to SEIFA and rurality mortality differences.
Asthma	fair	fair	Based on Australian studies which used results based on hyperresponsiveness test rather than the larger self-reported figures. LGA differences implied from SEIFA and rurality differentials self-reported asthma in national health survey 2001.
Other chronic respiratory condititons	fair	reasonable	Victorian estimates based on mortality data and SEIFA and rurality mortality differentials for LGA level estimates
Digestive disorders			
Liver Cirrhosis	fair	reasonable	Based on admission data but community prevalence hard to estimate. Reasonable to use SEIFA and rurality differences in hospitalisations as proxy for LGA differences.
Genito-urinary diseases			

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Table 9: Assessment of accuracy of Victorian and LGA estimates of Burden of disease (continued)

Disease Condition	Victoria	LGA	Disease Comment
Nephritis/nephrosis	good	reasonable	From disease register of renal failure. Reasonable assumption of LGA variation according to SEIFA and rurality mortality differences.
Benign prostatic hypertrophy	reasonable	good	Data on incidence consistent with other data sources. Lack of knowledge of natural history of disease and rate of complications post-surgery (filled in with "expert opinion"). LGA differentials based on admission data for surgery.
Infertility	fair	no information	Prevalence from one epidemiological study. Unknown LGA differentials.
Musculoskeletal disorders			
Rheumatoid arthritis	fair	no information	Based on overseas data.
Osteoarthritis	fair	poor	Based on overseas data. LGA estimates based on SEIFA and rurality differentials in self-reported arthritis in national health survey.
Congenital anomalies			
Other congenital anomalies	fair	no information	Victoria based on estimates of spina bifida Down syndrome and other chromosonal anomalies disability
Oral health			
Dental caries	good	no information	Good South Australian data on prevalence of DMFT. Unknown LGA differentials.
Injuries	excellent	excellent	Victorian hospitalisations data (2001) used for Victorian estimates. LGA differentials based on SEIFA and rurality differentials in national injuries data (2002) that presented at accident and emergency departments or were admitted.