

Using socioeconomic data to assess the preventable burden of disease in Health Service Districts in Queensland

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Queensland Government

Queensland **Health**

In this presentation:

- Establish a need for small area data and problem getting it
- Describe the method used to generate health profiles from sociodemographic data
- Show the result
- Discuss the dissemination of this information

Health information routinely available for planners in Queensland Health

- Death databases -data available to SLA
- Hospital databases -data available to SLA
- Cancer incidence- data available to SLA
- Survey data on attitudes beliefs and behaviours- usually at state level
- Local surveys-often one off and maybe not comparable
- Vaccination data-usually reported to LGA
- Perinatal data collection-state and regional
- Screening data-state and regional

At 'small area' level, there is a need for data specific to an area

In Queensland Health, each District wants its own data

- Death rates for major conditions
- Hospitalisation rates
- Prevalence of diabetes
- Incidence of a range of cancers
- Smoking rates
- Obesity
- Alcohol and illicit drug use
- Screening for major cancers

While there is a need for local area information there are limitations associated with getting it or reporting it:

Data may be available but;

- Changes in number of cases can exaggerate health burden, where number of cases is small eg drowning
- Effect of random events eg bus crash
- A trial or awareness campaign may result in higher incidence of a condition
- Changes in resourcing eg closure of a hospital or opening a facility may alter hospitalisation for a condition

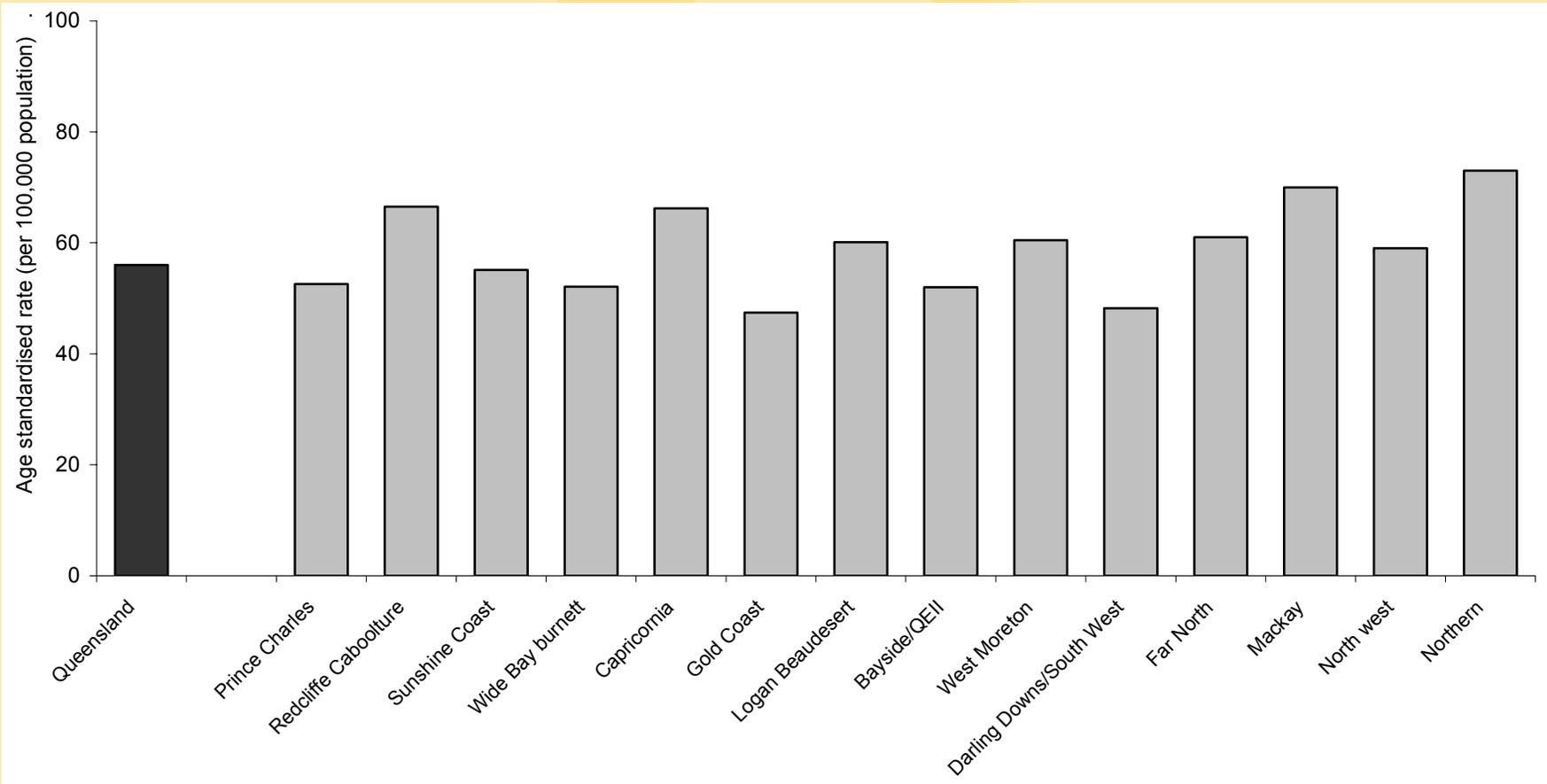
Data may not be collected at local level because;

- Resources not available for representative collection at small area level on a routine basis
- Collection of local information may not be comparable with state and national collection

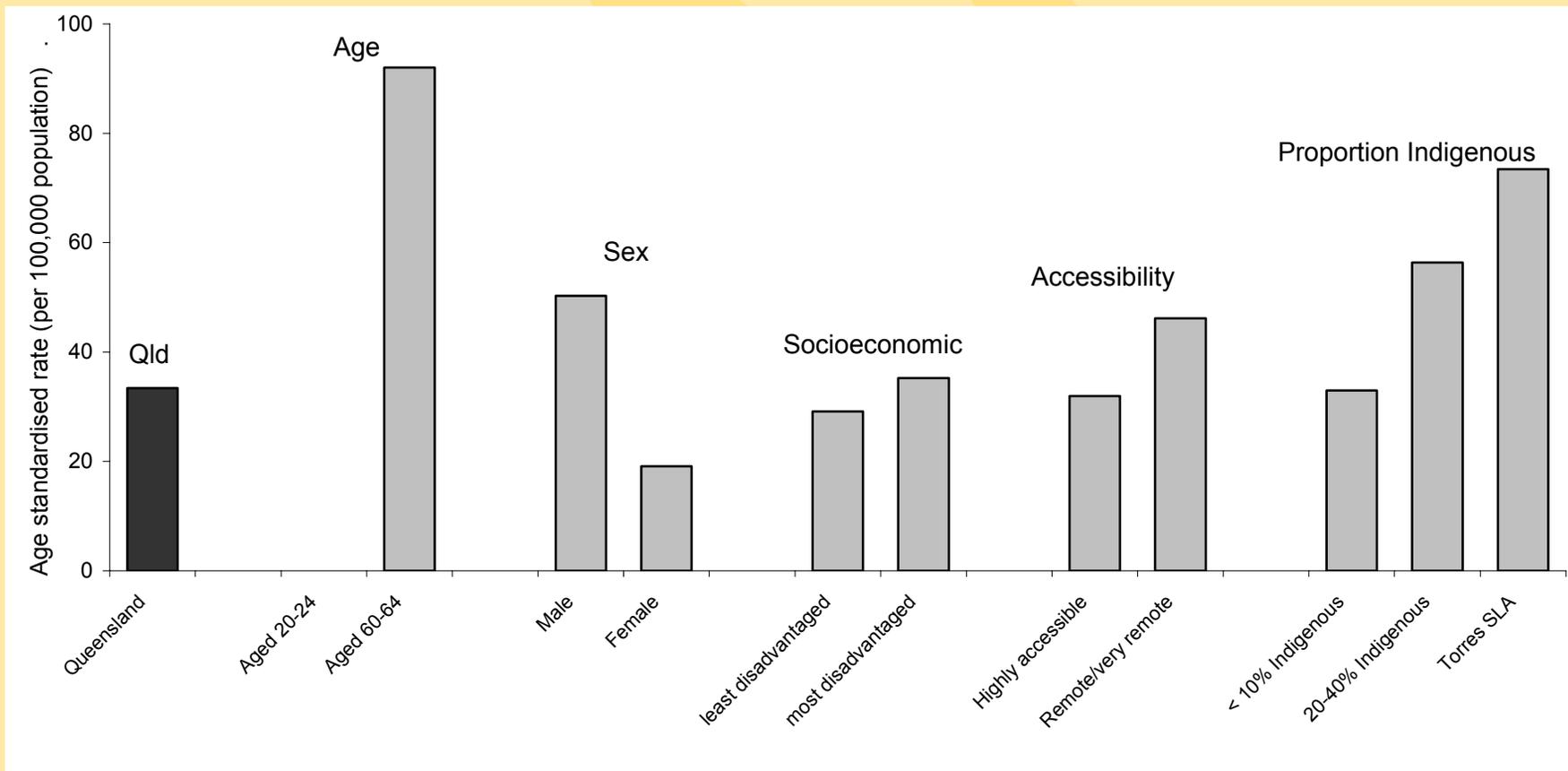
There is a belief that if we knew what the rates of disease and injury were at local level then we would have all we need for planning.

However the following slide shows that geographical differences are not all that informative

Rates of death for lung cancer in males across geographic areas in Queensland:



Contrast this with the rates across population groups:



We can conclude two things from this:

1. There is greater variation across demographic groups than there is across geographic groups
2. The variation in health status within a geographic area is greater than the variation across areas (not demonstrated explicitly by this slide).

Variation in rates across demographic groups is evident for all conditions.

Thus the drivers of health burden in a population are essentially sociodemographic.

- Age
- Sex
- Socioeconomic disadvantage
- Indigenous status
- Rurality/remoteness
- Cultural and linguistic diversity-evidence on this is limited

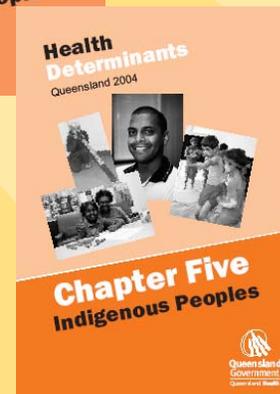
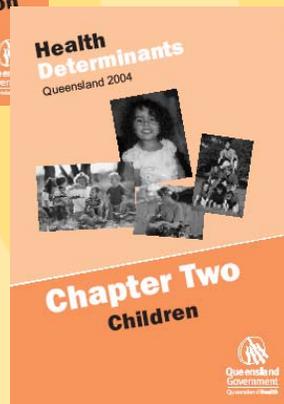
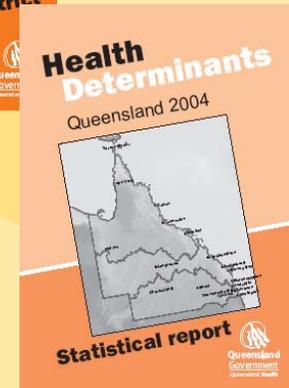
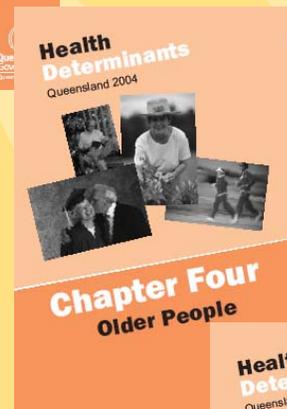
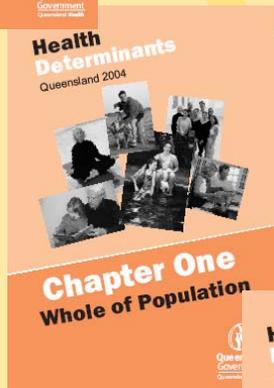
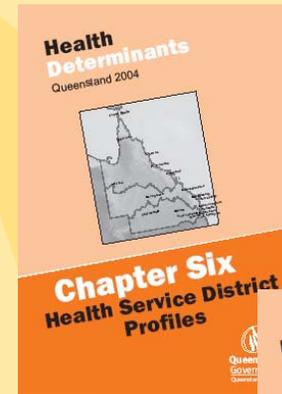
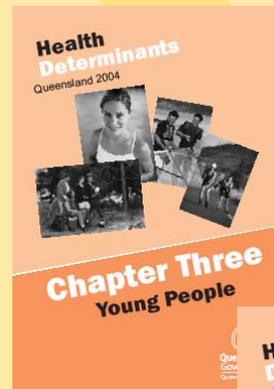
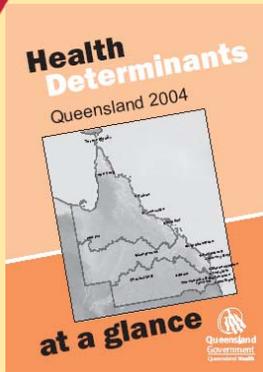
Research in QH has shown more than 70% of variance in all cause mortality can be explained by sociodemographic variables-similarly cardiovascular mortality

- So if we want to look at health issues we need to know about our population; the age and sex profile
- And if we are planning for future health needs we need to use projected population changes to assist



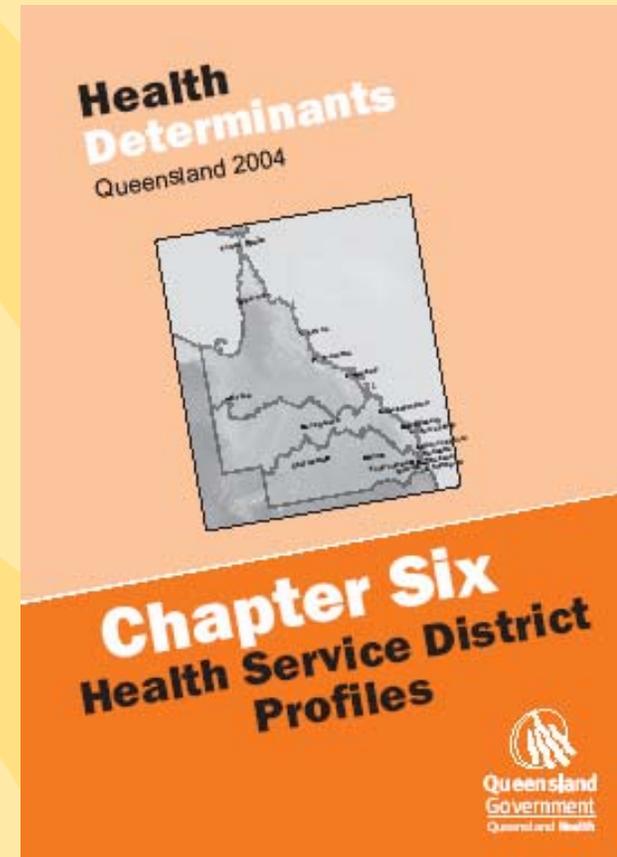
The reason we developed a methodology to generate a profile of health issues for 'small areas' was the production of a major report in 2004.

Health Determinants Queensland 2004



Chapter 6: Health Service District profiles

- Suite of 34 ie all population based HSDs
- Short-16 page document
- Using a similar methodology, generate unique profile
- Particularly useful for planning, taking a prevention and population approach



How were the sociodemographic profiles developed?

- Used 2001 census data (also 2003 ERPs)
- CData/Mapinfo to generate geographical areas to extract demographic data
- Qld government population projections

The sociodemographic indicators were:

- Total population and proportion of Qld total
- Proportion male/female
- Age distribution-4 age cohorts
- Past growth
- Projected growth: total and 4 age cohorts
- Advantage/disadvantage (quintile)
- Percent Indigenous
- Speaks a main language other than English at home
- Doesn't speak English well or not at all
- Remoteness/accessibility

Steps:

- Generate base demographic data for all Districts
- Tabulate into single table in Excel
- Include Qld for every indicator
- Rank for each indicator
- All those above Qld, classify as + or ++, below Qld as 's or l'
- Repeat for all indicators
- Use unique profile of each District to inform health issues

Demonstration-Excel file

Chapter 6: Health Service District profiles

Sociodemographic profile for each District.

+

Key health issues and determinants associated
with whole population and components

=

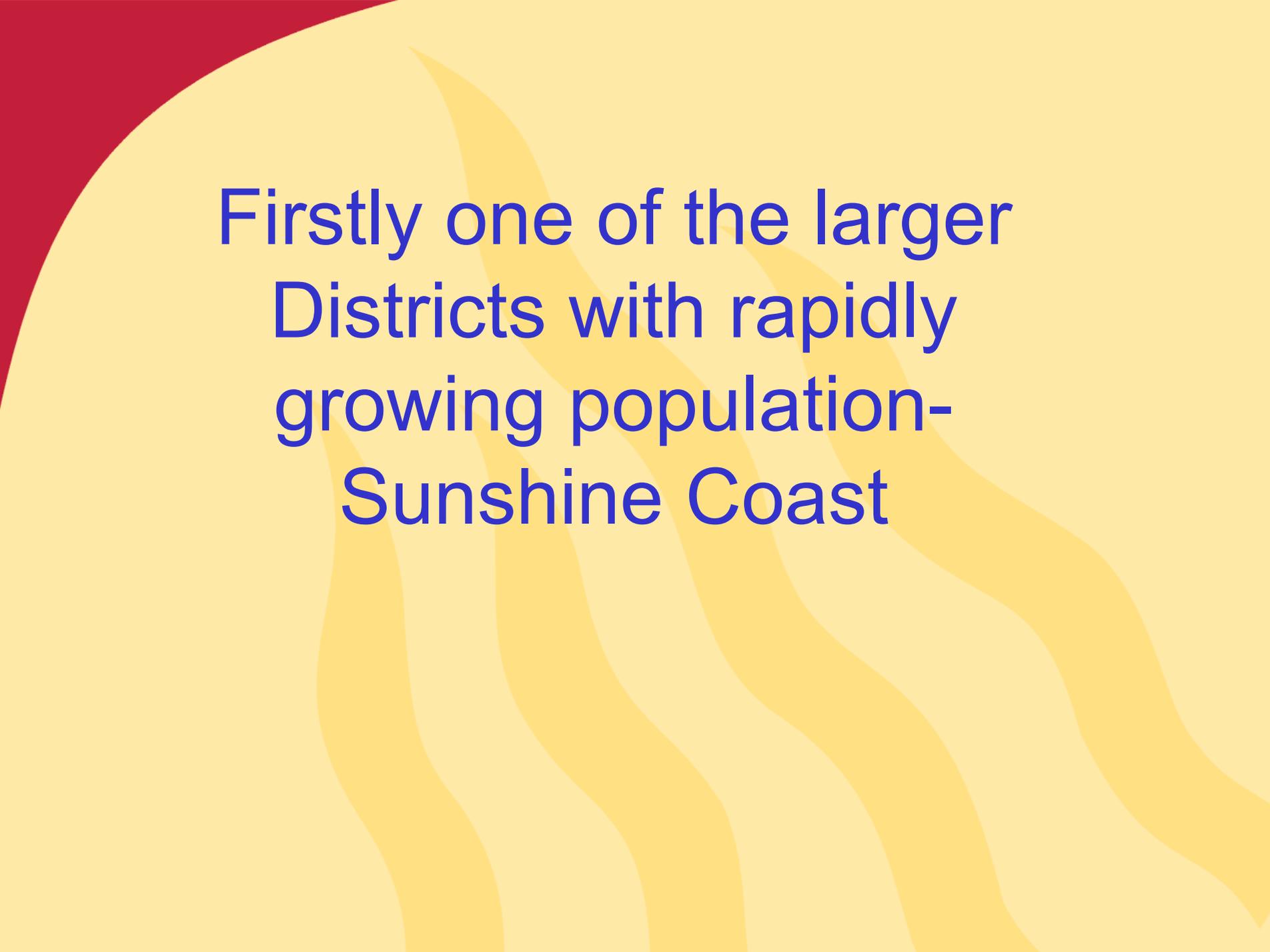
Priority areas for prevention in the District

Matrix of key health issues for each demographic cohort

- Health issues derived from the Burden of disease study
- Determinants associated with outcomes drawn from accepted knowledge
- Illustrate- table following
upper level -Burden of disease conditions,
lower level -Determinants

	Total population	Males	Females	Young children (0-14 years)	Young people (15-24 years)	Adults (25-59 years)	Older people (65+ years)	Indigenous ^{1,3}	Socioeconomic disadvantaged ^{1, 2}
	CHD Stroke COPD Depression Lung cancer Dementia Diabetes Colorectal cancer Asthma Osteoarthritis	CHD Stroke Lung cancer Suicide & self-inflicted injury COPD Road traffic injury Diabetes Substance use disorders Depression Colorectal cancer	Stroke CHD Depression Breast cancer Anxiety disorders Dementias Asthma Diabetes Osteoarthritis COPD	Asthma Low birth weight Attention-deficit hyperactivity disorder Birth trauma & asphyxia Other chromosomal anomalies Congenital heart disease SIDS Depression Road traffic injury Autism & Asperger's syndrome	Road traffic injury Depression Bipolar affective disorder Heroin dependence & harmful use Suicide & self-inflicted injury Social phobia Schizophrenia Borderline personality disorder Alcohol dependence & harmful use Eating disorders	CHD COPD Suicide & self-inflicted injuries Diabetes Lung cancer Depression Breast cancer Stroke Colorectal cancer Road traffic injury	CHD Stroke Alzheimer & other dementias COPD Lung cancer Colorectal cancer Diabetes Vision disorders Prostate cancer Hearing loss	All causes CHD Diabetes & complications including renal failure Unintentional injury Suicide & self-inflicted injury Mental health	All causes Diabetes Diseases of the digestive system Intentional injury Unintentional injury Mental disorders Musculoskeletal diseases Chronic respiratory disease Infectious & arasitic diseases & acute respiratory infections Neonatal causes Endocrine & metabolic disorders
	Harmful alcohol consumption Smoking Poor nutrition Overweight & obesity Physical inactivity Breast & cervical cancer screening Vaccination Social determinants	Harmful alcohol consumption Smoking Illicit drugs Sun protection	Smoking Poor nutrition Overweight & obesity Physical inactivity Breast & cervical cancer screening	Poor nutrition Overweight and obesity Physical inactivity Sun protection Vaccination Oral health Social determinants	Harmful alcohol consumption Illicit drugs Sexual health Social determinants	Harmful alcohol consumption Smoking Overweight & obesity	Poor nutrition Overweight & obesity Physical inactivity Falls Influenza vaccination Social determinants	Physical inactivity Poor nutrition Overweight & obesity Vaccination Breast & cervical cancer screening Harmful alcohol consumption Sexual health Illicit drugs Social determinants	Poor nutrition Overweight & obesity Physical inactivity Sun protection Vaccination Oral health Social determinants

The results of this
'analytical' process can be
demonstrated
(slides borrowed from
several presentations).



Firstly one of the larger
Districts with rapidly
growing population-
Sunshine Coast

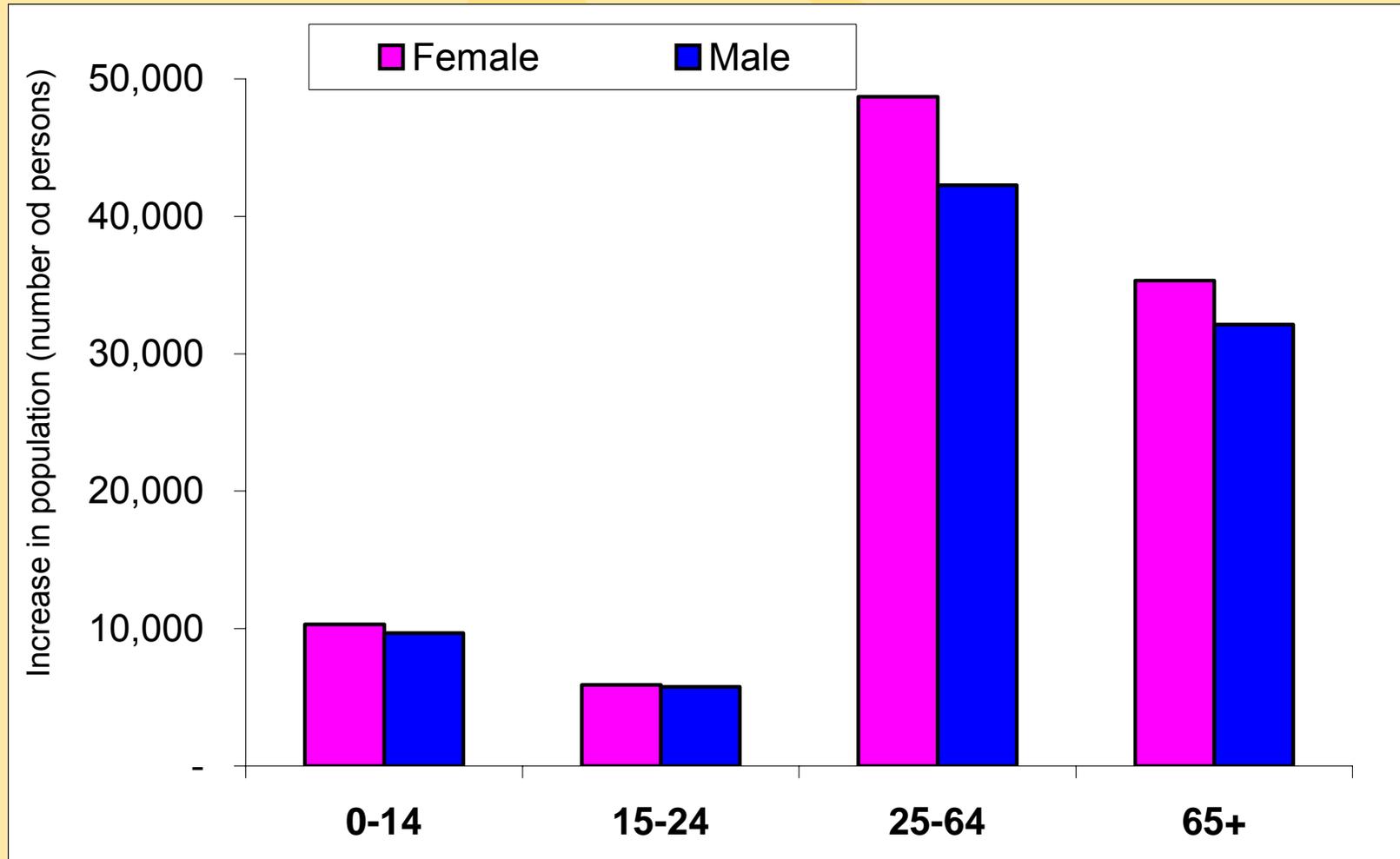
Age and sex distribution of this district

- In 2002, the population of the District was 255,407 = **6.9%** of the Queensland population
- Proportionally more older people (15.8%) than Qld (11.8%)
= about **10,000 more** older people than would be expected
- Proportionally more females (50.9%) than Qld (50.3%)
= about **1,500 more** females than would be expected

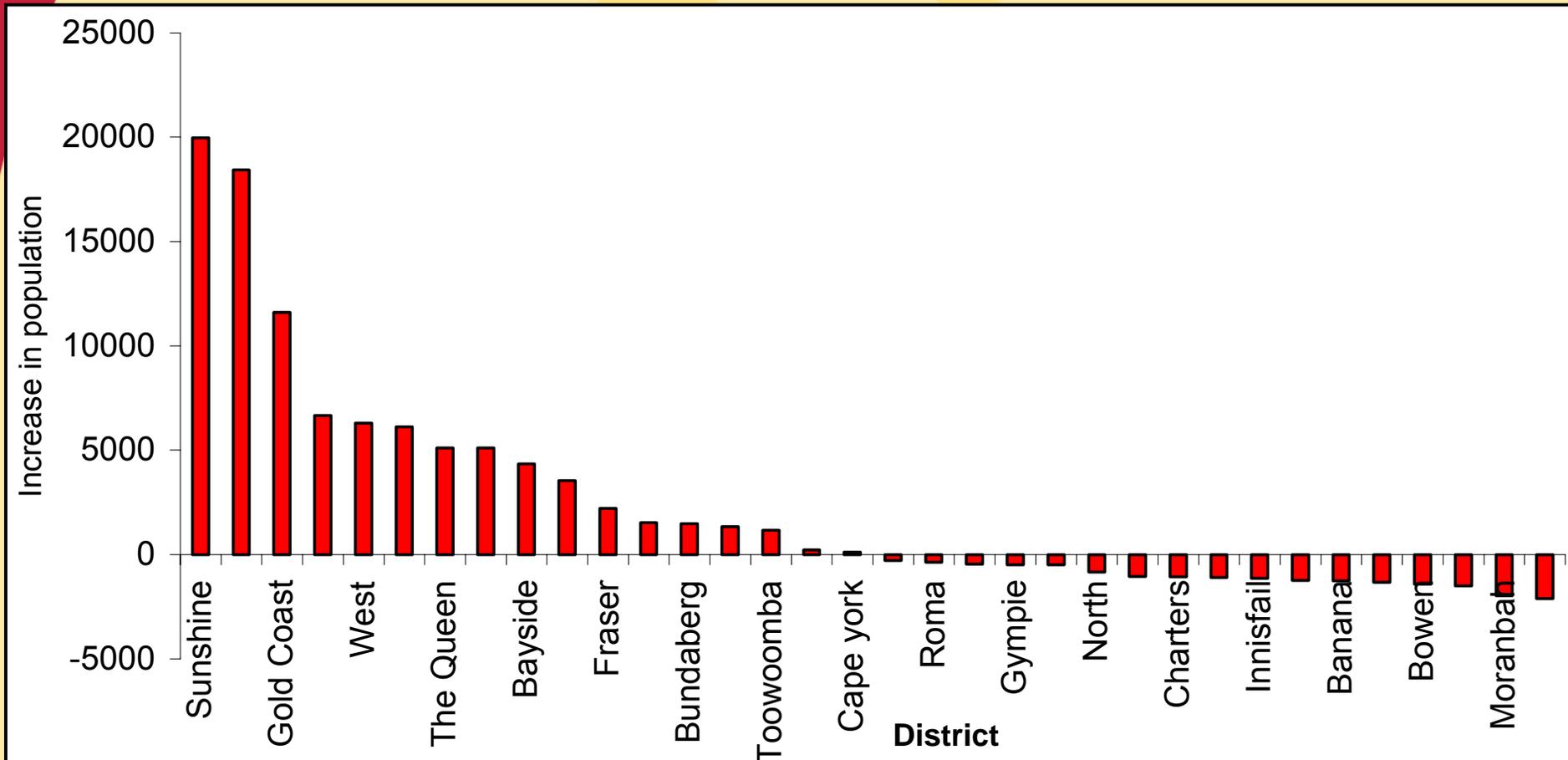
Population growth

- Recent history of population growth which is projected to continue from 2001 to 2021 (largest proportional increase and second largest numerical increase of all districts)
- In the 20-year period from 2001 to 2021, district population projected to increase from 247,167 to 437,220 (ie about 190,000 more people) and will affect all age groups.
- 26% of Queensland's projected increase in children aged 0-14 years, is projected to occur in Sunshine Coast. (~20,000 more children in Sunshine Coast)
- As in most areas in Qld, greatest proportional increases will occur in older age groups, (overall, 67,000 more older people), and about 91,000 in adult age group

Population change by age group and sex: 2001 to 2021



Projected increase in population of children aged 0-14 years in Queensland, by district: 2001 to 2021



Socioeconomic disadvantage

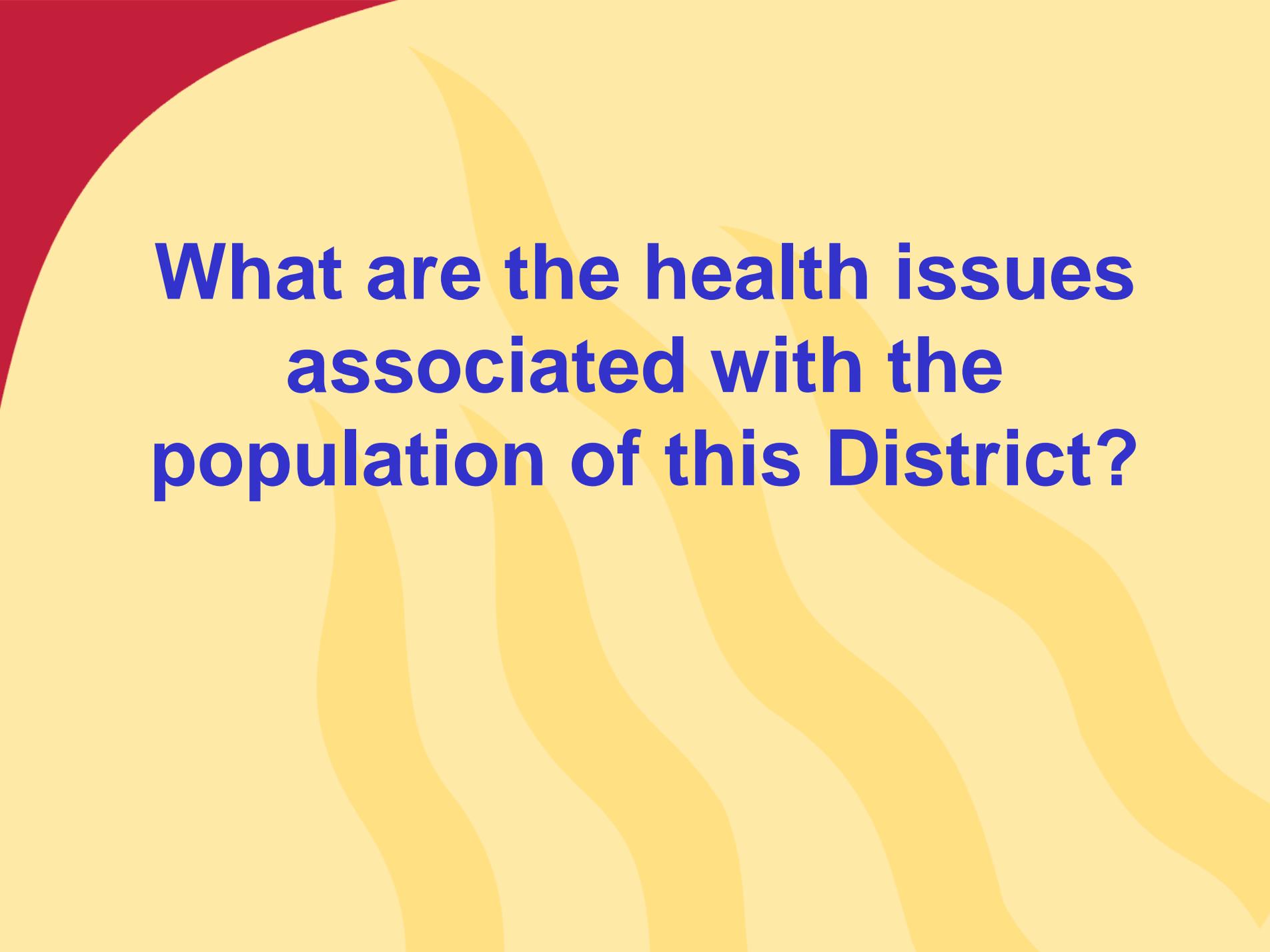
- In 2001, **~40,000 people** (16%), living in areas of relative socioeconomic disadvantage compared to 20% for Queensland (fewer people than would be expected)

Indigenous people

- In 2001, there were ~**2,800** Indigenous people in the district:
 - 1.1% of the total district population,
 - 2.5% of Queensland's Indigenous population
- Indigenous population more likely to live in areas of greater socioeconomic disadvantage

Cultural and linguistic diversity

- 3.3% of the population who speak a language other than English at home (**approx 8,200**) compared with 7% of state
- And of these, about 500 people have poor proficiency in spoken English, based on census data



**What are the health issues
associated with the
population of this District?**

**Consider the *whole* population
plus the demographic features
of this population that make it
different**

Major causes of death and illness for the whole population* include:

- coronary heart disease
- stroke
- chronic obstructive pulmonary disease (COPD)
- depression
- lung cancer

These issues apply to all districts

* Australian Burden of disease studies

Health determinants of significant impact for the whole population include:

- Harmful alcohol consumption
 - Smoking
 - Overweight and obesity
 - Poor nutrition
 - Physical inactivity
-
- Risk and protective factors for mental health are likely to have widespread effects on physical and mental health.

And considering this district has a higher proportion of older people and is projected to increase ...

Major causes of death and illness for older people include:

- Coronary heart disease
- Stroke
- Alzheimer and other dementias
- COPD
- Lung cancer

Health determinants of significant impact for older people include:

- Poor nutrition
 - Overweight and obesity
 - Physical inactivity
 - Influenza vaccination
 - Social determinants
-
- Risk and protective factors for mental health are likely to have widespread effects on physical and mental health.

***And considering the projected increase
in population of children...***

Major causes of death and illness for children
include:

- Low birth weight in infants 0-4 years
- Asthma in children 5-14 years

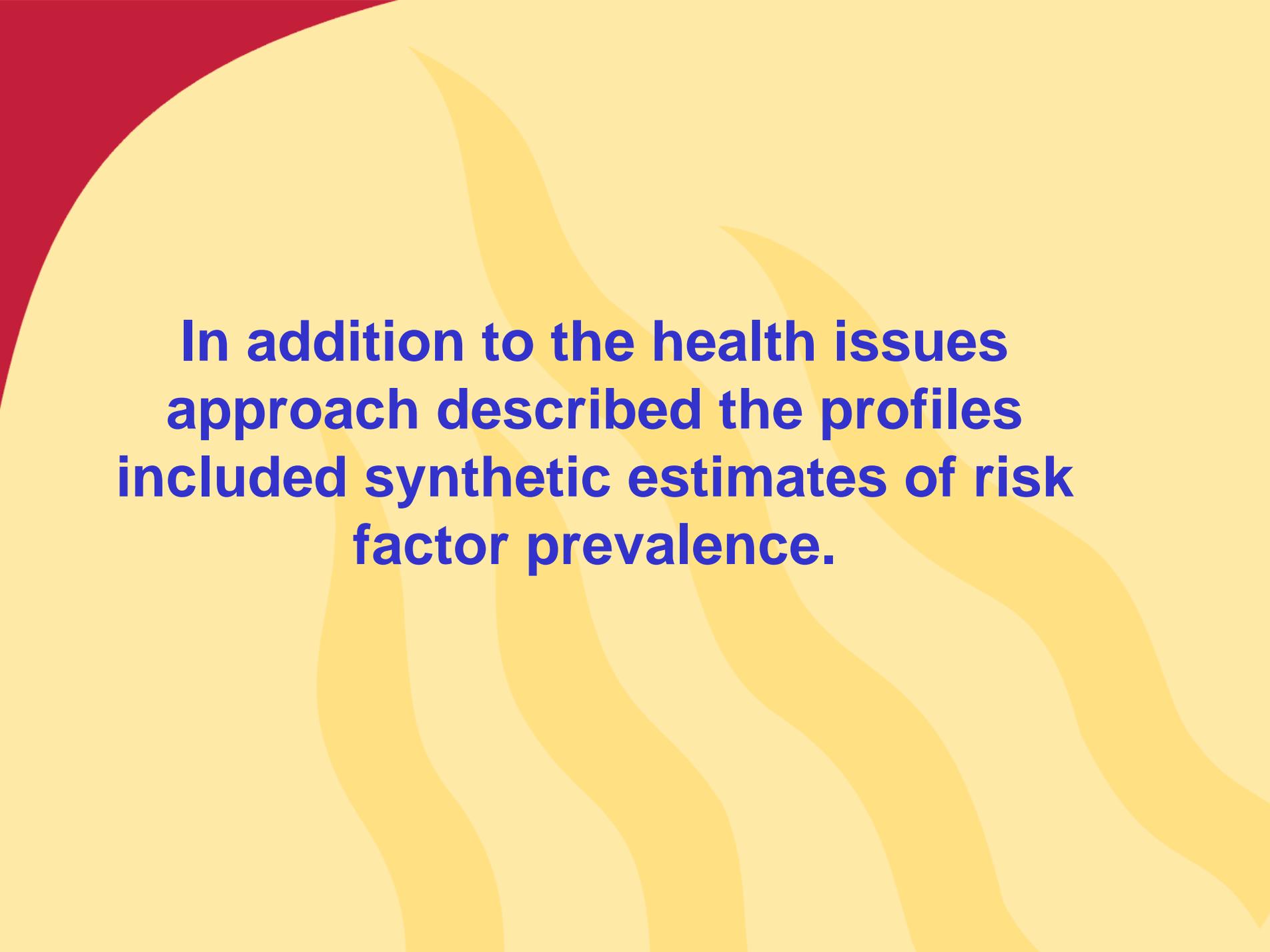
Health determinants of significant impact for children include:

- Poor maternal, infant and childhood nutrition
 - Overweight and obesity
 - Physical inactivity
 - Sun protection
 - Vaccination
 - Oral health
-
- Immediate and long term gains in health are dependant also on social and economic environments of children and families.

The profile contains a summary table (Table CW: 6.3) of key outcome and determinant issues for all population groups, not just those of particular relevance to this District

Sociodemographic groups in Innisfail HSD

	Innisfail HSD total population	Currently in greater proportion		Age groups projected to be in greater proportion			Key population group	Other population groups	
		Socioeconomic disadvantaged ^{1,2}	Females	Young people (15-24 years)	Adults (25-59 years)	Older people(65+ years)	Indigenous ^{1,3}	Males	Young children (0-14 years)
Burden of disease and injury	CHD	All causes	Stroke	Road traffic injury	CHD	CHD	All causes	CHD	Asthma
	Stroke	Diabetes	CHD	Depression	COPD	Stroke	CHD	Stroke	Low birth weight
	COPD	Diseases of the digestive system	Depression	Bipolar affective disorder	Suicide & self-inflicted injuries	Alzheimer & other dementias	Diabetes & complications	Lung cancer	ADHD
	Depression	Intentional injury	Breast cancer	Heroin dependance & harmful use		COPD	Unintentional injury	Suicide & self-inflicted injury	Birth trauma & asphyxia
	Lung cancer	Unintentional injury	Anxiety disorders	Social phobia	Diabetes	Lung cancer	Suicide & self-inflicted injury	COPD	Other chromosomal anomalies
	Dementia	Mental disorders	Dementias	Schizophrenia	Lung cancer	Colorectal cancer	Mental health	Road traffic injury	Birth trauma & asphyxia
	Diabetes	Musculoskeletal diseases	Asthma	Borderline personality disorder	Depression	Diabetes		Diabetes	Congenital heart disease
	Colorectal cancer	Chronic respiratory	Diabetes	Alcohol dependance and harmful use	Breast cancer	Vision disorders		Substance use disorders	SIDS
	Asthma	Infectious & parasitic diseases	Osteoarthritis	Eating disorders	Stroke	Prostate cancer		Depression	Depression
	Osteoarthritis	Acute respiratory infections	COPD		Colorectal cancer	Hearing loss		Colorectal cancer	Road traffic injury
	Neonatal causes			Road traffic injury				Autism & Asperger's syndrome	
	Endocrine & metabolic disorders								
Health determinants⁴	Harmful alcohol consumption	Harmful alcohol consumption	Smoking	Harmful alcohol consumption	Harmful alcohol consumption	Poor nutrition	Physical inactivity	Harmful alcohol consumption	Poor nutrition
	Smoking	Poor nutrition	Poor nutrition	Illicit drugs	Smoking	Overweight & obesity	Poor nutrition	Smoking	Overweight & obesity
	Poor nutrition	Overweight & obesity	Overweight & obesity	Sexual health	Overweight & obesity	Physical inactivity	Overweight & obesity	Illicit drugs	Physical inactivity
	Overweight & obesity	Physical inactivity		Social determinants		Falls	Vaccination	Sun protection	Sun protection
	Physical inactivity	Cervical cancer screening	Physical inactivity			Influenza vaccination	Breast & cervical cancer screening		Vaccination
	Breast & cervical cancer screening	social determinants	Breast & cervical cancer screening			Social determinants	Harmful alcohol consumption		Oral health
	Vaccination	Social determinants					Sexual health		Social determinants
	Social determinants	Smoking					Illicit drugs		
						Social determinants			



In addition to the health issues approach described the profiles included synthetic estimates of risk factor prevalence.

How many people are at risk in this District?

(synthetic estimates based linear regression
modeling using key demographic indicators)

Condition and age group	Male	Female
Diabetic adults, aged 25 years and older	8,000	7,500
Overweight adults, aged 20 years and older	40,000	25,000
Obese adults, aged 20 years and older	17,000	22,000
Overweight children, aged 5-14 years	2,000	3,000
Obese children, aged 5-14 years	800	1,500
Asthmatic children, aged 0-9 years	2,500	1,700

The presentations went on to identify:

- Priorities for prevention**
- Interventions to address the burden of disease in the District**

Addressing the burden of disease

- Key challenge is to ensure initiatives are:
 - ongoing and widespread
 - at a level sufficient to achieve broad based population-wide outcomes, as well as reduce health inequalities across population subgroups.

INTERVENTIONS TO ADDRESS BURDEN OF DISEASE

- Key evidence based strategies listed
- References providing further information listed
- Presented by risk and protective factors
- Alcohol, communicable disease, immunisation
- Injury, mental health, nutrition, oral health
- Physical activity, sexual health, smoking
- Soc det, sun protection, ♀ cancer screening

Now consider a small
District, with high proportion
of disadvantage
North Burnett

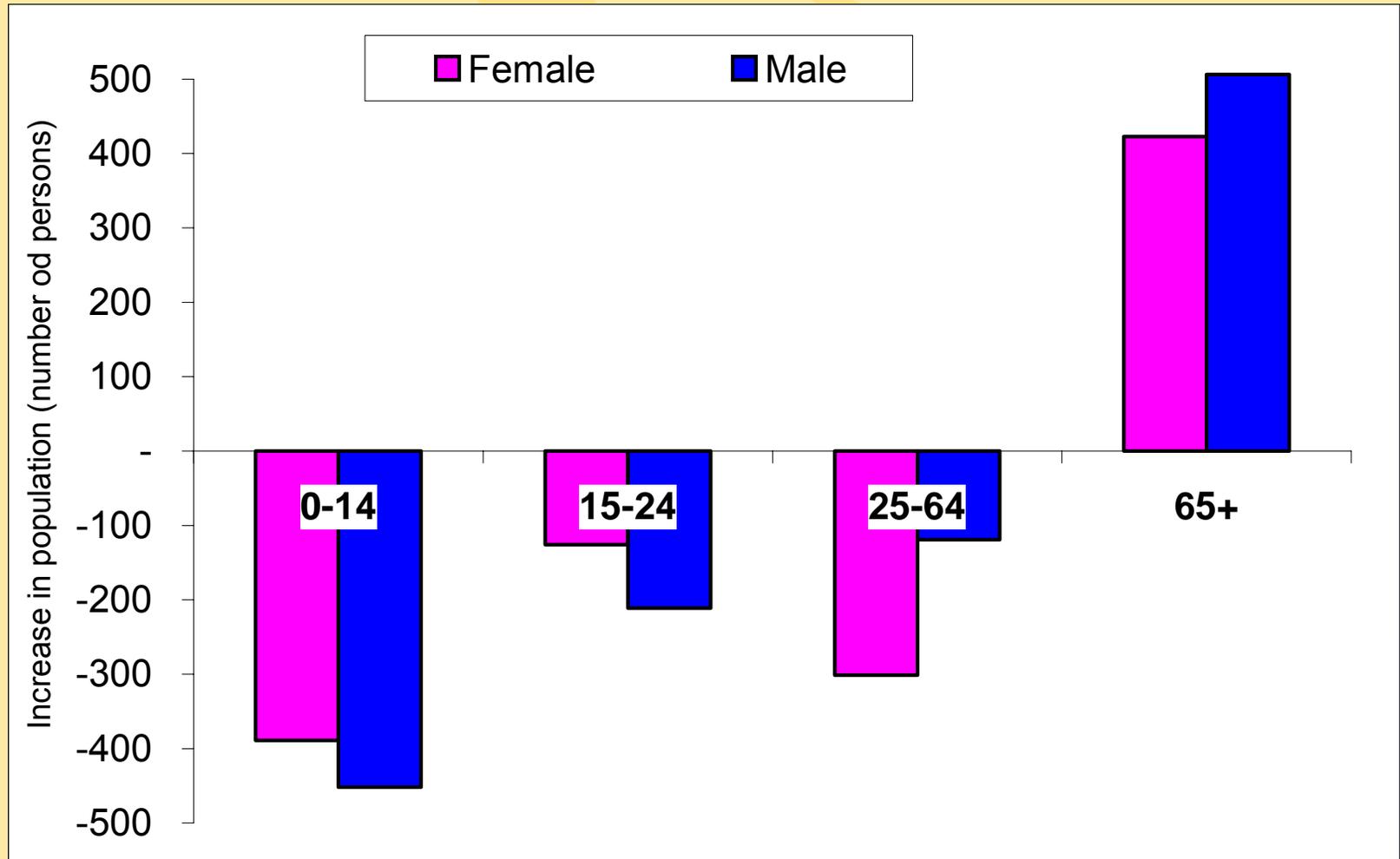
Age and sex distribution of this district

- In 2002, the population of the District was 10,199 = 1% of the Queensland population
- Proportionally more males (51.8%) than Qld (49.7%)
= about **200 more** males than would be expected
- Proportionally more older people (15.8%) than Qld (11.8%)
= about **400 more** older people than would be expected
- Proportionally more Indigenous people (5.5%) than Qld (3.1%)
= about **250 more** Indigenous people than would be expected
- Evidence of socioeconomic disadvantage
= about **5,400 more** people than would be expected

Population growth

- Recent history of population decline which is projected to continue from 2001 to 2021
- Decline is projected to affect all age groups except older population
- As in most areas in Qld, increases will occur in older age groups, (overall, **930 more** older people in the 20 year period).

Population change by age group and sex: 2001 to 2021



Socioeconomic disadvantage

- In 2001, **~7,200 people** (71%), living in areas of relative socioeconomic disadvantage compared to 20% for Queensland (about **5,400 more** people than would be expected)

Indigenous people

- In 2001, there were ~**570** Indigenous people in the district:
 - 5.5% of the total district population,
 - 0.5% of Queensland's Indigenous population
- Indigenous population more likely to live in areas of greater socioeconomic disadvantage

In this District the health issues would be based on:

Whole population

Males

Older

Indigenous population

Socioeconomic disadvantage

Dissemination:

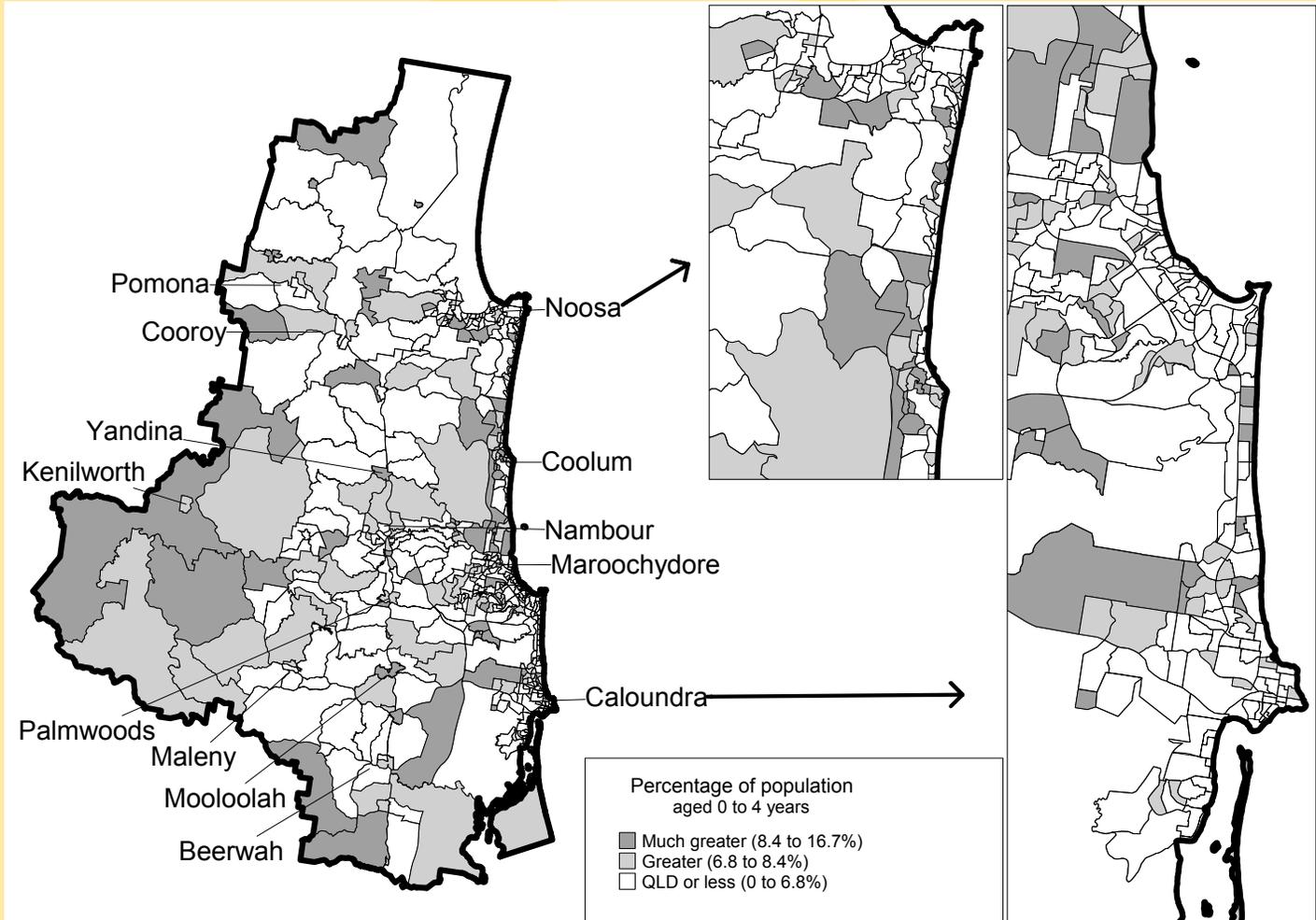
Written reports-16 pages

Presentations to all Districts

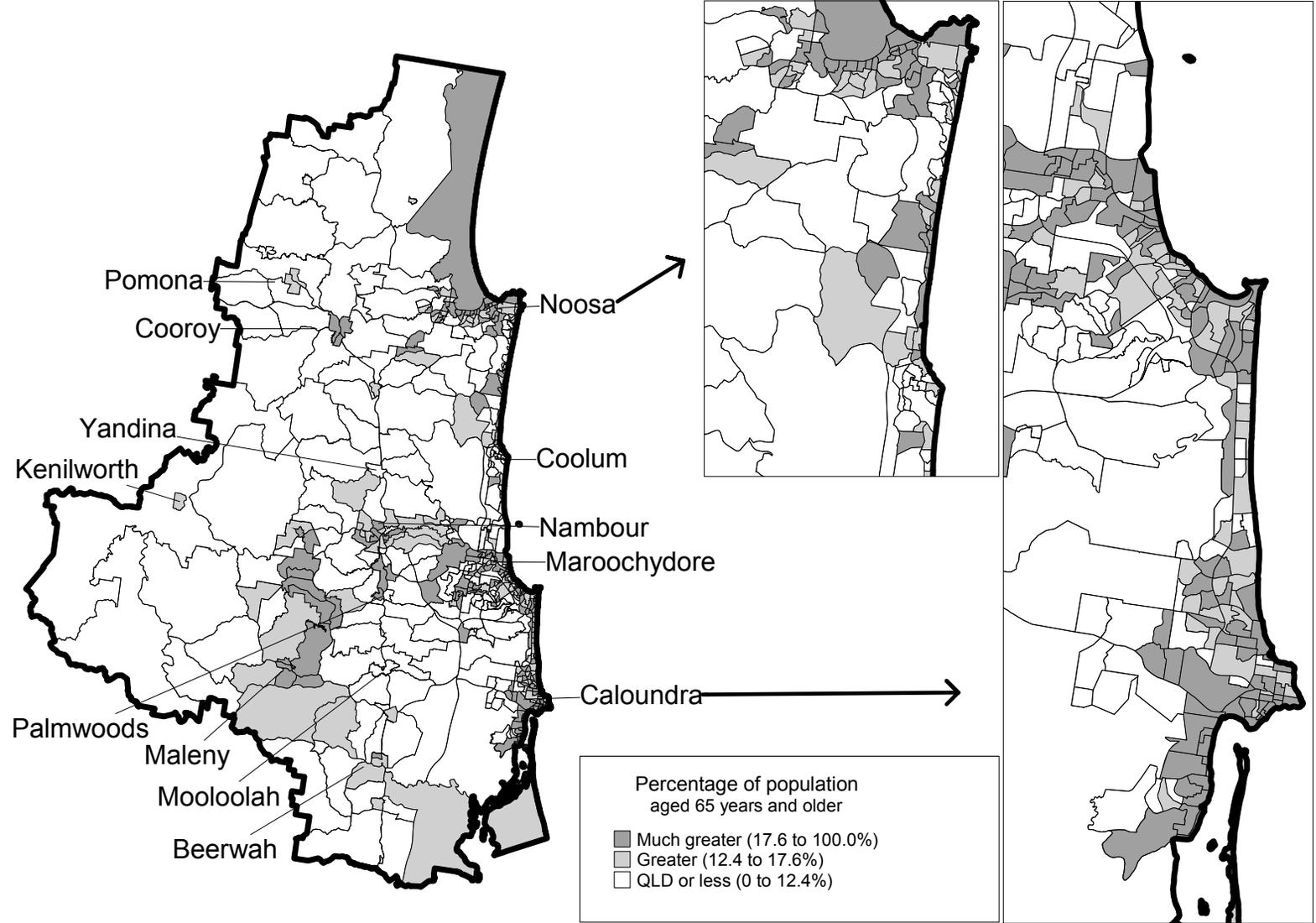
Written reports

- Text and tables including synthetic estimates
- Summary table of issues and determinants
- Priority issues for prevention
- Maps showing distribution of age groups within each District (based on CD)
- Available on internet
<http://www.health.qld.gov.au/hdq/>

For example: 0-4 year olds



For example: 65+ year olds



Oral presentations to all Districts

- Undertaken in the 3-5 months following release of report
- Presented information from 5 foundation chapters and focus on District issues
- Invitation for audience to reflect of the sociodemographic profile before leading into health issues.
- Presentations included discussion of interventions currently undertaken in the District as well as gaps.
- Presentations usually undertaken by Epidemiologist, along with Network manager and Senior health promotion officer

Evaluation of report including District profiles –

- Seeking to identify usefulness, relevance, appropriateness of report and its components, along with perceived value

Evaluation is currently being undertaken and will inform future reporting

In summary –

- The assessment of preventable burden in small areas (eg Health Service Districts) is dependant on knowledge of key sociodemographic features of the population, and their associated health burden.
- This approach has been used to profile all 34 population based HSDs in Qld.
- Dissemination involved written reports and roadshow presentations were done in all Districts to communicate this information.



The end