

NATSEM

Projecting the future health needs of Australia's migrants – dynamic modelling of diabetes over the next 30 years

PhD proposal

Student Name:

Clair Matthews

Supervisors:

A/Prof Laurie Brown

Prof Ann Harding

Australia's diverse population

- 23% of the population are born overseas
- 48% of the population were born overseas or have one or both parents born overseas
- Net overseas migration rate 5.8 persons per 1000 population
- NOM has contributed to approximately half of Australia's annual population growth since 1998-99
- Major country of resettlement for refugees in number after the United States

Comparison of mortality and morbidity by Country of Birth for selected datasets - diabetes

■ Mortality

- Other
 - Oceania, Polynesia, Melanesia and Micronesia²
- Other Europe
 - Croatia¹
 - Germany¹
 - Greece¹
 - Italy^{1 3}
 - Poland¹
 - Malta³
 - Former Yugoslavia³
 - Southern Europe²
- Asia
 - India¹ India (M)³
 - Southern Asia (M)²
 - Middle East and North Africa²
 - Lebanon (M)³

■ Morbidity

- Other
 - Fiji⁰
 - Philippines⁰ (F)
 - South Africa⁰ (M)
 - Oceania, Polynesia, Melanesia and Micronesia²
- Other Europe
 - Italy^{0 1}
 - Greece^{0 1}
- Asia
 - India^{0 1}
 - Middle East and North Africa² (F)
 - Lebanon⁰
 - Viet Nam¹

⁰ NSW data, rate/100,000, 1999-2003

² NSW data SMRs, 1991/92-95/96

¹ National data SMRs, 2001-03

³ NSW data, rate/100,000, 1989-93

Aim: To dynamically model diabetes in Australia's migrant population and their children over the next 30 years

■ Objectives

- To develop a dynamic microsimulation model of a select migrant group /(s) and diabetes;
- To ascertain the relationship between risk factors, e.g. socio-economic factors, weight, age, gender, and diabetes in migrant populations;
- To develop a methodology to add the next generation and their health profiles to the model;
- To identify prevalence and incidence rates;

Objectives cont...

- To project the number of people that have diabetes, at any point of time; and
- To model the effect of change in government policies on health outcomes (e.g. increased skill migration; weight loss programs) and provide better information to target programs to groups within migrant populations).

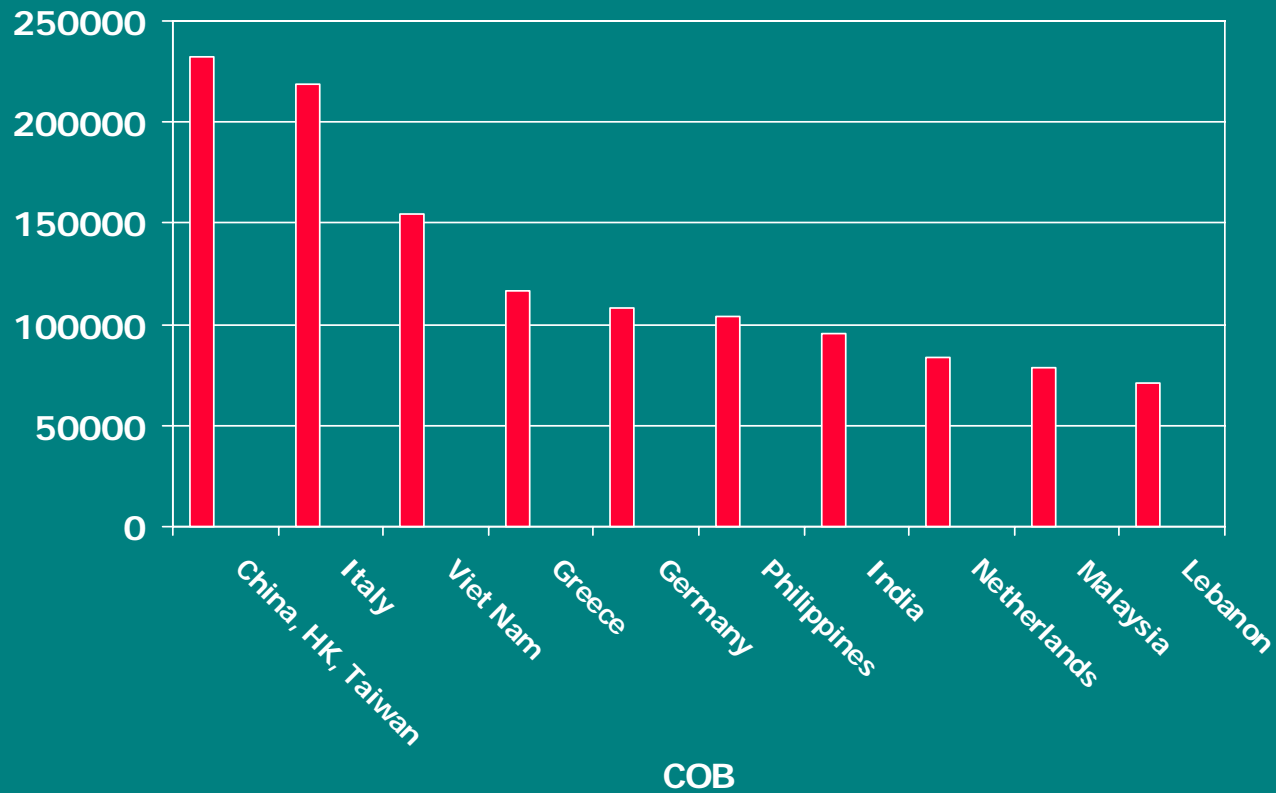
Method

- Develop microsimulation base files for select migrant groups from ABS Housing and Population Census CURF;
- Analyse linked data to determine the relationship between socio-economic factors and health status for migrant groups;
- Assess representativeness of local data at the national population level;
- Impute risk factor data to basefile population e.g. weight, income;
- Apply Markov modelling framework with 4 disease states for diabetes to generate number of individuals by sex, age group, ethnicity within each state;
- Track movement over time using transition probabilities and rates including prevalence, incidence, relative risk of mortality, and projections of demographic changes e.g. population numbers, live births, net migration, mortality rate;
- Develop 'what if' scenarios.

Factors to consider

- Population Projections
 - Net migration
 - Category of Migration
 - Country of Birth
 - Birthing rates
- Prevalence and Incidence of disease and Relative Risk ratios (1st and 2nd generation)
- Risk Factors
- Maintenance of traditional lifestyle and affect on disease patterns

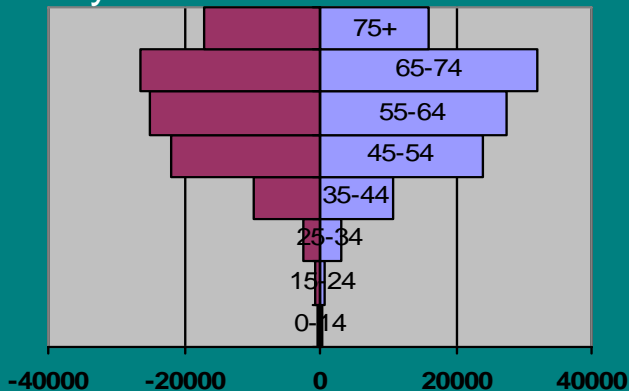
Top ten Countries of Birth (main language spoken not English) - 2001



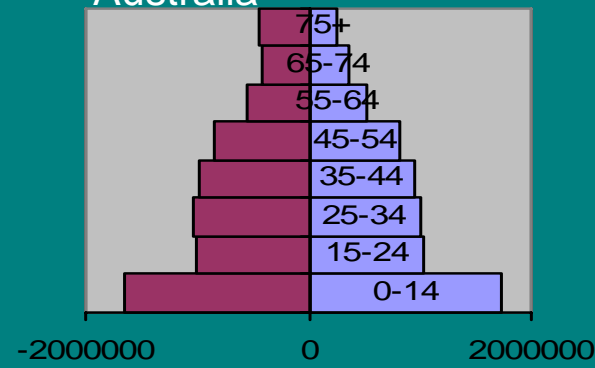
Source: ABS 2004

Age Gender distribution by COB, 2001

Italy

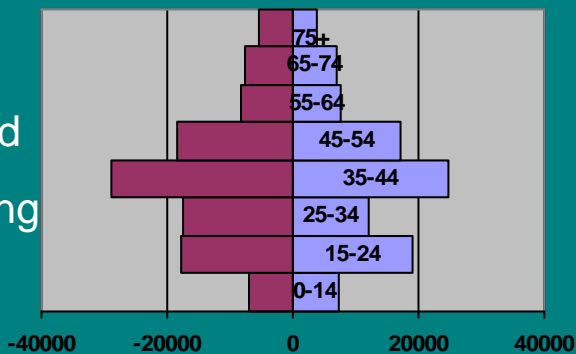


Australia

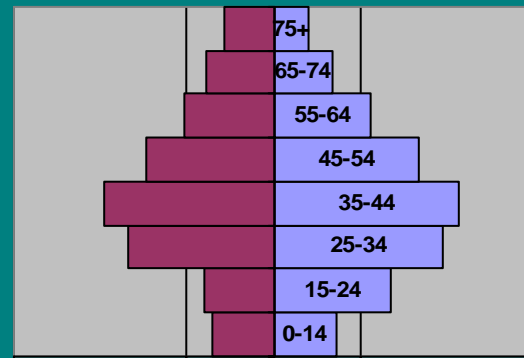


male
female

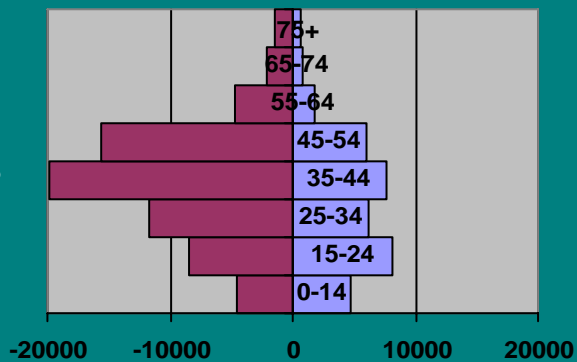
China and Hong Kong



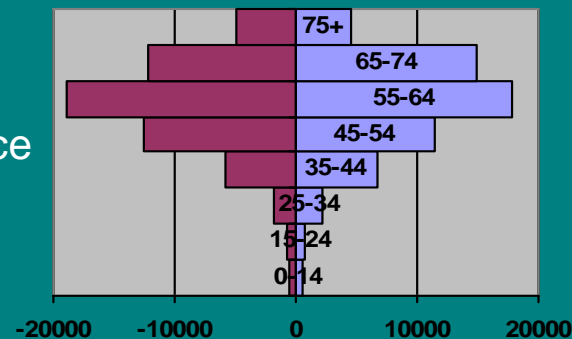
India



Philippines



Greece



Significance of study

- Analysis of socioeconomic inequalities in mortality in migrant groups in Australia
- Development of risk factor profiles for diabetes for select groups
- Model data on country of birth and diabetes for the Australian population
- Development of risk attributes for the children of migrants
- Contribute to simulation of national data at country of birth level, extending the development of current microsimulation models
- The information will inform debate, policy direction and service provision for people born overseas, by answering 'what if..' type questions.
 - Foreign policy choices will affect the overall health patterns of the Australian population.
 - Consideration will need to be given to population and strategic targeting of health.