

ARC Centre of Excellence in Population Ageing Research



Demography and Longevity Workshop

Epidemiological transition theory and lifespan in Aboriginal Australia

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Overview

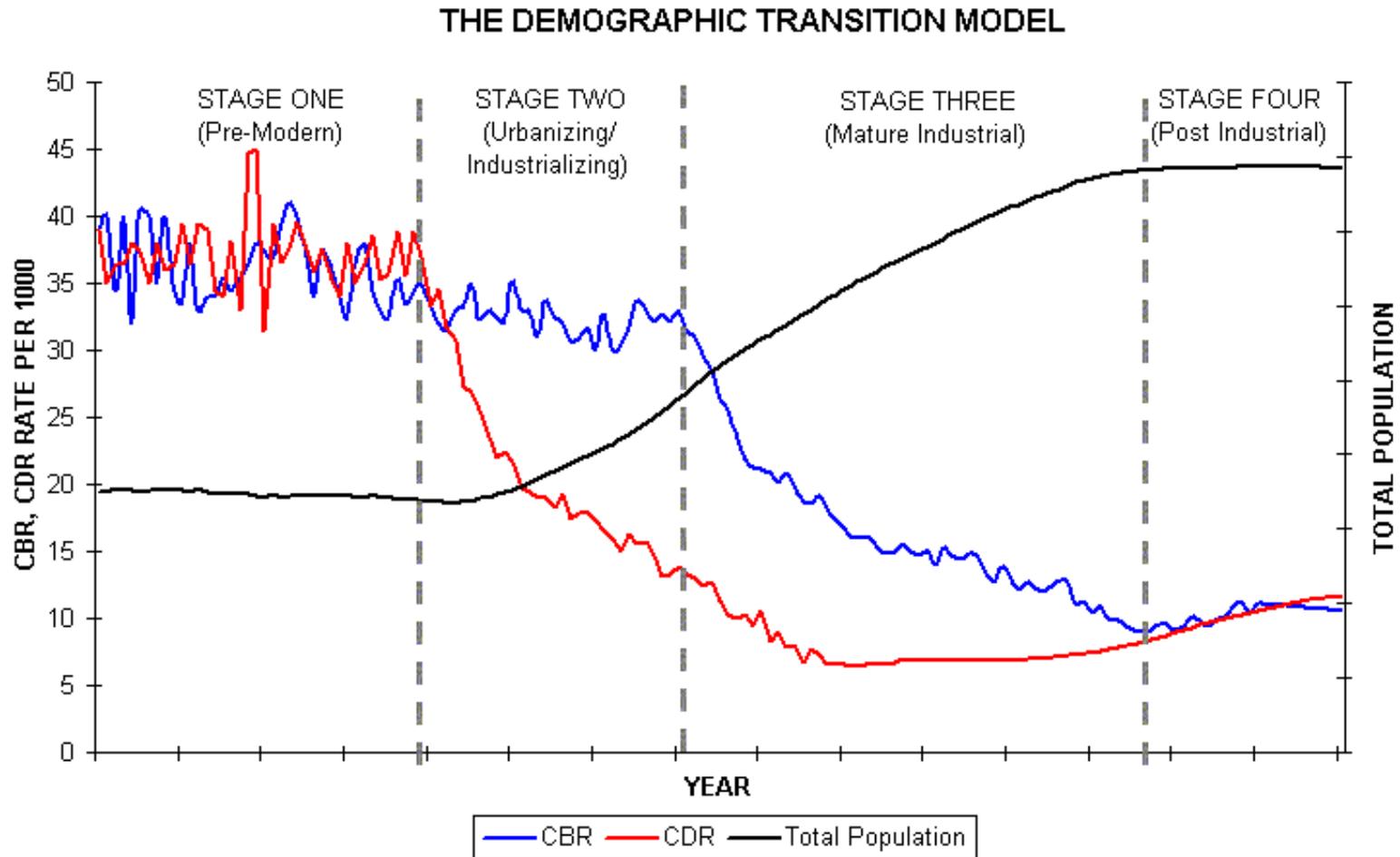
- Introduction
- Epidemiological transition theory and current knowledge
- Aboriginal morbidity, mortality and LE
- Current Aboriginal ageing research – KICA and KGOWS
- Considerations and complexities
- Conclusion

Political Arithmetic to Demography and the Modern State

- Oliver Cromwell, William Petty and Jonathan Swift's Modest proposal – (some) populations as a problem
- Linnaeus, Blumenbach and taxonomies of human kinds => races
- Thomas Malthus – the lower orders and such, Darwin read him and he's still quite popular it seems
- Adolphe Quetelet - populations and probability – the average man becomes normative man, social physics to sociology
- The growth of probability theory and Hacking's avalanche of numbers
- Francis Galton (1822-1911) “nature versus nurture” and eugenics amongst much else and Karl Pearson
- Race, class and intelligence linked to moral virtues and vices => social policy for the last 100 years?
- And on into the twentieth century and population policy - eg. Matthew Connelly, “Fatal Misconception”
- James C. Scott, “Seeing Like a State” and an abhorrence of diversity in nature and society
- Health status still often presented as a consequence of race, class, gender rather than as social processes acting on social categories
- History, politics, social structure and health outcomes are causally linked

Demographic Transition Model

Warren Thompson, 1929



Epidemiologic Transition Theory

(Omran 1971, Olshansky 1986)

1. Stage of epidemics & trauma from early times to ~1750 with average survival of around 20-30 yrs
2. Stage of receding infections from 1750 to ~ 1900 – average survival went from 30 to ~ 50 yrs
3. Stage of degenerative or “*man-made*” diseases from 1900 to mid C. Omran predicted max. survival of 70y
4. Stage of delayed systemic diseases from ~1950 Olshansky predicts maximum survival of 85 yrs

The next epidemiological transition

(Broe & Creasey 1995, 2003)

- **If** average life expectancy increases as predicted this century (Oeppen & Vaupel 2000; U.N.2000; Wilmoth 2000) - which is not a given
- The age distribution will shift to late-onset slowly progressive neurodegenerative diseases – AD and PD are the paradigms
- And these diseases will become the focus of research in prevention – social? bio-medical?

Epidemiological Transitions

19 th century	20 th century	21 st century
Infants/Children <u>Infectious diseases</u> Flu Typhoid Cholera Dysentery Small Pox Tuberculosis	Adults/Young old <u>Systemic diseases</u> Heart diseases Vascular/Stroke Hypertension Obesity/Diabetes Lung diseases Cancer	Older old <u>Neurodegenerative</u> Dementia Parkinsonism Cognitive loss Gait slowing Sensory loss

Vaupel and Human Life Expectancy

- 2.5 yrs on average for every decade of the 20th century
- Upper limits to LE, if so what?, or LE plasticity (neural plasticity now well known)
- Centenarian studies eg. Okinawa
- Emergence of supercentenarians aged 110+?
- Health and social policy challenged to catch up

Health Transitions – Five Stages

From epidemics to systemic diseases to dementias

Health Transition is a Western concept - with major variations in third & fourth world populations

1. Epidemic infectious disease with high infant mortality and high child death rates up to 19th C.
2. Declining epidemics and infections with average survival to reach young adult life - 1800 to 1900.
3. The stage of systemic degenerative disease (lung, heart etc) av. Survival to mid-life - 1900-1950
4. The stage of delayed degenerative disease with average survival into old age - 1960s-2000
5. Neurodegenerative disease/Dementias - 21st C.

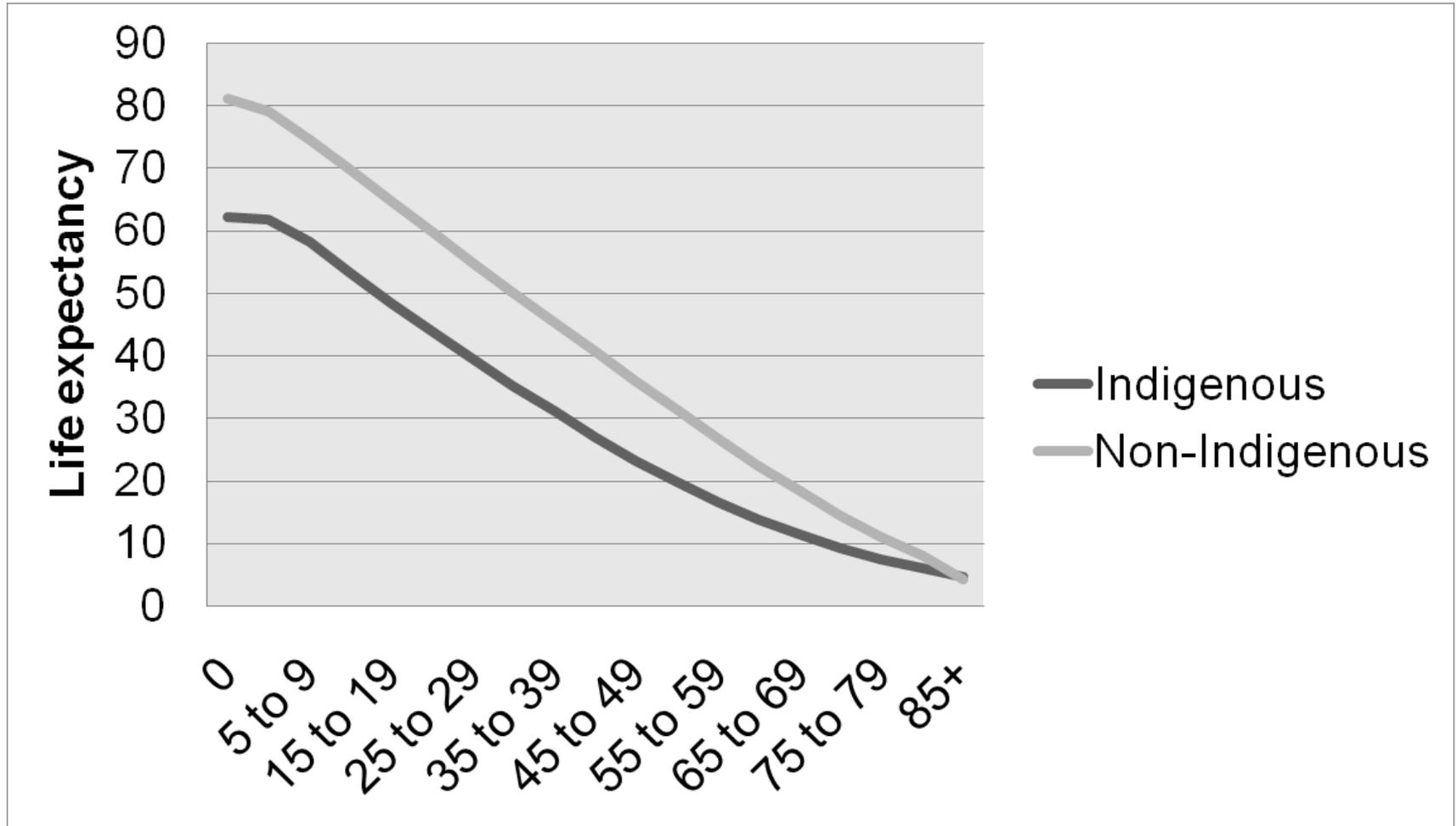
Aboriginal Health and Ageing – 1960s to Present

- However - from the 1960s infant mortality has been steadily falling – but still 3 x non-Indigenous
- From the 1990s through 2000s Aboriginal life-span has been increasing & fertility is starting to fall
- There are growing numbers of old-old ‘survivors’ - 75 years and over (mortality x 1.3) in all Aboriginal groups from the *Remote Kimberley’s* to *Urban La Perouse*
- The Australian Aboriginal population is both:
 - Growing rapidly with a large young population (0-24 years)
 - Ageing rapidly – led by the young old (45-64 years)

Aboriginal Health and Ageing Today

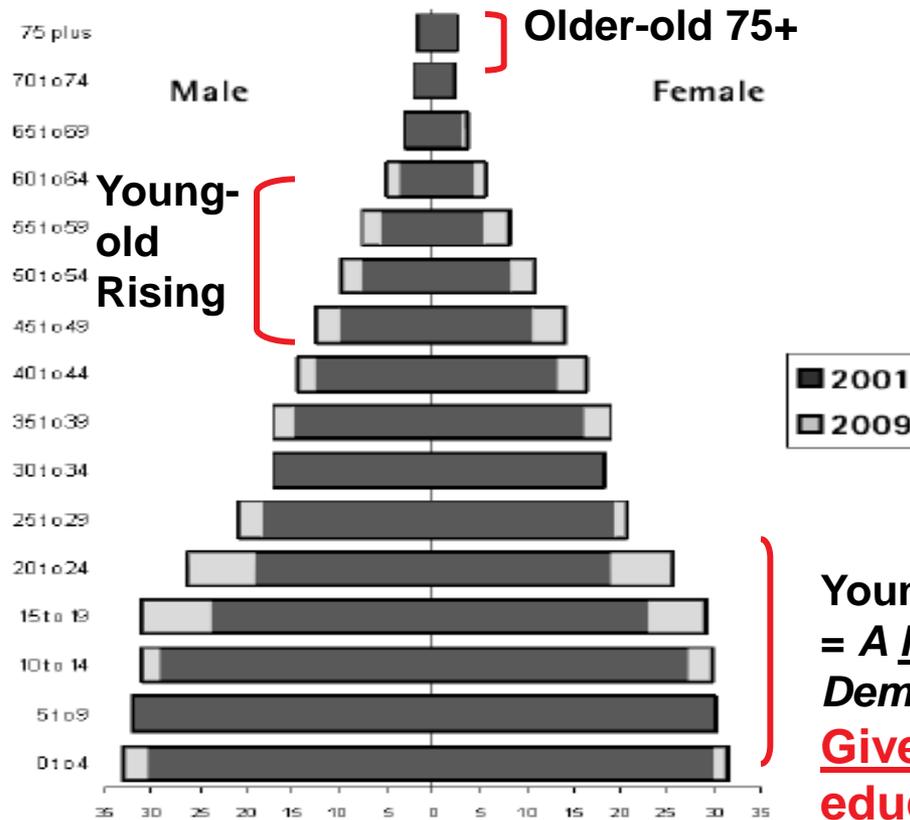
- Health and lifespan in Urban/Regional Aboriginal communities (around 70% of the total population) is no better than in more Remote Aboriginal people (around 30%) - despite major lifestyle differences
(ABS/AIHW/WAACHS data)
- Aboriginal people today are facing:
 - Health and lifespan similar to non-Indigenous Australians **70 years ago** (Demographic Transition data)
 - A delayed & mixed Epidemiologic & Demographic Transition
 - A lifecycle of unresolved risk factors - commencing in infancy (in utero?)

Life Expectancy Profiles, 2006



Australian Aboriginal Population by Age

Similar to non-Indigenous around 1940



Indigenous Australian Population

Evidence and Trends in Indigenous life expectancy

Source: Barnes, Choi and Smith, 2009

- Pre 1970s only available for NT
 - About 50 years
 - 20 year gap
- Based on population registers, because
 - enumeration at censuses incomplete
 - Indigenous deaths not identified
- Under-identification of deaths
- ABS estimated in 2004 that completeness of reporting of Indigenous status ranges from 32% to 90%, with an overall figure of 55%
- •In 2008 revised estimate of completeness to 85-89%
- Earlier estimate implied about half not stated, half false negatives

The Data on Indigenous Dementia

Kimberley Indigenous Cognitive Assessment Study

- 363 Kimberley Indigenous Australians \geq 45 years (oldest: 96 years)
- Prevalence of dementia: **12.4%** ($n = 45$)
 - 5 times overall Australian rate of 2.4%
 - At 65 yrs and over - 27% Vs 5.2% non-Indigenous

Dementia types (DSM-IV)

- Alzheimer: 11 (24%)
- Vascular: 6 (13%)
- Alcohol: 2 (4%)
- Other medical conditions: 2 (4%)
- Not otherwise specified: 24 (53%)



Smith K et al. High prevalence of dementia and cognitive impairment in Indigenous Australians. Neurology 71: 1470 - 1473, 2008.

The Koori Growing Old Well Study (KGOWS)

Chief Investigators

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Project Manager

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The Koori Growing Old Well Study

- NHMRC funded project #510347 approx. \$1.5M
- Five urban communities in metro Sydney (LaPa and Tharawal) and northern NSW (Kempsey and Nambucca, Coffs)
- Capacity building dimension, not just more research
- Focus on health and ageing across the life cycle:
 - Examine the present state of ageing and health - in urban Aboriginal communities - in people aged 60+
 - Examine the frequency, types, and causes of dementia in this “representative” group
 - Look for ways to build healthy brains, extend healthy old age and prevent dementia
 - Look for ways to improve present provision of services and plan for future services
 - Develop Aboriginal researchers and build knowledge about dementia in the Aboriginal communities

Comparison of 'Risk Factors': KICA and KGOWS Urban Pilot Sample

	KICA Study (Smith et al.)	KGOWS (Broe Group)
Age	45 – 96 (54% <60yrs)	41 – 81 (36% <60yrs)
Male	45% (165/363)	30% (13/44)
No formal education	40%	0% (0/39)
Previous stroke	9%	15% (5/33)
Head Injury	51%	21% (7/34)
Epilepsy	3%	3% (1/34)
Current smoker	35%	34% (10/29)
Currently drinks alcohol	37%	64% (10/29)

Some persistent data problems in Indigenous research

- All big picture pre and historical population data essentially estimates ie. no point in time enumeration until contemporary censuses
- Census data for 'mixed bloods' and not for 'full bloods' (racial and eugenics categories) – change in terminology from racial to social
- Birth data issues eg. historically unregistered births => Medicare cards etc
- Collection of mother and child data even now eg. Gudaga project in NSW
- Death data as above – Barnes, Choi and Smith (2009)
- Data collection by authorities eg. health, education etc
- Identification to authorities by Aboriginal people (safe/unsafe/unsure/other purpose?)
- Attitude of data collectors to asking if Aboriginal status 'not obvious'
- Data entry errors within bureaucratic systems – false positive and false negative errors including both over counting and under counting (Victoria and elsewhere)
- Quality of Census (and other) data collections under these circumstances?

Conclusion

- Social processes and categories can have enduring health consequences
- Morbidity, mortality and LE mediated via social circumstances (political, historical etc)
- Change is underway but data quality and pathways remains a problem
- Heterogeneity of Indigenous circumstances will make generalisations problematic eg. Kunitz
- Social policy impacts can be significant
- Watch this space...

Future Directions

- Completion of KGOWS including data entry and analysis
- Potential for a longitudinal study with this work
- Potential for improved international cooperation
- Capacity building activities, strategies and evaluation tasks
- Knowledge synthesis – what do we know overall
- Social and systemic change based on what is already known

The Koori Growing Old Well Study

<http://www.neura.edu.au/research/projects/koori-growing-old-well-study>

