
Growing Up in New Zealand
An investment in effective policy



Background



The Ministry of Social Development and the Health Research Council of New Zealand, in association with the Families Commission, the Ministries of Health and Education and the Treasury, wish to establish a new longitudinal study of New Zealand children and families

Introductory statement from MSD and HRC RFP, Nov 2004

Agreed objectives of new study



The overall objective of the new study is to provide a robust, relevant evidence base to inform policy related to children and their families in 21st century New Zealand.

The new study aims to create a valuable resource:

- for policy makers across sectors to inform strategies to optimise children's development
- for researchers to gain a better understanding of the causal pathways that lead to particular developmental outcomes
- for the children and families who take part in this study as well as for all future generations of New Zealanders

Report card for New Zealand



- Firstly, New Zealand has insufficient information to be included in overall assessment (24 OECD countries)
- Maternal well-being: NZ below average (behind Australia; just ahead of UK and US)
- A greater proportion of our children grow up in relative poverty than other countries
- Second to lowest immunisation rates in first 2 years of life
- Highest rates of child deaths from accidents and injuries

Innocenti Report (2007) Child wellbeing in 24 OECD rich countries

Inequalities in child health (NZ)



- Breastfeeding exclusivity at 2 weeks of age – 66% overall (Māori 31% , Pacific 20% and Asian 16%)
- Neonatal death rates – early is greatest for Pacific babies (13.8/1000 births), late is greatest for Māori at 0.9/1000
- 21% of NZ children are overweight and 9% obese, but for Māori it is 30% and 11%, Pacific 33% and 27% respectively

Educational wellbeing



- 94% of all NZ children receive some early childhood education - but 10% Māori and 15% Pacific children none before entering primary school
- NZ in lowest half of countries for well-being of teenagers
- Scores well in achievement of 15 yr olds, but poorly in proportion of 15-19 yr olds in “education” (11%)
- Māori and Pacific youth are twice as likely to NOT be in education, training or employment

Designing a new longitudinal study



- Despite widespread policy initiatives and spending to reduce inequalities in outcomes, many are worsening
- Contemporary information is required to inform the policy arena
- New Zealand has a rich history of longitudinal studies, but
 - there has been significant changes in scientific knowledge in the last three decades
 - the global environment has changed dramatically in the last three decades
 - the New Zealand environment and context has changed dramatically in the last three decades

Changes in scientific knowledge



- Importance of early life (including pre-birth)
- Increasing need for multi-disciplinary research
- Emergence of the life course approach
- Epigenetic influences (nature versus nurture)
- Recognition of intergenerational influences
- Complexity of pathways leading to developmental outcomes

The importance of early life...



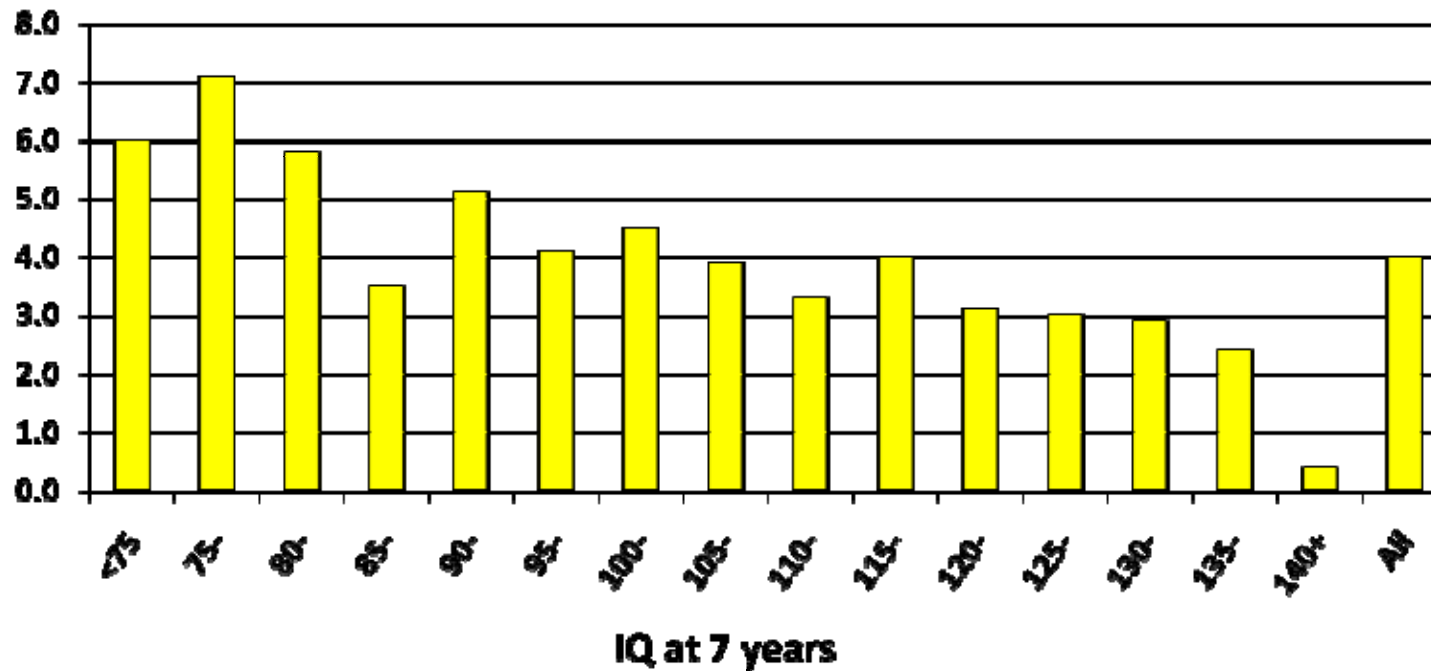
Birth weight and breast cancer



BWT (grams)	Pre-menopausal cancers	HR (95% CI)
<3000	9	1.00
3000-3499	21	1.34 (0.60, 2.96)
3500-3999	26	2.21 (0.97, 5.05)
>=4000	11	2.90 (1.16, 7.27)

Data from Uppsala, n=5420, 67 cancers – 50 yr follow-up (De Stavola)

Childhood IQ and proportion (%) of adults who died before 50 years of age



The importance of early life ...



Although associations link two points in time – the relationships are temporally “flat”

Size at birth



Adult
diseases

Childhood
cognition

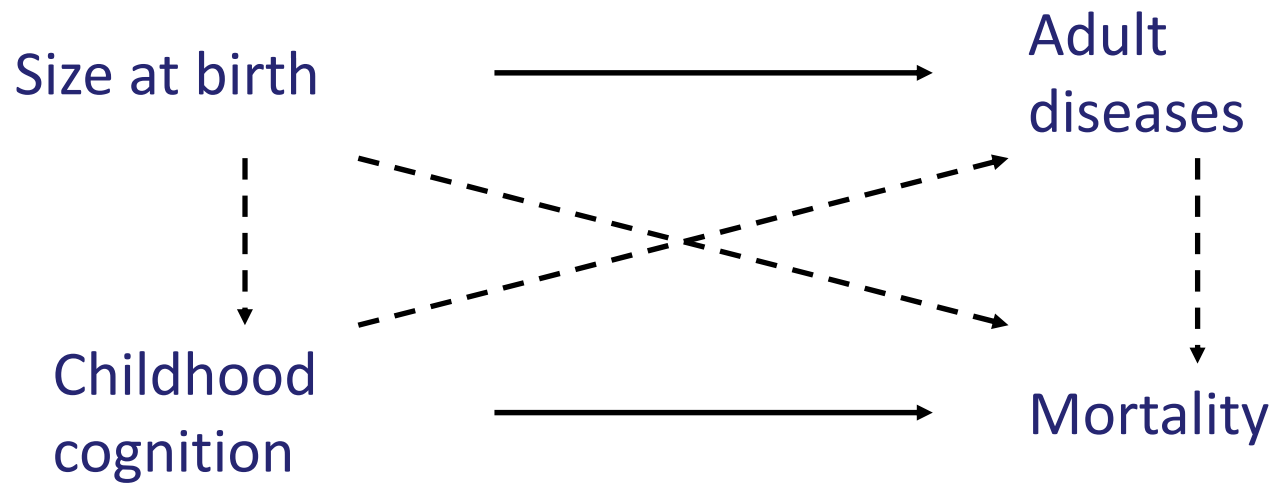


Mortality

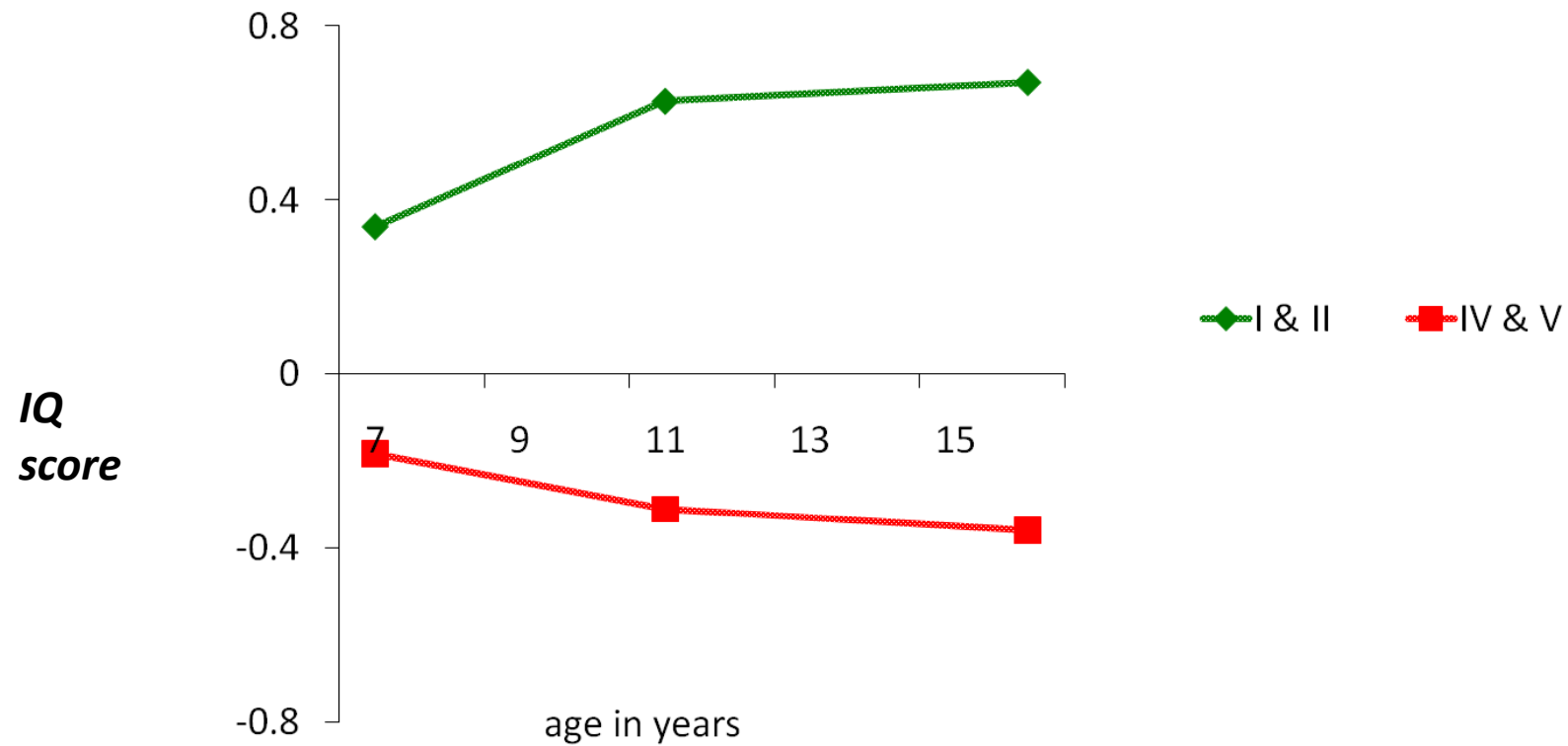
“Pseudo” life course associations



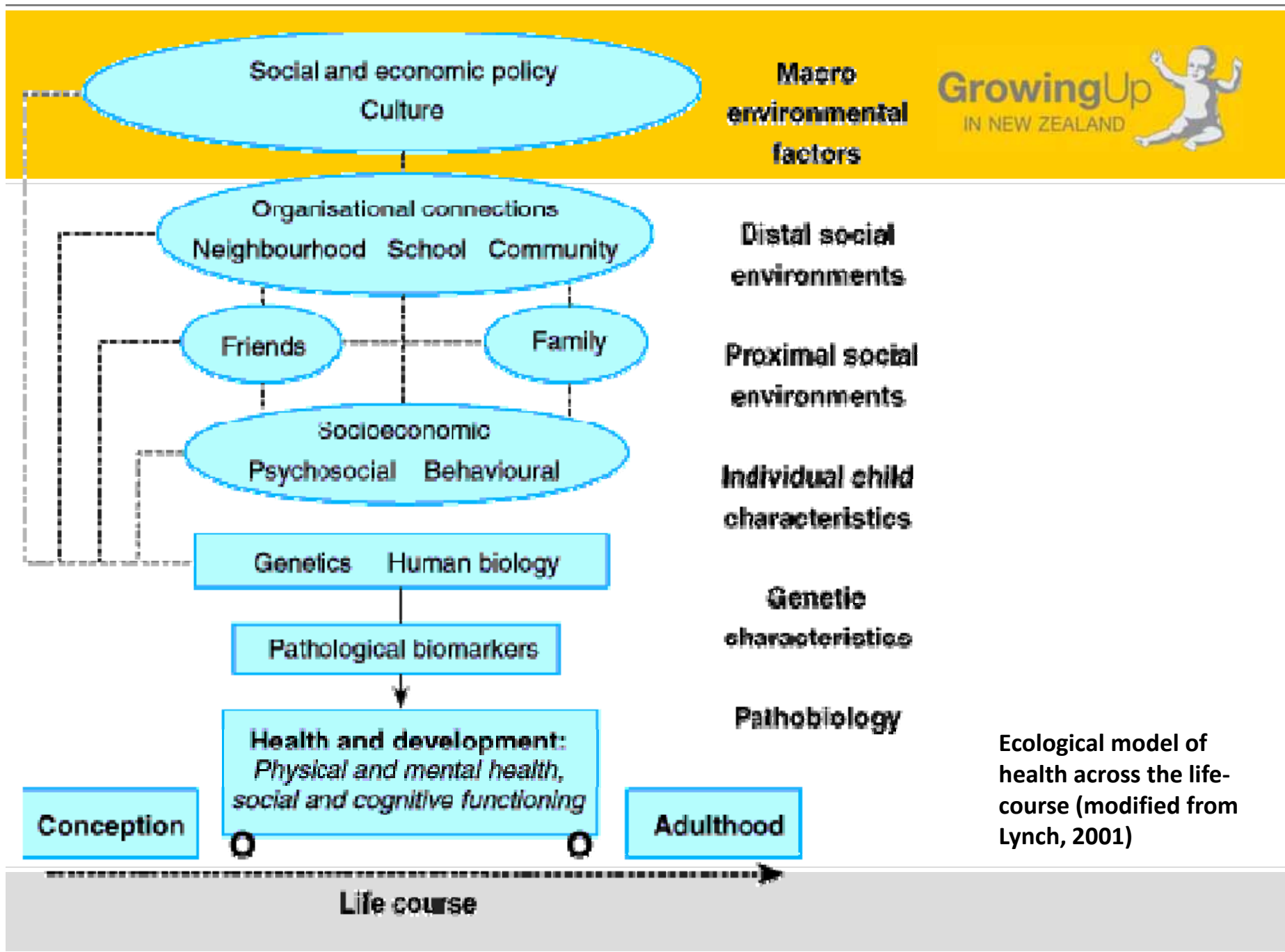
Useful in understanding “risk factors” – but less helpful in understanding when/how to intervene to lessen the burden of “disease”



Cognitive development from 7-16 years

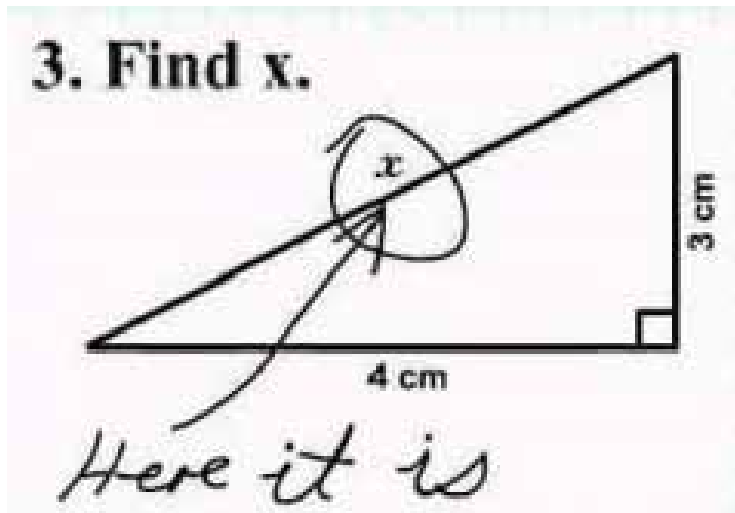


Jefferis et al, 2002
(UK 1958 cohort study)



Ecological model of health across the life-course (modified from Lynch, 2001)

Stating the obvious...



“a life course approach is intuitively simple, but methodologically complex...”

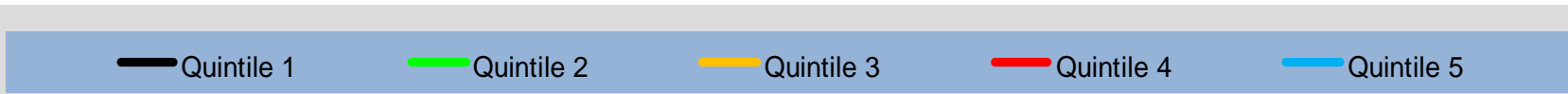
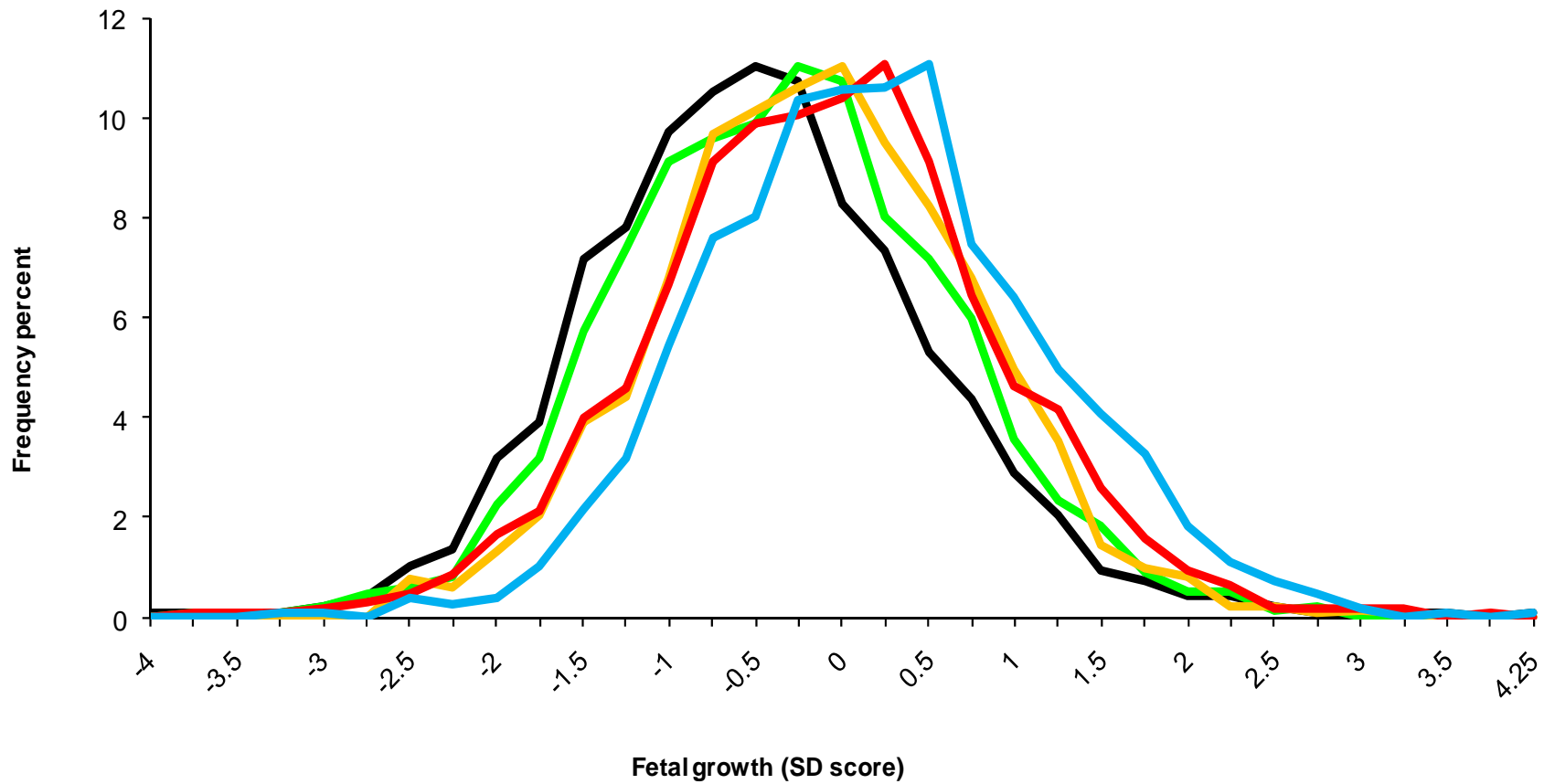
Matt Gilman (2002)

Methodological challenges



- Repeated measures over time
- Highly correlated measures
- Missing data (not at random)
- Capturing the temporal dimension

Associations beyond a generation



Viewing “snapshots” of development



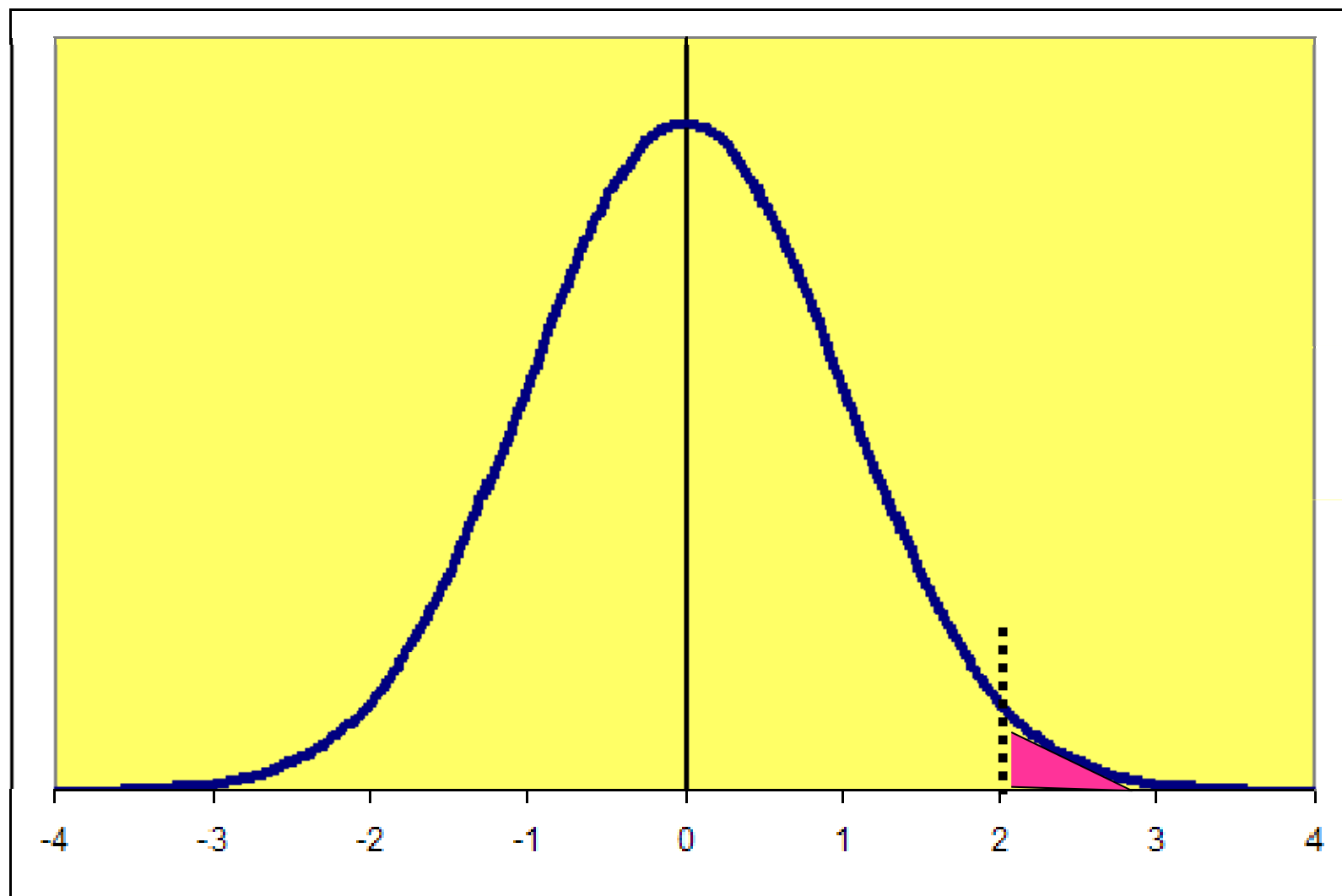
- Understanding associations between points in time is useful in terms of defining “risk”
- It is also useful in determining treatment options in early disease states for individuals
- However often it does not allow us to “fill in” the pathway between these events over time
- It is often the extent of the evidence that we base judgements about prevention
- It often only elucidates one dimension of a problem

Life course approach: a conceptual framework

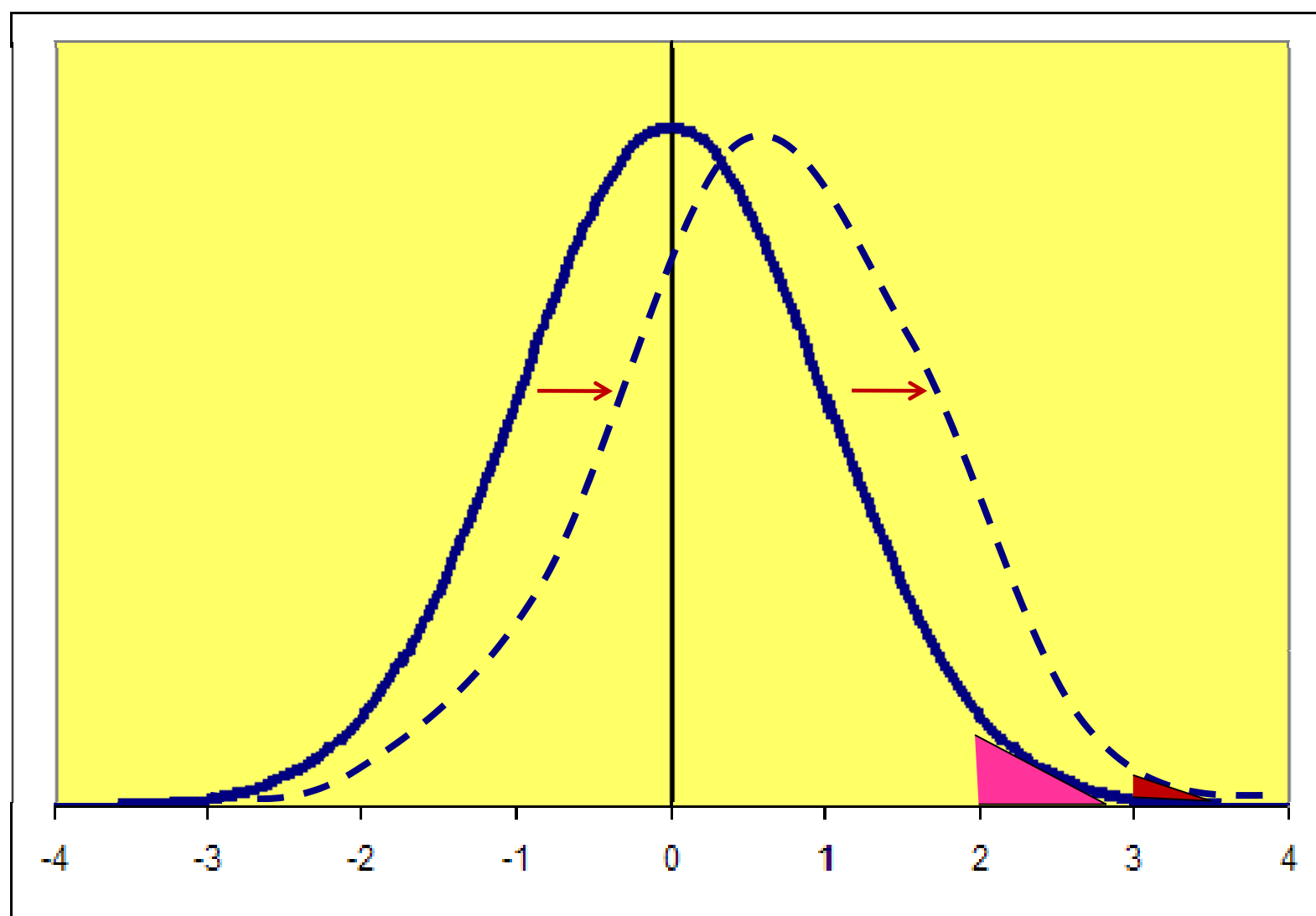


- Study of the long-term effects of early life exposures on later (adult) health
- Includes antenatal and intergenerational influences
- Importantly includes a consideration of the temporal dimension
- Considers cumulative and modifying effects
- Allows us to “fill in” the pathways between discrete events
- Uses a multidisciplinary framework
- More relevant for approaches to improving population outcomes

Prevention strategies – high-risk individual strategy



Prevention strategies – population level



Rose's prevention paradox



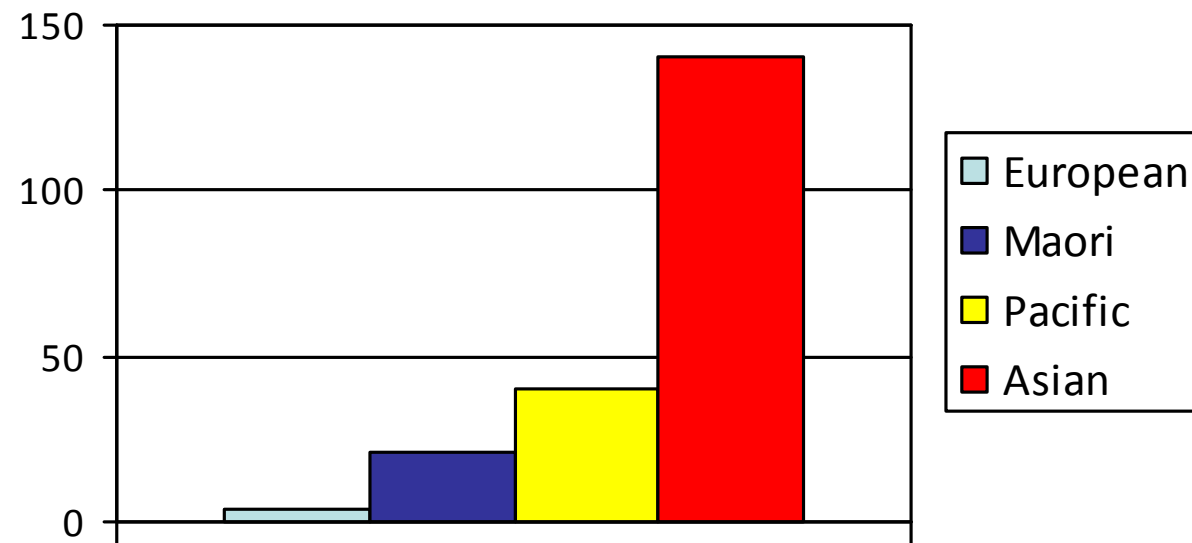
- Greatest benefit comes from treating those individuals who are identified as at risk
- Identifying those at risk is not always straightforward and may be very costly
- In general, the greatest absolute number of problematic outcomes will come from the “normal” population (not at risk)
- Concentrating only on “at risk” unlikely to produce long term benefits
- Population change usually only comes from population-based strategies
- In order to target strategies, we also need to understand “what works” as well as identifying problematic outcomes
- Prevention requires an understanding of pathways to outcomes, not just associations (may not be causal)

Changes in New Zealand population



- Increasing ethnic diversity overall (Census 2006)
- New Zealanders increasingly identifying with more than one ethnic group
- Increasing proportion of our population born overseas
- Greater Auckland region has most ethnic diversity
- Ethnic diversity is projected to increase in the next few decades (estimates till 2051)

Change in ethnic composition of NZ (1990 – 2000)

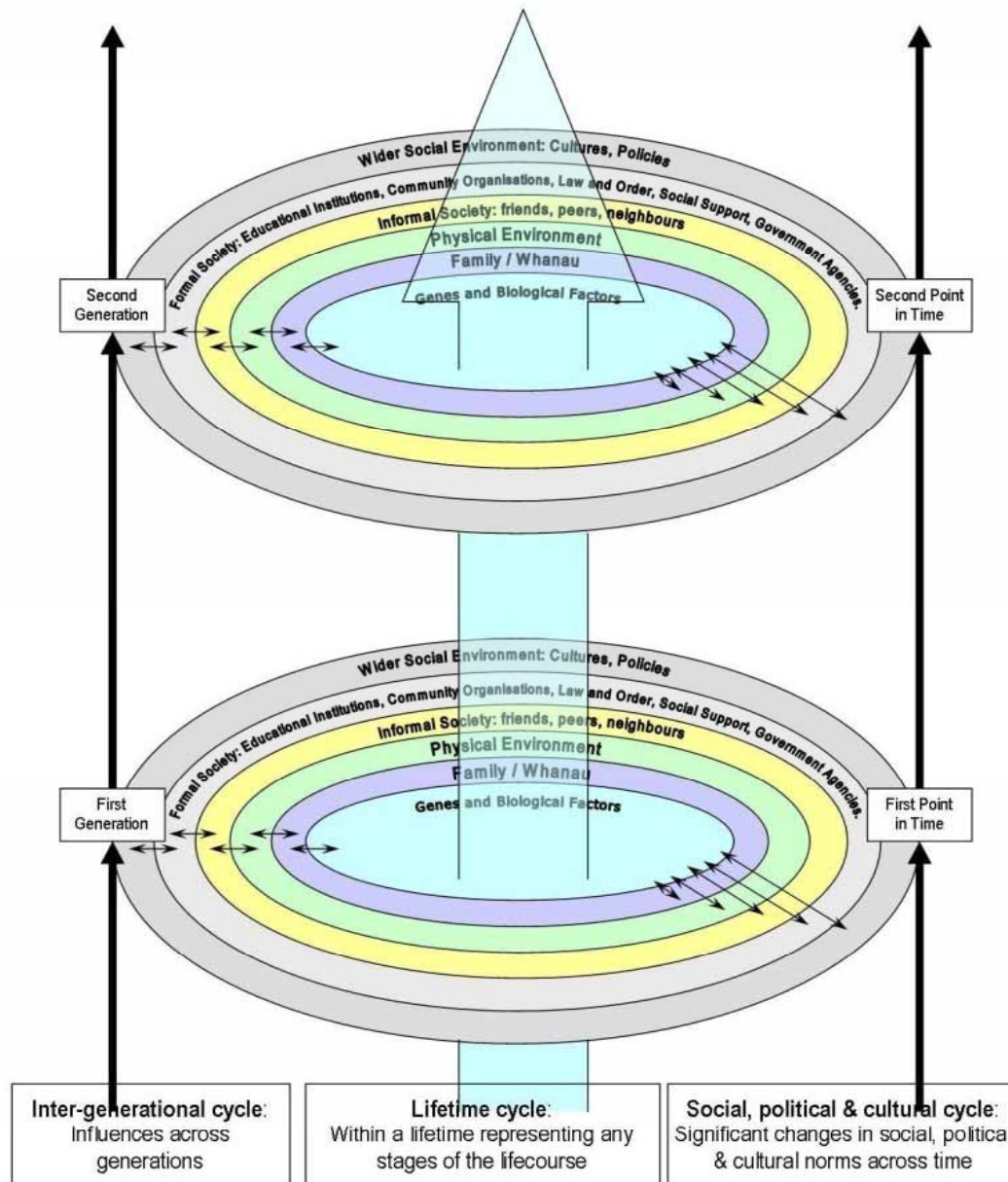


Bars denote the percentage change in the population groups

Overview of *Growing Up*



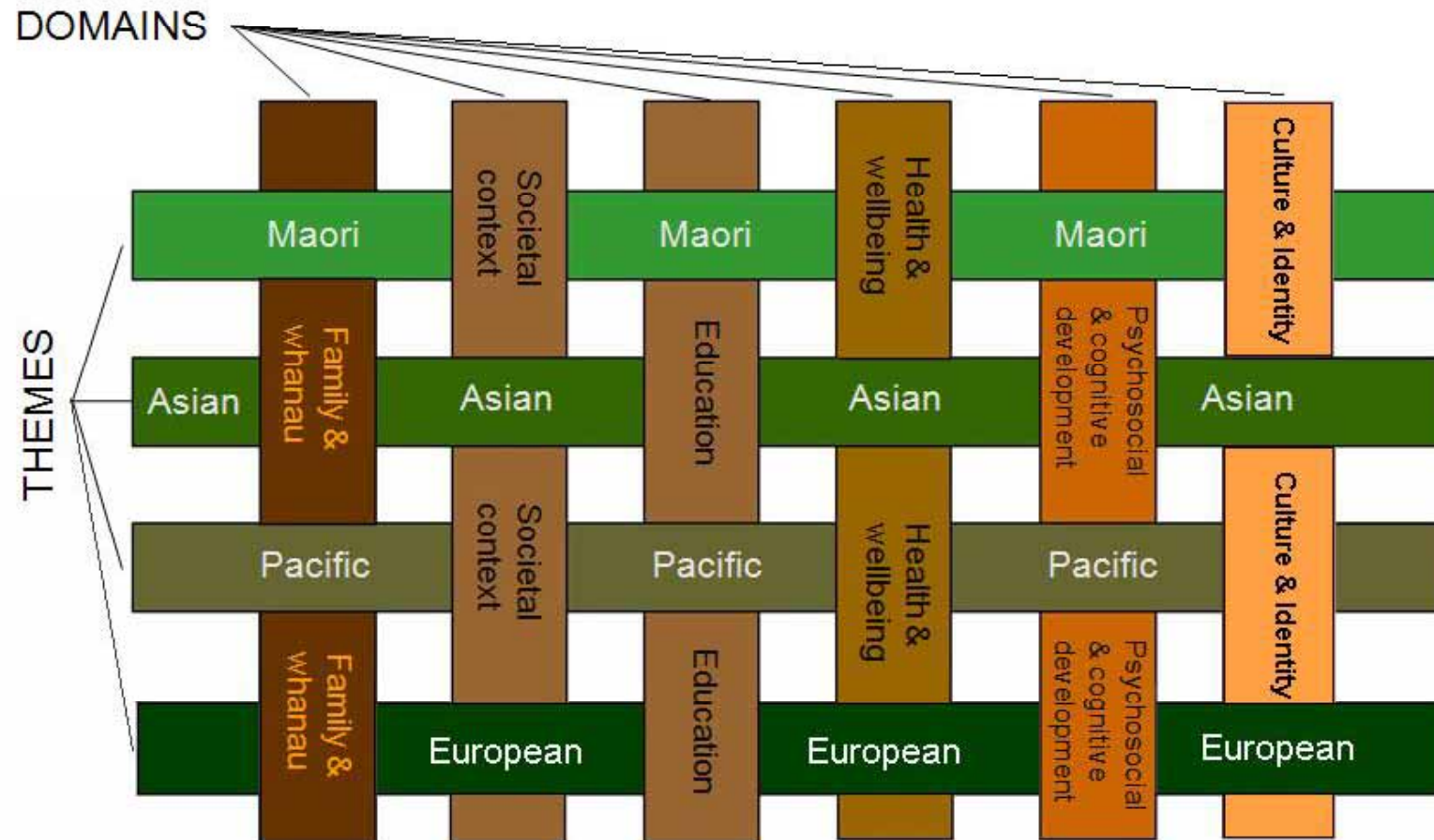
- Recruit a cohort of 7,800 children and their families from before birth in the Auckland and Waikato regions
- Cohort to be broadly generalisable to all births in NZ, in particular to capture the ethnic diversity of our population
- Measure children's development over time, in the context of their families (mother and partner) and their wider social environment, to understand pathways of development
- Understand better the multi-level influences on their life long development to provide a robust evidence base to inform policy



Conceptual Model

- Child centred
- Multi-dimensional
- Dynamic interactions
- Life course approach
- Change over time
- Intergenerational
- Epigenetic component

Research structure



Planning longitudinally – first 5 years



- Face to face interviews with mother and partner in last trimester of pregnancy
- Routine linkage to antenatal and perinatal records
- Linkage to NZHIS data in first year of life
- Face to face interview with primary caregivers at 9 months postnatal age
- Interviews at 2 years (24 months) and pre-school (3.5 yrs)

Leading up to *Growing Up*



November 2004: HRC releases RFP in partnership with Ministry of Social Development for Longitudinal Development Project (LDP)

Oct 2005 – Feb 07 : LDP to design new longitudinal study of New Zealand children and families (TAP review - 9 experts throughout)

Aug 06 - Feb 07: ADHB pilot study of 100 families was an integral part of the LDP to check feasibility and acceptability of recruitment strategies and instruments

Dec 07 - April 2008: Initial funding for new study announced by Minister of Social Development end 2007, followed by further Budget funding announcement 2008

April 2008: Hon Ruth Dyson launches *Growing Up* study, consultation begins

August 2008: Contract signed, Ethics Committee approval received to proceed

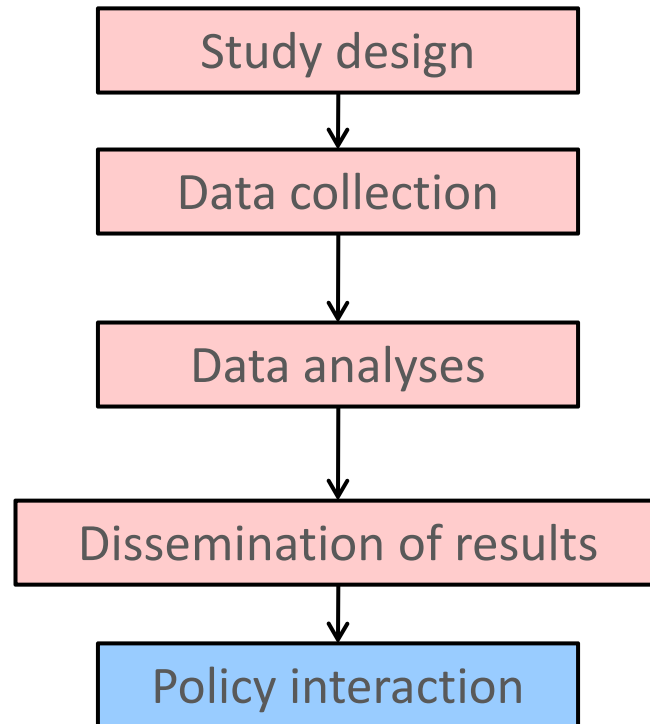
February 2009: Main cohort antenatal interviews begin

Challenging traditional paradigms

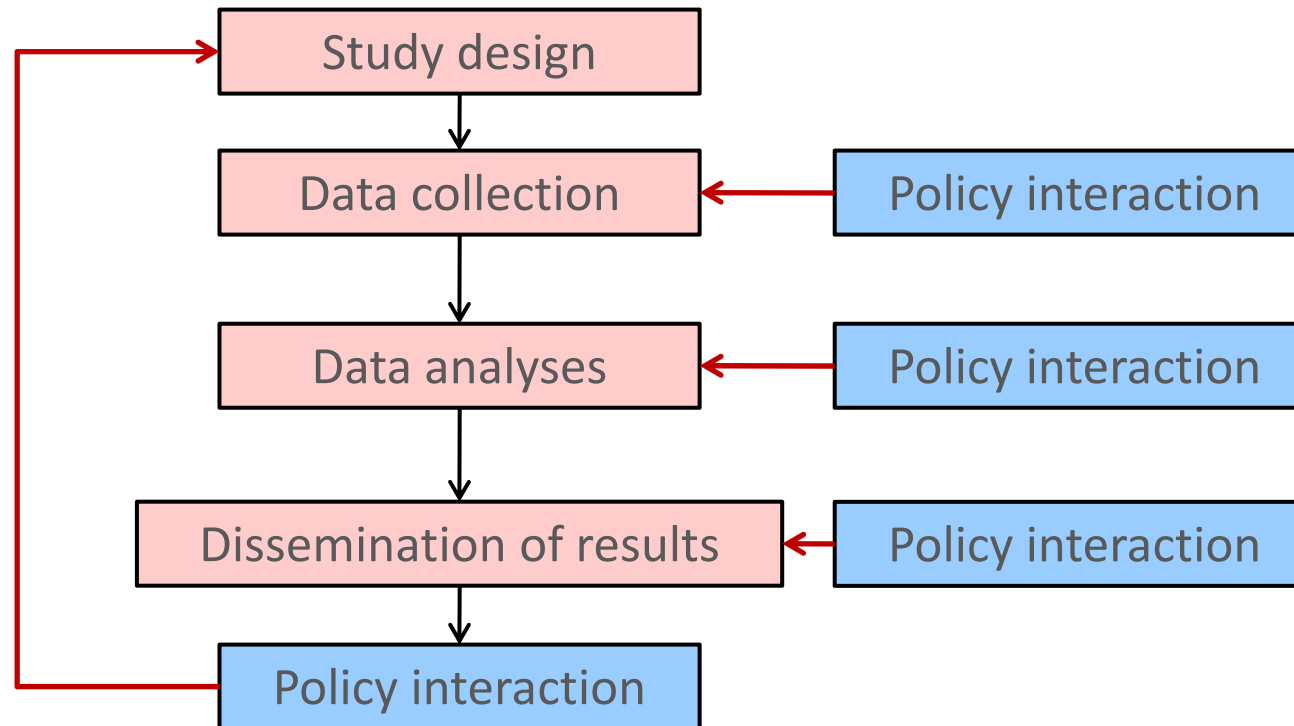


- Multi-disciplinary study and team
- Multiple institutions
- Multiple government agencies
- Multiple stakeholders
- Integrated research and operations team
- Partnerships with key stakeholders
- Partnerships with participants
- Partnerships with policymakers

Translating research outputs into policy



Partnership with policy makers



Cost and value for money



Growing Up in New Zealand is establishing a national treasure (Taonga)

Value for investment is demonstrated by:

- Partnership paradigm
- Relevance to current New Zealand population of births
- Knowing “what works”, as well as identification of problems
- Early reporting to stakeholders
- Comparisons with other current expenditure
- Checking for effectiveness of policies (in progress and new)
- International credibility and comparability
- Theoretical projections of value

International credibility



- *Growing Up in New Zealand* is one of many new longitudinal studies that have begun around the world in the new millennium
- Unique in antenatal recruitment and engagement of partners from the outset
- UK has recently reviewed the utility of longitudinal studies for understanding populations
- Proposed 2012 UK cohort study will be very similar to the NZ design
- Diversity in New Zealand population and study sets it apart from other countries
- Costs for initial phases are comparable around the world (regardless of currency)

Theoretical evidence of cost savings



Potential Economic Savings from US National Children’s Study: Median Estimated Reductions

Health Outcome	Estimated cost \$bn (2003)	Age at diagnosis	Cost savings, \$bn			
			2020	2025	2030	2040
Diabetes	136.6	10	0	0	7.76	22.39
Asthma	14.5	3	1.58	5.55	9.51	17.43
Obesity	46.3	10	0	0	7.59	22.77
Low birth weight	51.2	0	3.94	7.87	11.81	19.68

Table 1: The National Children’s Study: A 21-year prospective study of 100,000 American children, *Paediatrics*, 2007

Current status



- 200 families recruited as *Leading Lights* (Te Roopu Piata) – children now approaching first birthdays
- First three data collections waves almost complete for *Leading Lights*
- Over 7400 families enrolled in main cohort – antenatal interviews completed and planned for 6990 (mothers and partners)
- Antenatal mother and partner interviews continue throughout 2009
- Ongoing stakeholder consultation regarding planning data collection and early reporting (2010)
- Ongoing planning for fourth data collection wave at 24 months
- Ongoing planning for funding and sustainability

Early reporting to inform policy



- Diversity of families having children in 2009
- Acceptability and uptake of parental leave
- Interaction with maternity carers and transitions to primary care
- Access to services and use of these resources
- Early nutrition and value of dietary information
- Early childhood education – intentions and use
- Family beliefs and values
- In depth ethnicity and meaning
- Parental relationships and family dynamics
- Social connectedness
- Neighbourhood and environment
- Family effects of recession

Providing population relevant evidence to inform effective policy development



“Tomorrow’s world is already taking shape in the body and spirit of our children”



Kofi Annan (UN Secretary General)

Acknowledgements



- Participants and their families
- LDP and *Growing Up* teams
- UniServices and University of Auckland
- Ministry of Social Development
- Policy makers from Ministry of Health, Ministry of Education, Ministry of Justice, Dept of Labour, Ministry of Pacific Island Affairs, Te Puni Kokiri, Office of Ethnic Affairs, Statistics NZ, Families Commission, Children's Commission
- Lead maternity carers, advisory and stakeholder groups