Using Long-term Cohort Data to Inform Policy and Healthcare: 12 Years of The PATH Through Life Project

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Director, Centre for Research on Ageing, Health and Wellbeing, ANU
Plan of talk

• Describe PATH study design
• Use of cohort data for monitoring
• Use of cohort data for risk identification
• Use of cohort data to identify outcome for specific clinical groups
• Use of cohort data to evaluate use (or lack of use) of health services
• Summary
Prof Tony Jorm, 1999 – PATH Aims:

a) To delineate the course of depression, anxiety, substance use, and cognitive ability with increasing age across the adult life span

b) To identify environmental and genetic risk factors

c) To investigate interrelationships over time between the three domains

Three cohorts chosen to represent different stages of the life course. At each wave new ideas and aims introduced. At wave 5 the cohorts will overlap in age!
Random selection from the ACT and Queanbeyan Electoral Rolls

**20 – 24 Year-Old Cohort**
- 1999/2000, N = 2404
- Participation Rate = 58.6%

**40 – 44 Year-Old Cohort**
- 2000/2001, N = 2530
- Participation Rate = 64.6%

**60 – 64 Year-Old Cohort**
- 2001/2002, N = 2551
- Participation Rate = 58.3%

**48 – 52 Year-Old Cohort**
- 2008/2009, N = 2182
- Retention Rate = 86.3%

**64 – 68 Year-Old Cohort**
- 2005/2006, N = 2222
- Retention Rate = 87.1%

**24 – 28 Year-Old Cohort**
- 2003/2004, N = 2139
- Retention Rate = 89.0%

**44 – 48 Year-Old Cohort**
- 2004/2005, N = 2354
- Retention Rate = 93.0%

**64 – 68 Year-Old Cohort**
- 2005/2006, N = 2222
- Retention Rate = 87.1%

**28 – 32 Year-Old Cohort**
- Retention Rate = 82.3%

**48 – 52 Year-Old Cohort**
- 2008/2009, N = 2182
- Retention Rate = 86.3%

**68 – 72 Year-Old Cohort**
- 2009/2010, N = 1973
- Retention Rate = 77.3%

**32 – 36 Year-Old Cohort**
- 2011/2012, N = 1286
- Retention Rate = 53.5%

**52 – 56 Year-Old Cohort**
- 2012/2013, N = 1806
- Retention Rate = 71.4%

**72 – 76 Year-Old Cohort**
- 2013-2015, N = 1645
- Retention Rate = 64.5%

**MRI Study**
- Randomly selected for MRI and blood tests conducted every 4 years
- 40+ 60+
  - Wave 1: N = 551
  - Wave 2: N = 431
  - Wave 3: N = 324
  - Wave 4: N = 293

**Health and Memory Study**
- Wave 1: N = 117
- Wave 2: N = 138
- Wave 3: N = 166
- Wave 4: N = 368
Major Sub-studies

- **Genetics**: cognition and affect e.g. Alzheimer’s genes, DRD2, COMT, etc.

- **Memory**: (60-64 age group at all waves) – to identify transitions to cognitive impairment and dementia

- **MRI normative brain ageing**: (40-44 and 60-64 age groups) 431 and 478 participants, Structural scan, diffusion tensor imaging

- **Cardio-vascular**: (40-44, 60-64 age groups, wave 3)
Domains of Measurement: Full Sample

- Demographics – partner, children, education, economic
- Mental Health
- Work
- Social support
- Activities, volunteering, caring
- Life events
- Physical health
- Physical activity
- Genetic markers,
- Personality
- Health service use
Physical Health Measures

- Blood pressure
- Lung function (FEV)
- Handgrip
- Vision
- List of illnesses
- Medication and supplements
- Short form SF-12
- History of head injury
- BMI, waist circumference
Lifestyle Measures

- Smoking
- Marijuana, illicit drugs
- Religiosity
- Alcohol
- Physical activity
- Social engagement
- Cognitive activity
- Diet
Mental Health and Personality

- Goldberg Depression and Anxiety Inventory
- Eysenck Personality Questionnaire (EPQ)
- Big 5 personality
- Resilience
- CIDI clinical diagnoses
- Role strain, dyadic adjustment
- BISBAS
  - Behavioural inhibition
  - Behavioural activation
Cognitive Tests

All waves indicators of broad abilities:
- Simple reaction time
- Choice reaction time
- California verbal learning test Trial 1 (immediate, short delay)
- Digits backwards
- Symbol digit
- Spot-the-word

Added to Wave 2:
- Trails B
- Face recognition

60s Wave 3:
- Boston naming
- Go-NoGo

60s Wave 4:
Neuropsychological for DSMV diagnoses
Contributions of PATH
## Suicide attempts

Fairweather-Schmidt et al., 2012. Social Psychiatry and Social Epidemiology

### Table 4 Comparison of unadjusted 12 month prevalence rates between PATH and NSMHWB for suicide attempts (PATH N = 7,485; NSMHWB N = 2,559)

<table>
<thead>
<tr>
<th>Survey</th>
<th>Age group % (n)</th>
<th>20–24</th>
<th>95% CI</th>
<th>40–44</th>
<th>95% CI</th>
<th>60–64</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>PATH</td>
<td>1.2 (14)</td>
<td>0.7–2.0</td>
<td>0.7 (8)</td>
<td>0.3–1.3</td>
<td>0.2 (2)</td>
<td>0.03–0.5</td>
</tr>
<tr>
<td></td>
<td>NSMHWB</td>
<td>0.4 (2)</td>
<td>0.1–1.2</td>
<td>0.0 (0)</td>
<td>0.4 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(\chi^2) significance</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>PATH</td>
<td>1.6 (20)</td>
<td>1.0–2.4</td>
<td>1.2 (16)</td>
<td>0.7–1.9</td>
<td>0.0 (0)</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>NSMHWB</td>
<td>1.0 (5)</td>
<td>0.4–2.1</td>
<td>0.2 (1)</td>
<td>0.02–0.9</td>
<td>0.6 (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(\chi^2) significance</td>
<td>n.s.</td>
<td>a</td>
<td>a</td>
<td>a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(n\) Number of participants indicating suicide attempt

* Frequencies too few for reliable analysis
Monitoring: 12 year changes in BMI from 20-76 years
Monitoring: Increase in rates of diabetes in cohorts over 12 years
# Clustering of Risk Factors

PhD student Lara Morris – Preventive Medicine, 2016

## Table 2

Combinations of lifestyle risk factors stratified by age cohort and gender.

<table>
<thead>
<tr>
<th>No. Risks</th>
<th>Smoke</th>
<th>Inactive</th>
<th>Alcohol</th>
<th>20s males (n = 911) O</th>
<th>20s males (n = 911) O/E</th>
<th>20s males (n = 911) 95% CI</th>
<th>40s males (n = 1020) O</th>
<th>40s males (n = 1020) O/E</th>
<th>40s males (n = 1020) 95% CI</th>
<th>60s males (n = 1006) O</th>
<th>60s males (n = 1006) O/E</th>
<th>60s males (n = 1006) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>56.5</td>
<td>1.09</td>
<td>1.06, 1.12</td>
<td>50.4</td>
<td>1.06</td>
<td>1.03, 1.10</td>
<td>47.0</td>
<td>1.00</td>
<td>0.97, 1.03</td>
</tr>
<tr>
<td>1</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>12.2</td>
<td>0.75</td>
<td>0.66, 0.83</td>
<td>5.2</td>
<td>0.68</td>
<td>0.54, 0.81</td>
<td>1.5</td>
<td>0.57</td>
<td>0.34, 0.82</td>
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<tr>
<td></td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>9.8</td>
<td>0.93</td>
<td>0.82, 1.04</td>
<td>20.3</td>
<td>0.98</td>
<td>0.91, 1.04</td>
<td>28.3</td>
<td>1.00</td>
<td>0.96, 1.05</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>8.5</td>
<td>0.74</td>
<td>0.62, 0.85</td>
<td>10.7</td>
<td>0.86</td>
<td>0.76, 0.96</td>
<td>13.3</td>
<td>1.09</td>
<td>0.99, 1.19</td>
</tr>
<tr>
<td>2</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>3.5</td>
<td>1.08</td>
<td>0.76, 1.37</td>
<td>3.4</td>
<td>1.02</td>
<td>0.77, 1.30</td>
<td>2.5</td>
<td>1.58</td>
<td>1.15, 2.04</td>
</tr>
<tr>
<td></td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>6.0</td>
<td>1.69</td>
<td>1.36, 2.08</td>
<td>3.3</td>
<td>1.66</td>
<td>1.20, 2.16</td>
<td>0.6</td>
<td>0.88</td>
<td>0.28, 1.60</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>1.5</td>
<td>0.66</td>
<td>0.39, 1.04</td>
<td>4.7</td>
<td>0.87</td>
<td>0.67, 1.06</td>
<td>6.1</td>
<td>0.82</td>
<td>0.66, 0.98</td>
</tr>
<tr>
<td>3</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>2.0</td>
<td>2.76</td>
<td>1.61, 4.01</td>
<td>2.0</td>
<td>2.24</td>
<td>1.35, 3.18</td>
<td>0.7</td>
<td>1.70</td>
<td>0.68, 2.99</td>
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<tr>
<td>20s female (n = 1051)</td>
<td></td>
<td></td>
<td></td>
<td>52.8</td>
<td>1.04</td>
<td>1.01, 1.07</td>
<td>43.5</td>
<td>1.04</td>
<td>1.01, 1.07</td>
<td>43.9</td>
<td>1.00</td>
<td>0.98, 1.02</td>
</tr>
<tr>
<td>40s females (n = 1124)</td>
<td></td>
<td></td>
<td></td>
<td>10.0</td>
<td>0.85</td>
<td>0.75, 0.95</td>
<td>4.5</td>
<td>0.70</td>
<td>0.54, 0.85</td>
<td>2.0</td>
<td>0.77</td>
<td>0.53, 1.07</td>
</tr>
<tr>
<td>60s females (n = 940)</td>
<td></td>
<td></td>
<td></td>
<td>24.7</td>
<td>0.98</td>
<td>0.94, 1.03</td>
<td>37.0</td>
<td>0.99</td>
<td>0.96, 1.03</td>
<td>47.0</td>
<td>1.00</td>
<td>0.98, 1.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.0</td>
<td>1.03</td>
<td>0.85, 1.22</td>
<td>6.1</td>
<td>1.07</td>
<td>0.90, 1.25</td>
<td>3.2</td>
<td>1.14</td>
<td>0.88, 1.38</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.6</td>
<td>1.98</td>
<td>1.18, 2.89</td>
<td>1.6</td>
<td>2.60</td>
<td>1.59, 3.87</td>
<td>0.3</td>
<td>3.06</td>
<td>0.00, 7.02</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>1.1</td>
<td>0.66</td>
<td>0.33, 1.03</td>
<td>2.9</td>
<td>0.79</td>
<td>0.57, 1.01</td>
<td>1.4</td>
<td>0.74</td>
<td>0.40, 1.09</td>
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<td>1.4</td>
<td>3.06</td>
<td>1.74, 4.67</td>
<td>1.1</td>
<td>1.96</td>
<td>1.06, 3.07</td>
<td>0.1</td>
<td>0.95</td>
<td>0.00, 3.44</td>
</tr>
</tbody>
</table>

*Note: + risk factor present; – risk factor absence; O = observed prevalence of combination %, E = expected prevalence of combination.*
Contributions of PATH
Predictors: Chemobrain – does history of chemotherapy for cancer increase risk of cognitive decline?

Background

• Lifetime prevalence for cancer at any site for males is 44.81% and for females is 38.17%
• In 2012, 9.7 million cancer survivors aged 60 and older in the USA
• Cross-sectional and case-control studies have shown that patients receiving adjuvant chemotherapy for breast cancer have poorer cognitive function
• Some studies have reported effects to be subtle and more likely due to aspects of cancer diagnosis such as distress and physical disability
Research Gap and hypotheses

• No previous prospective study that has evaluated the link between chemotherapy and cognitive decline in older adults
• No study with psychometric measures designed to measure cognitive change in normal ageing

Hypotheses

1. Chemotherapy will be associated with poorer cognition cross-sectionally, after adjusting for depression and disability
2. Chemotherapy will be associated with cognitive decline
Measures

- Data were collected on type of treatment for cancer including surgery (yes/no), radiation (yes/no), and chemotherapy (yes/no).
- Year of treatment was recorded.
- Distribution of total number of cancer diagnoses for the cohort was compared with the Australian National Cancer registry. There was no difference in the frequency of cancer reported in the cohort with that recorded on official records $\chi^2(1)=2.158$, $p=.142$.
## Description of sample

<table>
<thead>
<tr>
<th></th>
<th>No Cancer N=1562</th>
<th>Cancer + Chemo N=81</th>
<th>Cancer No Chemo N=306</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>50.1%</td>
<td>44.4%</td>
<td>60.5%</td>
<td>.002</td>
</tr>
<tr>
<td>Age (M, SD)</td>
<td>70.58 (1.49)</td>
<td>70.58 (1.54)</td>
<td>70.75 (1.53)</td>
<td>.184</td>
</tr>
<tr>
<td>Years Education (M, SD)</td>
<td>14.03 (2.68)</td>
<td>13.95 (2.73)</td>
<td>14.38 (2.64)</td>
<td>.116</td>
</tr>
<tr>
<td>Diabetes</td>
<td>12.9%</td>
<td>18.5%</td>
<td>15.0%</td>
<td>.247</td>
</tr>
<tr>
<td>Heart Condition</td>
<td>20.2%</td>
<td>23.5%</td>
<td>21.9%</td>
<td>.655</td>
</tr>
<tr>
<td>Hypertension</td>
<td>62.5%</td>
<td>61.2%</td>
<td>62.7%</td>
<td>.971</td>
</tr>
<tr>
<td>Alcohol Intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstain / Occasional</td>
<td>29.0%</td>
<td>27.2%</td>
<td>25.8%</td>
<td>.621</td>
</tr>
<tr>
<td>Light / Medium</td>
<td>66.9%</td>
<td>70.4%</td>
<td>69.0%</td>
<td></td>
</tr>
<tr>
<td>Hazardous / Harmful</td>
<td>4.1%</td>
<td>2.5%</td>
<td>5.2%</td>
<td></td>
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<tr>
<td>Smoking Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never Smoked</td>
<td>54.8%</td>
<td>58.0%</td>
<td>52.0%</td>
<td>.822</td>
</tr>
<tr>
<td>Past Smoker</td>
<td>39.8%</td>
<td>38.3%</td>
<td>42.5%</td>
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<tr>
<td>Current Smoker</td>
<td>5.3%</td>
<td>3.7%</td>
<td>5.6%</td>
<td></td>
</tr>
<tr>
<td>Waist Circumference (M, SD)</td>
<td>95.98 (13.54)</td>
<td>95.51 (15.30)</td>
<td>97.86 (13.01)</td>
<td>.087</td>
</tr>
<tr>
<td>Depression (M, SD)</td>
<td>2.30 (2.88)</td>
<td>3.68 (3.30)</td>
<td>2.48 (2.89)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>SF-12 Physical Health (M, SD)</td>
<td>47.33 (10.29)</td>
<td>42.04 (12.13)</td>
<td>46.73 (10.13)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Spot-the-word</td>
<td>53.27 (4.96)</td>
<td>52.25 (4.66)</td>
<td>53.74 (4.66)</td>
<td>.055</td>
</tr>
<tr>
<td>APOE genotype</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ε4/-ε4-</td>
<td>73.5%</td>
<td>64.1%</td>
<td>73.6%</td>
<td>.037</td>
</tr>
<tr>
<td>ε4+/ε4-</td>
<td>24.6%</td>
<td>32.1%</td>
<td>26.4%</td>
<td></td>
</tr>
<tr>
<td>ε4+/ε4+</td>
<td>1.9%</td>
<td>3.8%</td>
<td>0.0%</td>
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</table>
## Cross-sectional Wave 3

<table>
<thead>
<tr>
<th></th>
<th>Immediate Recall</th>
<th>Delayed Recall</th>
<th>Processing Speed</th>
<th>Digit Backwards</th>
<th>Simple Reaction Time</th>
<th>Choice Reaction Time</th>
<th>Trails</th>
<th>Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=1763</td>
<td>n=1761</td>
<td>n=1769</td>
<td>n=1740</td>
<td>n=1735</td>
<td>n=1728</td>
<td>n=1746</td>
<td>n=1731</td>
</tr>
<tr>
<td>Cancer + Chemo</td>
<td>-0.11(0.12)</td>
<td>-0.26(0.12)*</td>
<td>-0.24(0.12)**</td>
<td>-0.15(0.12)</td>
<td>0.15(0.12)</td>
<td>-0.34(0.12)**</td>
<td>0.26(0.12)*</td>
<td>-0.23(1.07)*</td>
</tr>
<tr>
<td>Cancer - Chemo</td>
<td>0.12(0.06)*</td>
<td>0.13(0.06)*</td>
<td>0.08(0.06)</td>
<td>0.06 (0.06)</td>
<td>0.05(0.07)</td>
<td>0.07(0.06)</td>
<td>-0.08(0.06)</td>
<td>0.01(.11)</td>
</tr>
</tbody>
</table>

|                      | n=1745           | n=1743         | n=1751           | n=1723         | n=1719               | n=1718               | n=1728 | N=1718  |
| Cancer + Chemo       | -0.06(0.12)      | -0.21(0.12)    | -0.16(0.11)      | -0.16(0.11)    | -0.09(0.12)          | -0.29(0.12)*         | 0.20(0.12) | -0.21(.11) |
| Cancer - Chemo       | 0.14(0.06)*      | 0.14(0.06)*    | 0.12(0.06)       | 0.07(0.06)     | 0.06(0.06)           | 0.06(0.06)           | -0.11(0.06) | 0.03(.06)  |

Note: Effects are beta weights with standard error estimates from generalized linear models (reference group= no cancer). Model 1 adjusts for age, sex and education; Model 2 adjusts for age, sex, education, depressive symptoms and disability.  * p < .05, ** p < .01
Plotted linear trajectory of Delayed Recall and Digits Back fully adjusted.
Other results

- No effect of chemotherapy on self reported memory complaints
- No interactions with APOE genotype
- Adjustment for radiation therapy (n = 88) did not alter results

Putative Mechanism

Inhibition of neurogenesis, interruption of consolidation of memories in the hippocampus, DNA damage, inflammation, oxidative stress
Strengths, Limitations, Conclusion

• This is the first prospective study of the impact of chemotherapy on cognitive decline, 3 occasions of measurement, range of cognitive measures
• Specific effects on memory ageing were identified, but not on other cognitive abilities
• Limited by self report cancer and chemotherapy data, lack of specific data on timing of diagnosis and treatment, pooling of cancer types
• Further research needed to confirm findings
Predictors: Cardiovascular risk factors and cognitive decline in mid-life


Neuropsychology. 28(4):653-665
• 40s cohort studied for 12 years, 3 waves
• Cardiovascular risk score created from
  – Insufficient physical activity, BMI>27, diabetes, smoking, hypertension, depression
We showed that adults in middle age with 3+ cardiovascular risk factors are declining faster on isolated measures of cognitive speed but not memory or verbal ability.
Diet and brain atrophy
Jacka et al, 2015, PLoS Medicine

Fig. 1 Predicted left hippocampal volume (with standard errors represented by error bars) at baseline and 4-year follow-up for respondents classified with poor, average and good quality diet based on scores on the Western and prudent dietary factor scores (poor defined as 1 SD below mean on prudent and 1 SD above mean on Western dietary factor scores; average defined as mean/0 on both prudent and Western dietary factor scores; good defined as 1 SD above mean on prudent and 1 SD below mean on Western dietary factor scores)
Contributions of PATH
Impact of cognitive impairment on everyday function


*Alzheimer’s & Dementia, 9(6):640-648*
Aims of the PATH Through Life Health and Memory Study

• To establish prevalence and incidence of preclinical dementia syndromes in young-old
• To identify risk and protective factors for cognitive decline and impairment
• To identify neural and genetic correlates
Measures

• Demographic – age, sex, education, employment status
• Cognitive – short screening battery
• APOE genotype
• IADL items
• Memory complaints

Anstey et al., Cohort Profile: The PATH Through Life Project, International Journal of Epidemiology, 2011
Conclusion

- About 9% of adults develop a mild cognitive disorder in their 60s
- Incidence about 2%
- Characterized by:
  - Faster decline in MMSE, Speed and Memory
  - 1/3 rate of workforce participation of NC
  - Higher rates of difficulty with IADL and service use associated with memory
Self-reported Memory difficulties

Wave 1
- Memory difficulties
- Memory interferes with activity
- Seen Doctor for memory

Wave 2
- Memory difficulties
- Memory interferes with activity
- Seen Doctor for memory

Status at Wave 3
- Normal
- MCD

% responding "Yes"

* p<0.05
** p<0.01
ns
Self-reported IADL difficulties

- Reading a map
- Meal preparation
- Shopping
- Phoning
- Taking meds

* p<0.05
** p<0.01
Income and retirement

![Bar chart showing % Reporting situation by main income and reason for retirement. The chart compares 'Normal' and 'MCD' categories.](https://example.com/chart.png)
Activities after retirement

<table>
<thead>
<tr>
<th></th>
<th>Home duties or caring for children</th>
<th>Studying</th>
<th>Caring for an aged or disabled person</th>
<th>Voluntary work</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td>42.8%</td>
<td>1.3%</td>
<td>3.6%</td>
<td>14.4%</td>
<td>37.9%</td>
</tr>
<tr>
<td><strong>MCD</strong></td>
<td>56.5%</td>
<td>1.4%</td>
<td>7.2%</td>
<td>7.2%</td>
<td>27.5%</td>
</tr>
</tbody>
</table>
Policy Implications

• These data need to inform policy relating to retirement age, pension age and productive ageing

• Secondary prevention will increase productivity of this significant group of young-old adults
Contributions of PATH
Mild Cognitive Disorders and GP use
PhD student: Lily O’Donohue-Jenkins

- 20% of adults aged 70+ have a mild cognitive disorder, not dementia

<table>
<thead>
<tr>
<th>Condition</th>
<th>Participants, n</th>
<th>Mean GP use (SE)</th>
<th>Males, %</th>
<th>Married, %</th>
<th>Mean age, years (SD)</th>
<th>Mean education, years (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCD</td>
<td>247</td>
<td>8.19 (0.58)</td>
<td>59.1</td>
<td>70.4</td>
<td>62.53 (1.50)</td>
<td>11.73 (3.05)</td>
</tr>
<tr>
<td>Non-MCD</td>
<td>2303</td>
<td>6.82 (0.30)</td>
<td>50.8</td>
<td>75.4</td>
<td>62.51 (1.51)</td>
<td>13.99 (2.68)</td>
</tr>
<tr>
<td>MCD and arthritis</td>
<td>92</td>
<td>9.24 (0.78)</td>
<td>49.1</td>
<td>62.9</td>
<td>62.51 (1.44)</td>
<td>11.16 (3.06)</td>
</tr>
<tr>
<td>MCD and depression</td>
<td>36</td>
<td>10.56 (0.81)</td>
<td>52.9</td>
<td>54.9</td>
<td>62.76 (1.46)</td>
<td>11.15 (3.22)</td>
</tr>
</tbody>
</table>

SE = Standard error.
Mild cognitive disorders and GP use

**Fig. 2.** Graph comparing the mean number of GP visits for participants with MCD, cognitively healthy participants (non-MCD), participants with both MCD and depression, and participants with both MCD and arthritis across the three time points.
Advantages of cohort data

- Can estimate incidence
- Monitor change within individuals, and within cohorts over time
- Individual linkage to service use over time
- Can estimate unmet needs i.e. who is not using services but has mental disorders
- Duration of conditions, exposures, effects
- Life-course development, biopsychosocial approach
- Correlation of psychosocial with health outcomes over time
Limitations

• Geographically restricted
• Selection effects
• Costs of maintenance
• Attrition

But what are the alternatives?
Conclusion

• Untapped opportunities to use cohort data to inform health policy and planning
• Partnerships between health services and cohorts needed
• Dialogues between policymakers and researchers and partnership grants will increase utilization of these resources
Data Access

- Develop collaboration with PATH team member
- Ethics if needed
- Submit proposal to the PATH Governance Committee
- Sign collaborative agreement
- Begin work!

Collaborative Consortia

- DYNOPTA – Dynamic analyses to optimise ageing well
- COSMIC – focusses on Memory, UNSW led
- CAPA – focusses on Alzheimer’s disease
- IALSA – cognitive ageing and health
- Cannabis use
- Many individual papers that pool data for collaborative re-analysis
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