

# Innovative use of big data to answer primary health care policy relevant questions

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# Briefly Cover

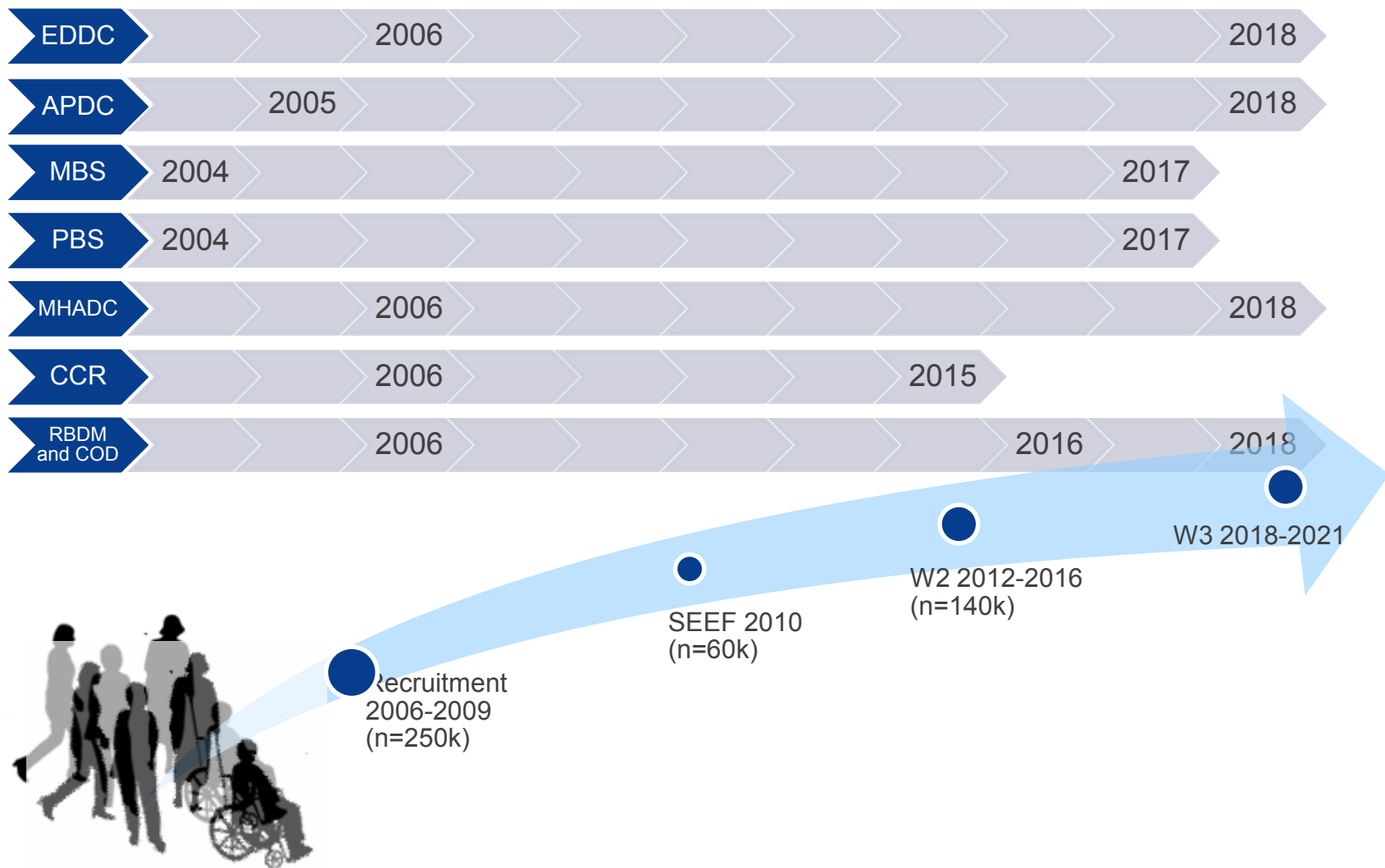
Central and South Eastern Sydney Primary and Community Health Cohort/Linkage Resource (CES-P&CH)

Examples using CES-P&CH:

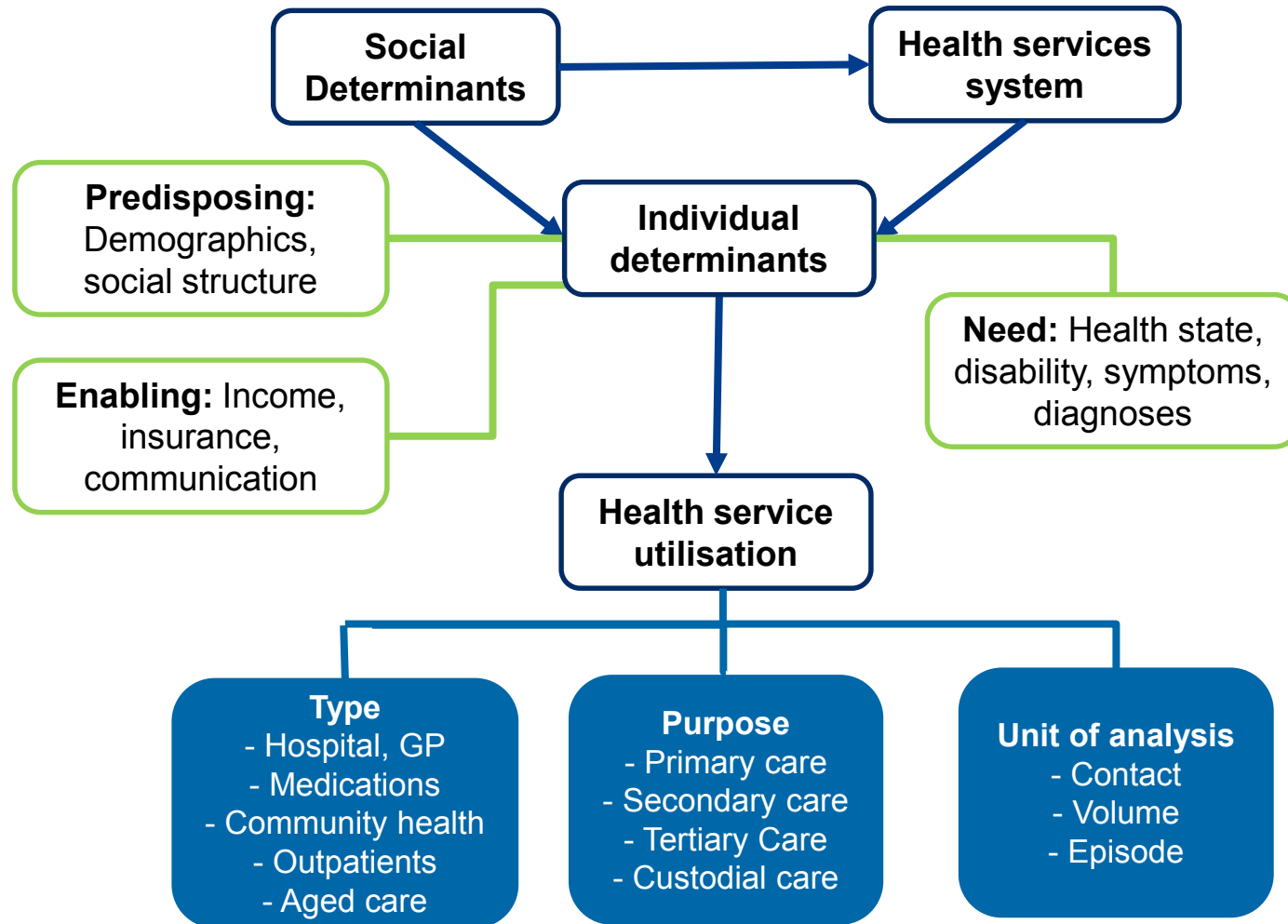
- Impact of care plans on health outcomes
- Impact of GP follow-up after hospitalisation on re-admissions
- Predictors for high service use in older people
- Impact of social isolation and living alone on health service use



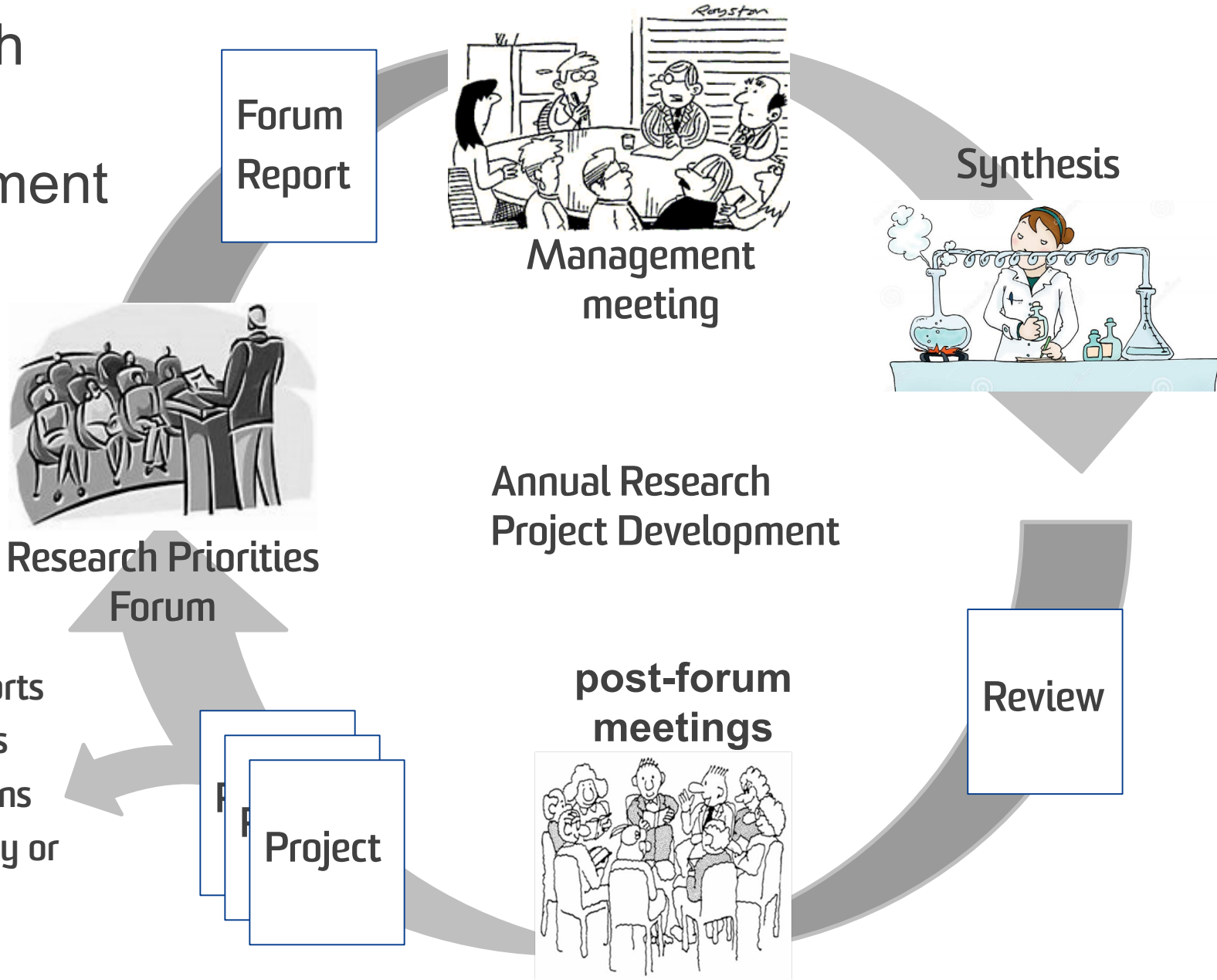
# Longitudinal data within the resource



# Analytical framework



# Research question development process



# Impact of care plans on health outcomes



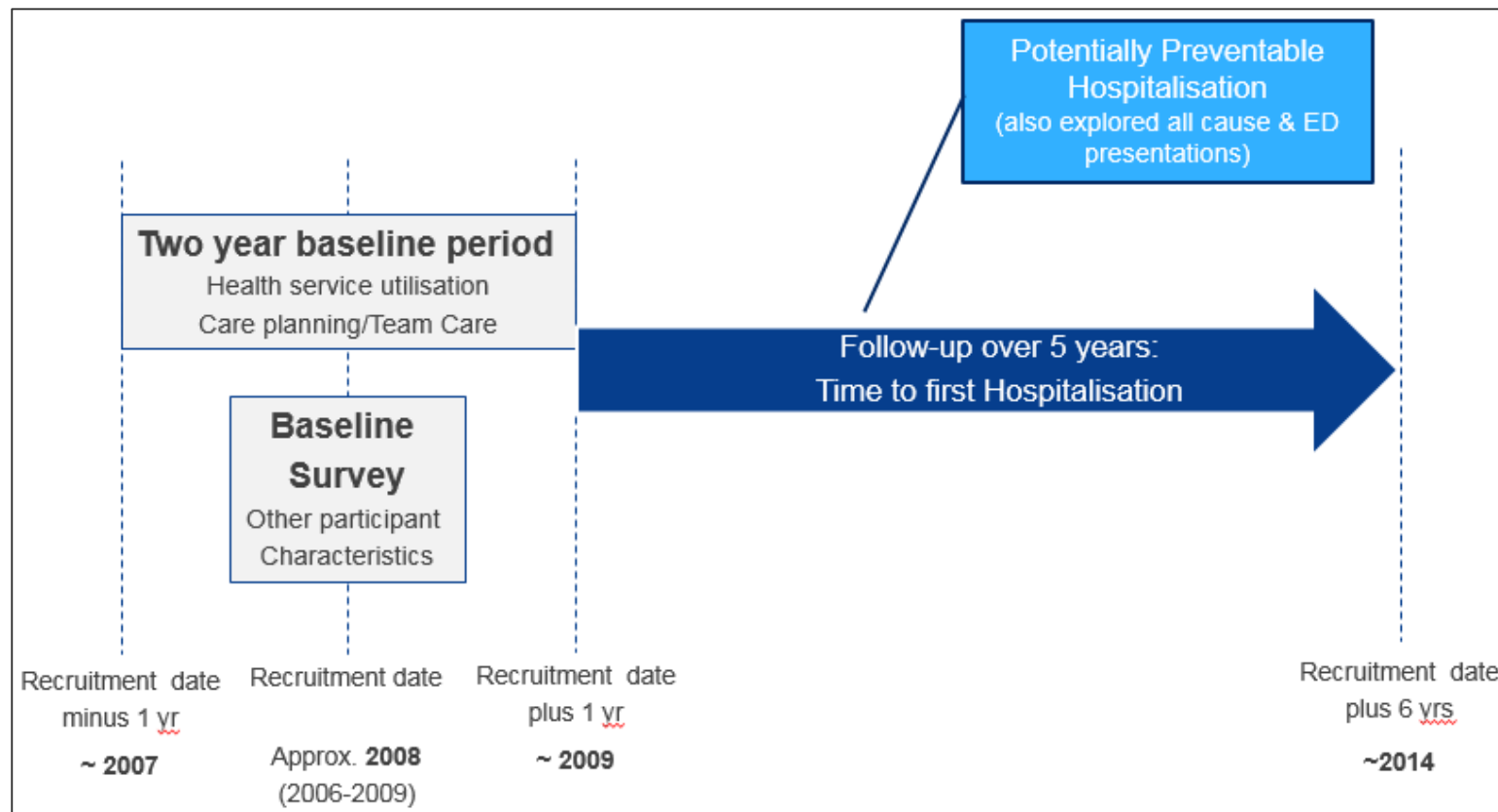
## Literature

- Evidence of a rapid uptake of GPMP/TCAs, reviews and allied health service items over time for chronic disease management
- Little evidence to date on the impact of these allied health services on longer term patient outcomes e.g. in preventing hospitalisations.

## Aim

- Explore differences in five-year hospitalisation rates using record linkage data analysis for: GPMP/TCA and allied health service claims.

# Method



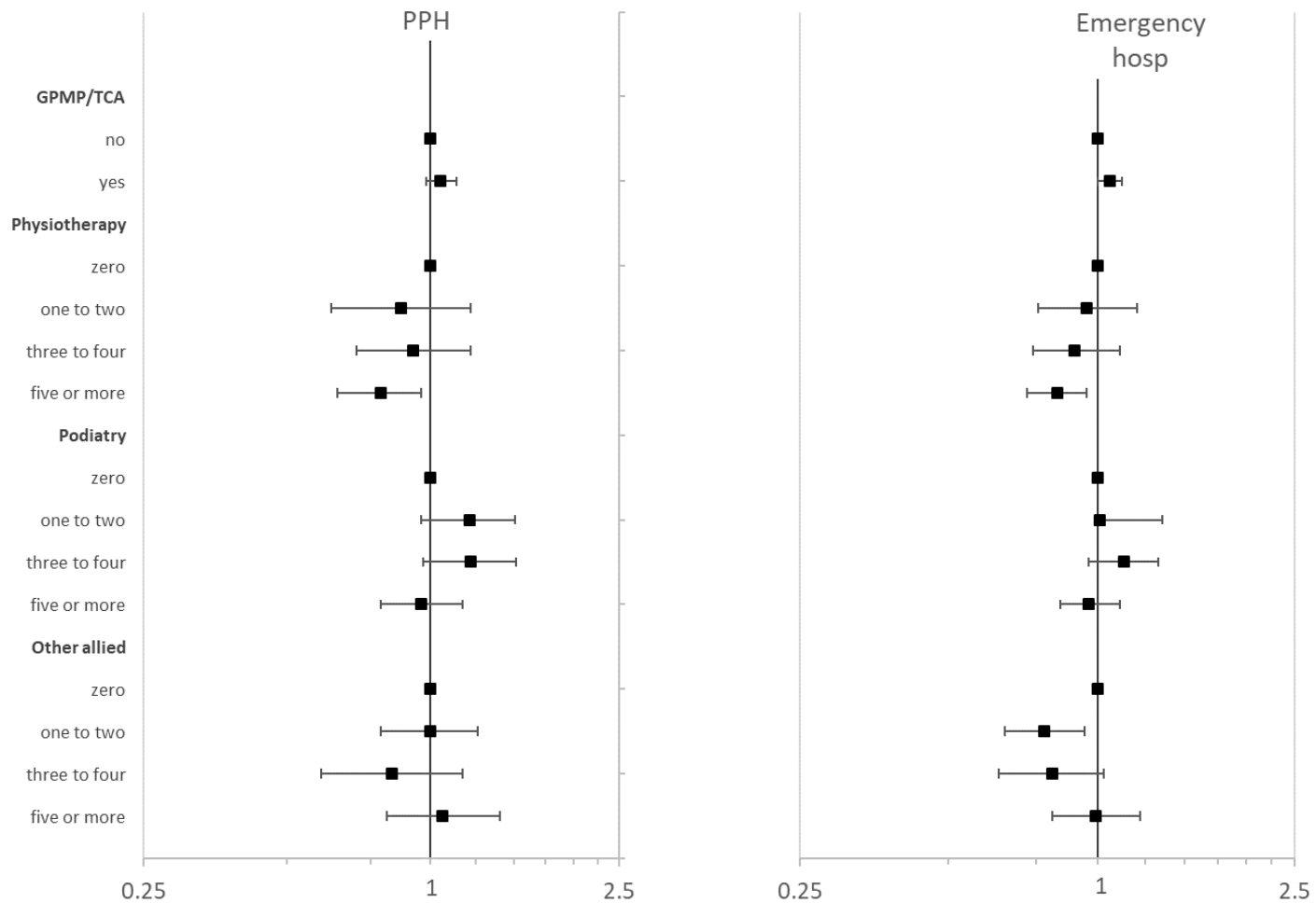


# Relationship between participant characteristics and preparation of a GPMP/TCA

Domain	Characteristics of those using GPMP/TCA (significant associations highlighted)
Socio-demographic	<b>Male, Older, Language other than English, Born overseas, Lower Education, Lower Household income, Not working, Housing type, No private health cover</b>
Health risk factors	<b>Current smoker</b> , inadequate physical exercise, inadequate Fruit & Veg, High risk alcohol consumption, <b>Overweight/Obese, Being treated for high BP, Being treated for high Cholesterol</b>
Health status	<b>More physical limitations (SF36)</b> , Higher psychological distress (K10), <b>Self reported poorer health</b> , Self reported lower quality of life, <b>More chronic conditions*</b> , <b>Needs help for a disability</b> , Self reported fall
Healthcare utilisation	<b>More GP visits</b> , continuity of care, hospitalisation, <b>saw a specialist, bulk-billed most or all of the time</b> (within the baseline period)

\*Maximum of 6: Diabetes, cardiovascular, cancer, mental health, respiratory (asthma), musculoskeletal

# Results – impact of



Hazard ratio controlling for all other demographic, risk behaviours, health conditions and service use

# Impact of GP follow-up after hospitalisation on re-admissions



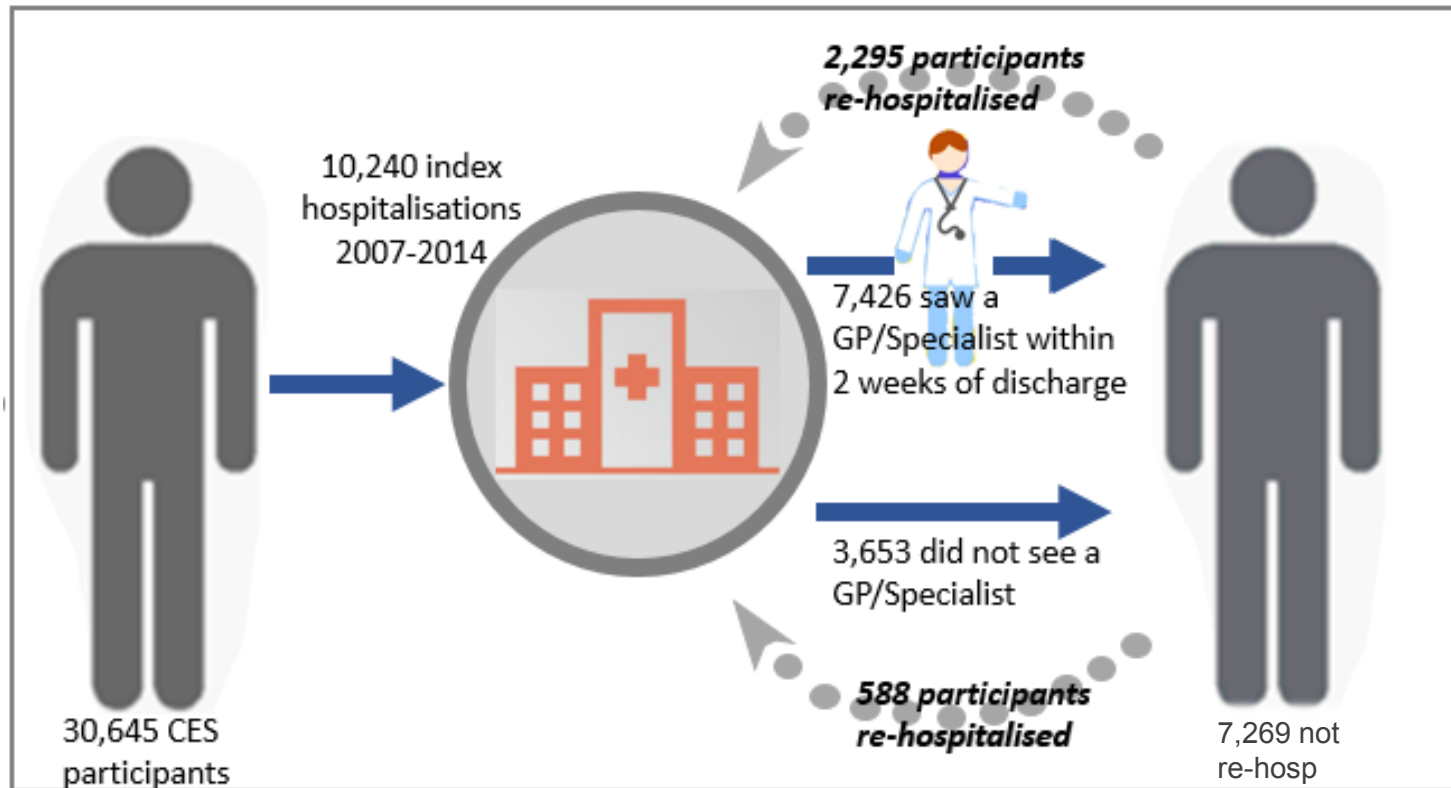
## Literature

- Varied evidence re impact of GP follow-up on re-hospitalization
- Most studies had small samples and facility based.

## Aims

- Determine the characteristics of patients who see a GP within 2-weeks of hospital discharge
- Determine impact of seeing a GP within 2-weeks of hospital discharge on re-hospitalisation in the next 12 months.

# Method

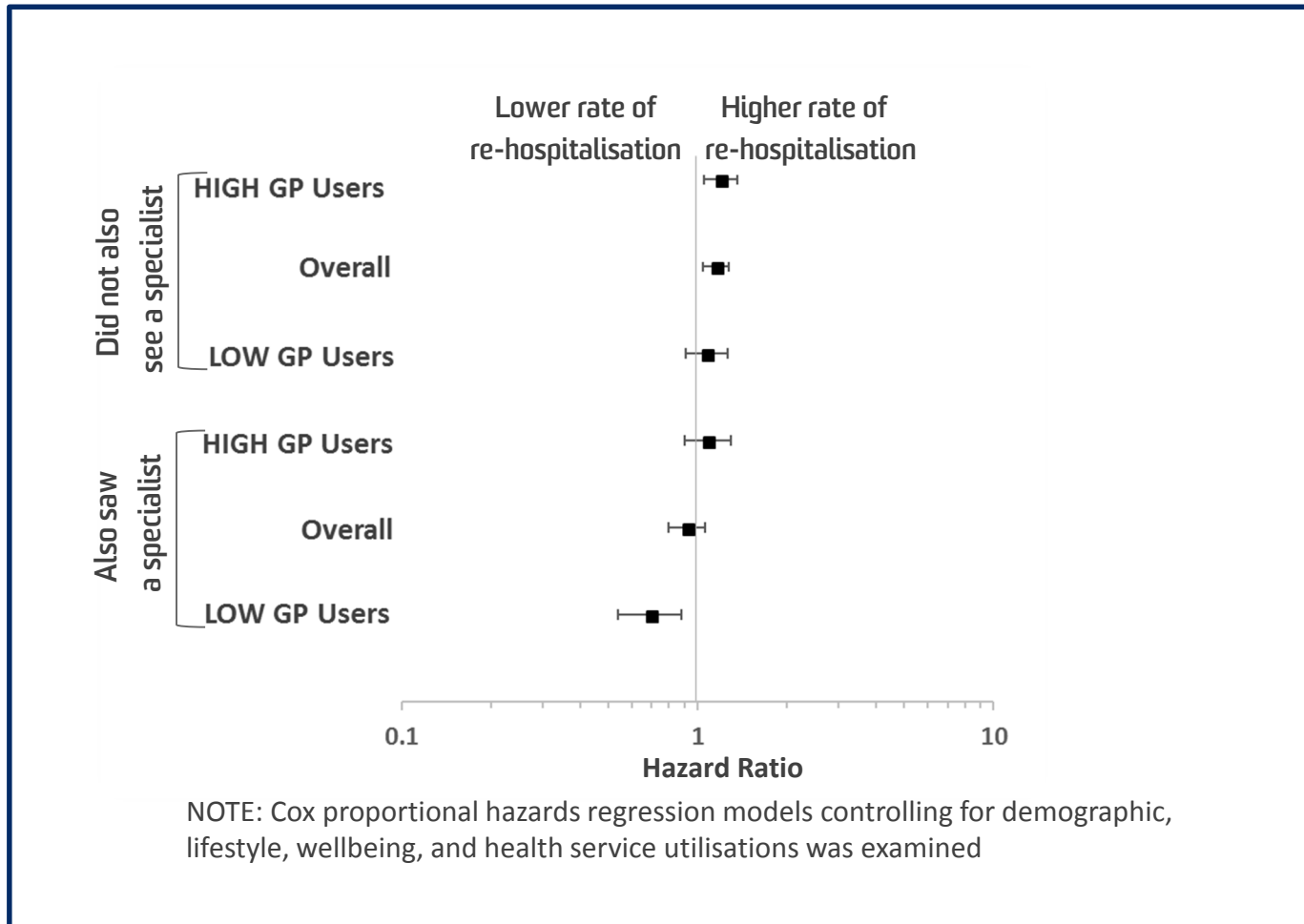


NOTE: 6,587 (64.3%) saw a GP within 2 weeks of hospital discharge and of those 2017 were re-hospitalised; and 3653 did not see a GP and of those 866 were re-hospitalised.

# Characteristics of patients more likely to see a GP 2-weeks after hospitalisation

Domain	Characteristics of those seeing GP/specialist (significant associations highlighted)
Socio-demographic	<b>Male, Older</b> , Language other than English, Born overseas, Lower Education, <b>Lower Household income</b> , Full-time work, Housing type, <b>No private health cover</b>
Health risk factors	Current smoker, Inadequate physical exercise, inadequate Fruit & Veg, <b>some alcohol consumption</b> , <b>Underweight</b> , Being treated for high BP, Being treated for high Cholesterol
Health status	More physical limitations (SF36), Higher psychological distress (K10), Self reported poorer health, Self reported lower quality of life, Needs help for a disability, <b>not having reported cancer</b> , other self-reported conditions
Healthcare utilisation	<b>More GP/specialist visits</b> , continuity of care, <b>not seeing a specialist, not hospitalised</b> , bulk-billed most or all of the time.

# Results - impact



Seeing a GP and specialist associated with a 30% reduction in 12 month re-hospitalisations (LOW GP users).

# Predictors for high service use in older people



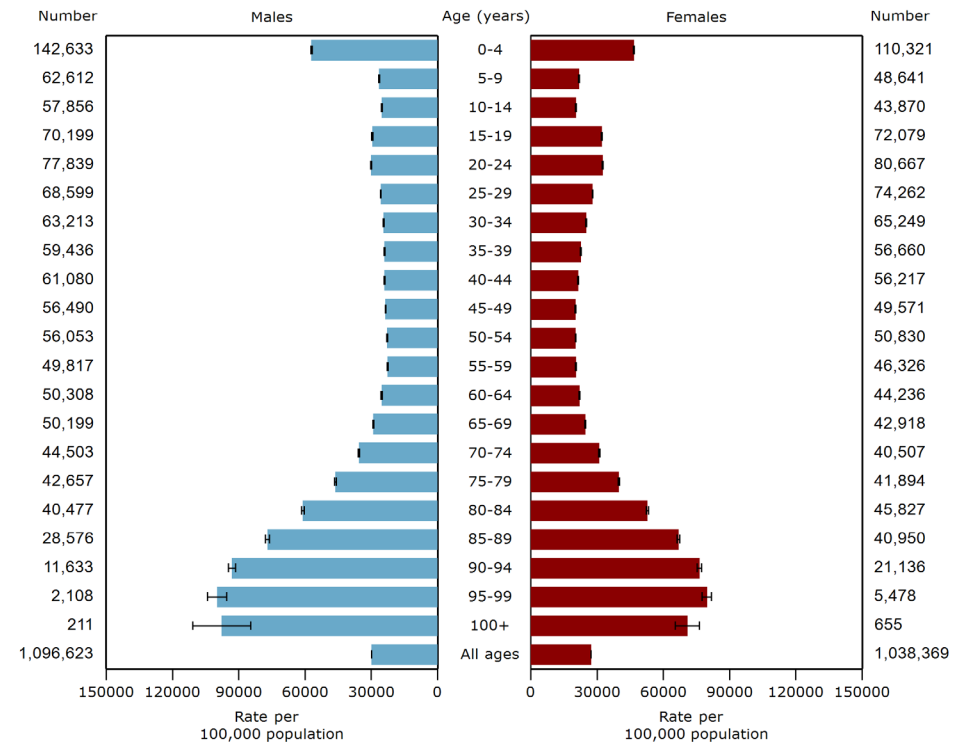


# Literature

- Patients aged 75 years and over:
  - 12.4% of all ED presentations
  - 6.7% of the population.
- Most literature on predictors of service use are from small studies.

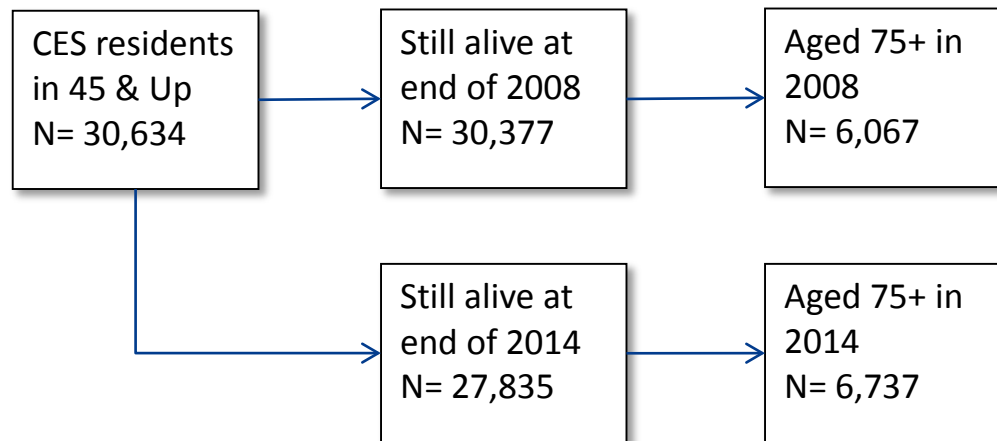
## Aim

- Explore predictors of service use amongst people aged 75 years and over (changing over time) to inform planning and the provision of quality cost effective care



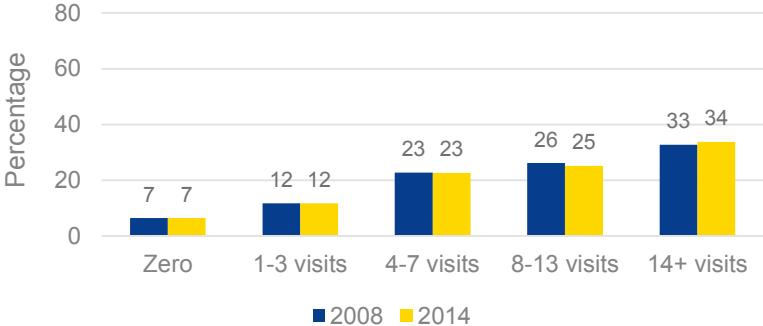
Source: Health Statistics New South Wales [Internet]. Sydney: NSW Ministry of Health, [cited 11/10/2018]. Available from: [www.healthstats.nsw.gov.au](http://www.healthstats.nsw.gov.au).

# Eligible participants

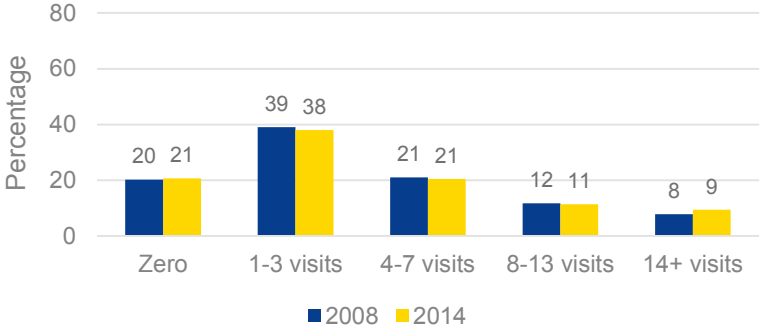


# Results - Service use over time

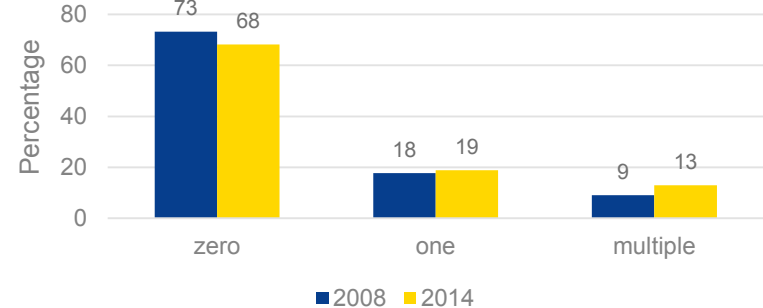
### GP Visits



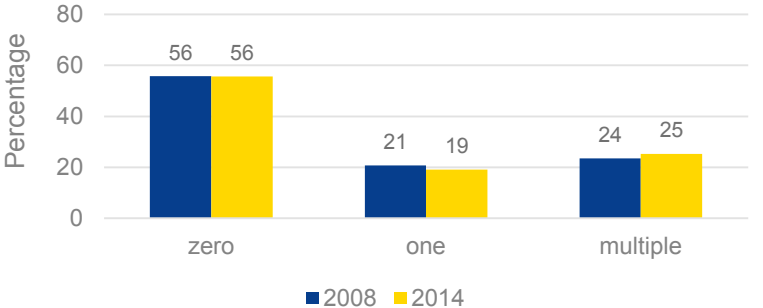
### Specialist Visits



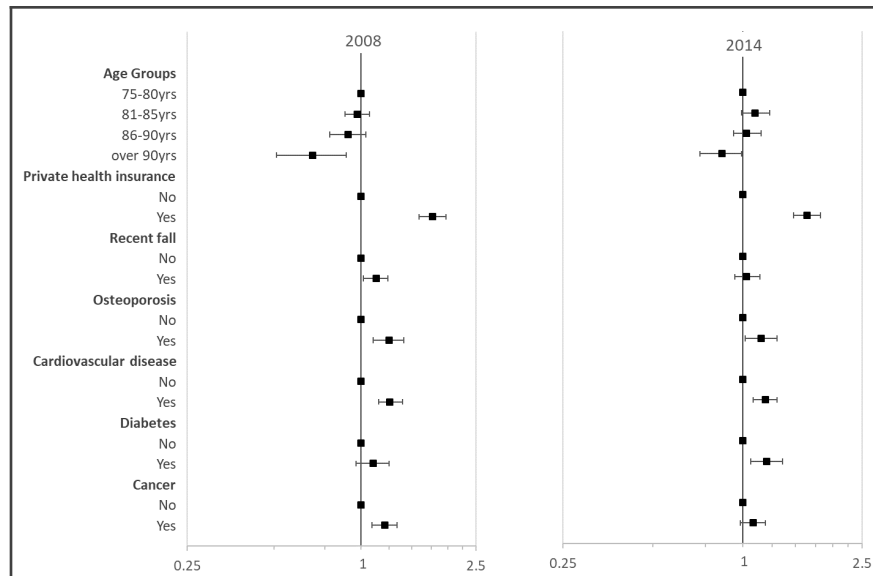
### ED Visits



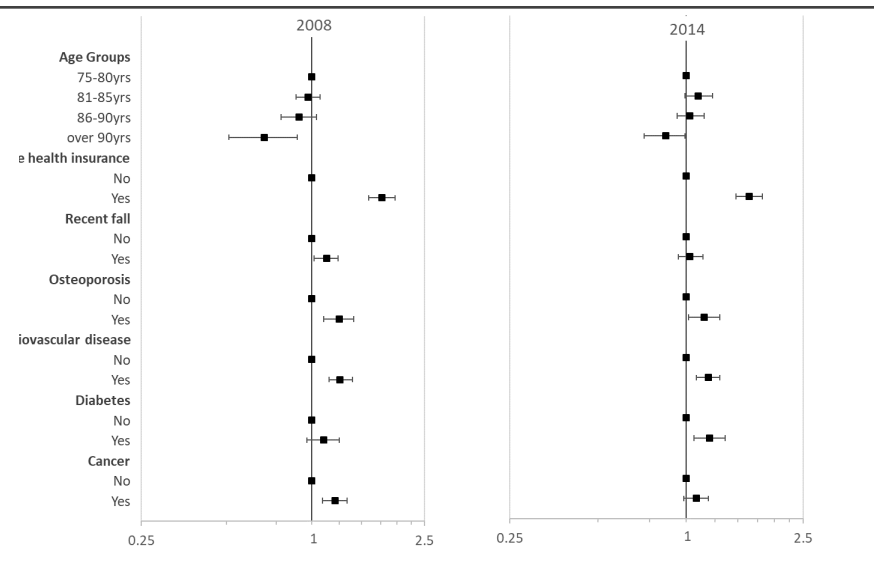
### Hospital admissions



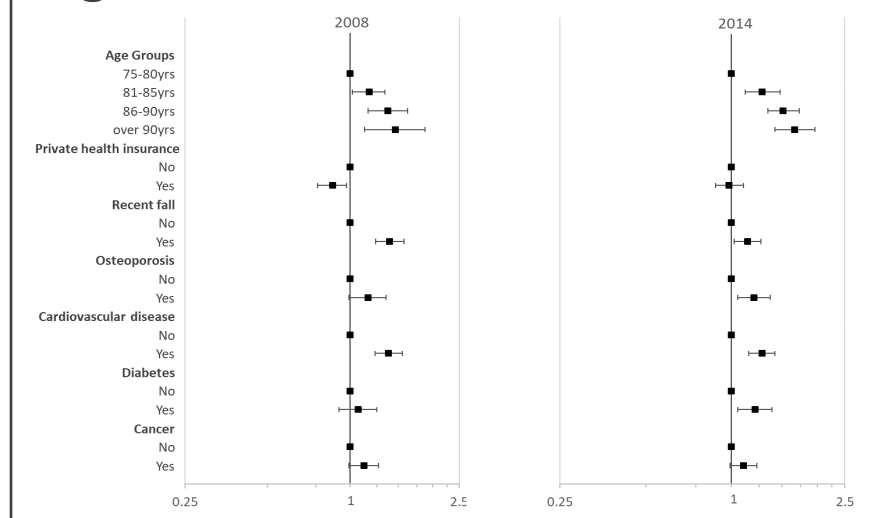
# High GP use



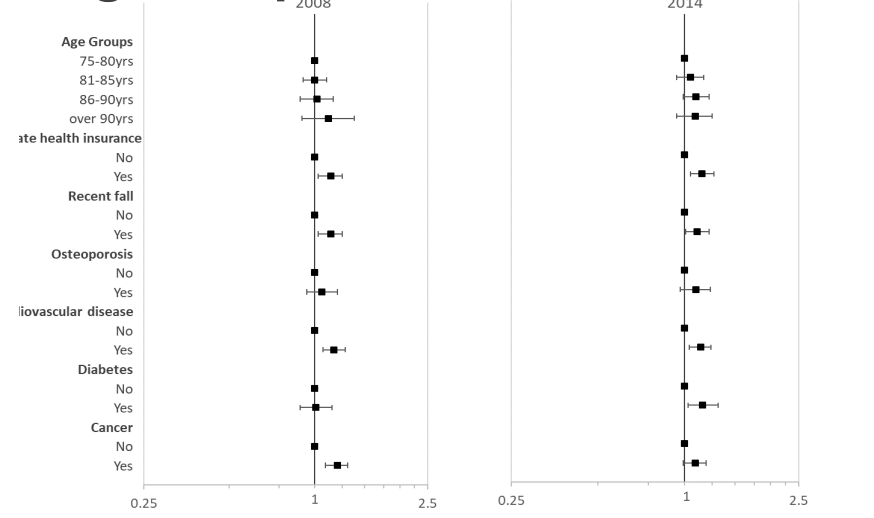
# High Specialist use



# High ED use



# High Hospital use



# Summary of adjusted models (PR)

	2008		2014	
	More likely	Less likely	More likely	Less likely
High GP use	Speaking LOTE, having PHI, having HCC, high BP, recent fall, CVD	University or higher qualifications, higher income, 1-13 alcoholic drinks	Having PHI, having a HCC, osteoporosis	University or higher qualifications, high income
High Specialist use	Having PHI, currently married, being an ex-smoker, recent fall, osteoporosis, CVD, cancer	Older age, university or higher qualifications, higher income, reported good health	Having PHI, high BP, osteoporosis, CVD, diabetes	Older age, speaking LOTE
High ED use	Older age, recent fall, CVD	Being female, working, having PHI, reporting good health	Older age, university or higher qualifications, working and being an ex-smoker, recent fall, osteoporosis, CVD, diabetes	Adequate physical activity
High Hosp use	Having PHI, recent fall, CVD, cancer		Having PHI, having a HCC, recent fall, CVD, diabetes	Being female, speaking LOTE, reporting good health

# Impact of social isolation and living alone on health service use



# Literature

- Prevalence of social isolation, loneliness and living alone among older people in Australia is estimated to be 17%, 19% and 25% respectively and increasing.
- Social isolation, living alone and loneliness are perceived as potential risk factors for poor health outcomes and inappropriate and/or inadequate service use.

# Aims

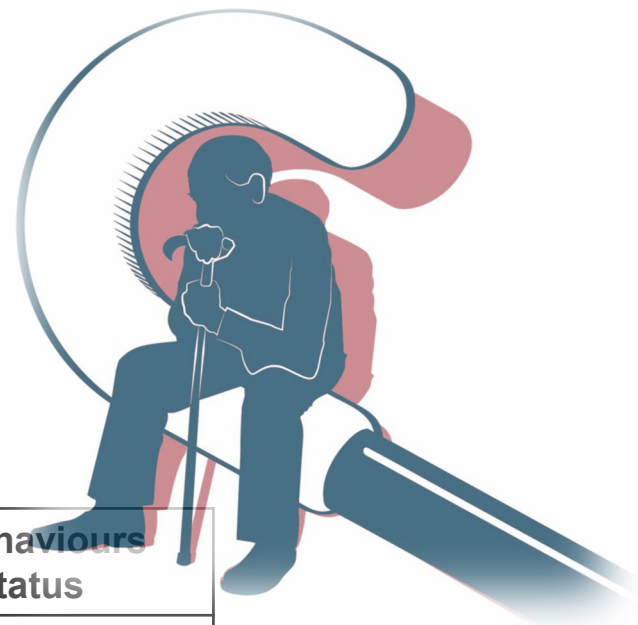
- Determine the factors associated with social isolation and living alone
- Determine impact of social isolation and living alone on health service use over time in Central and Eastern Sydney

# Methods

- Social, Economic and Environmental Factors(SEEF) questionnaire data linked to MBS claims, ED presentations, and hospitalisations for 6,176 people in CES.
- For those who were/were not socially isolated or did/did not live alone examined:
  - Demographics, social, health behaviours and health status
  - Health service use change over time
- Lowest quintile from the Duke Social Support Index were defined as socially isolated
- High GP defined as 8 plus visits per year

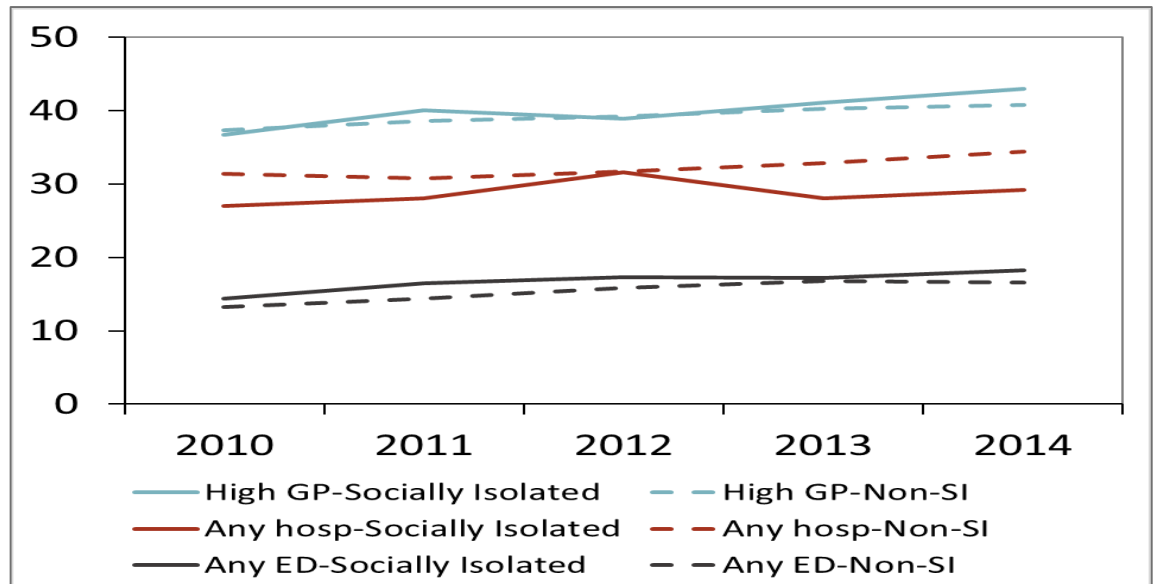


# Factors associated with social isolation and living alone

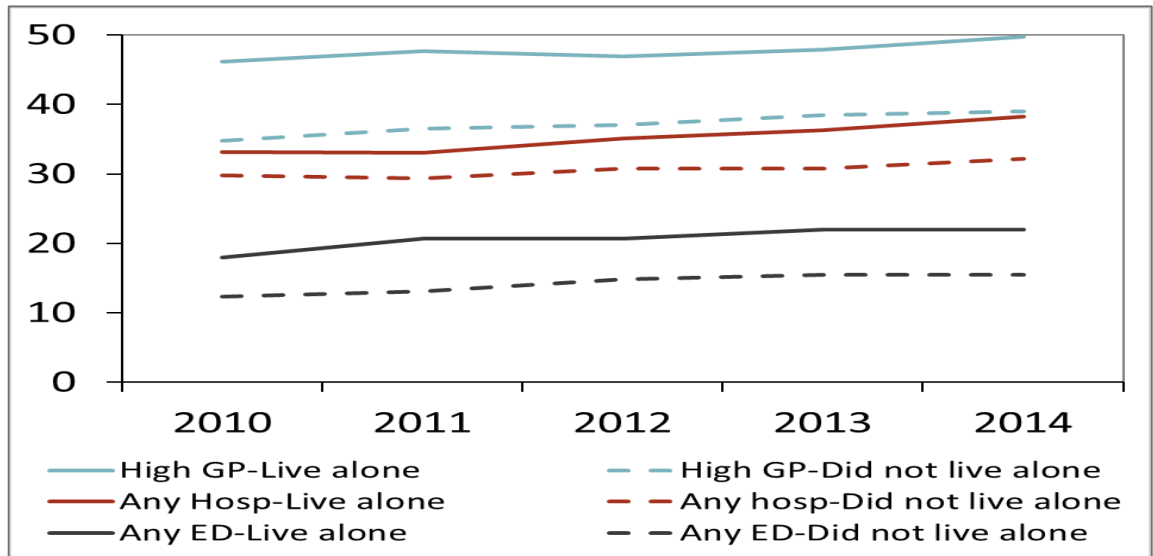


Parameter	n	%	Adj PRs	Demographics and social	Heath behaviours and status
<b>Socially isolated</b>	1213	19.6%	more likely	Work full-time	Current smoker, poor quality of life, heart disease, anxiety
			less likely	Female, have PHI, has children, lives alone	Adequate PA, adequate fruit/veg, drinks alcohol, needs help with daily activities
<b>Lives alone</b>	1263	20.5%	more likely	Being older, female, work full-time	Adequate PA, needs help with daily activities, asthma, cancer
			less likely	Higher income, has children, live in safe area	Adequate fruit/veg, drinks alcohol, treated for HBP, recent fall

## Health Service Use for people were/were not Socially isolated



## Health Service Use for people who did/did not Live alone



# Summary, challenges and opportunities



Source: Bureau of Health Information. Data Matters – Linking data to unlock information. The use of linked data in healthcare performance assessment. Sydney (NSW); BHI; 2015.

## Investigators

A/Prof Margo Barr (Principal), A/Prof Elizabeth Comino, A/Prof Ben Harris-Roxas, Prof Mark Harris, Mr A.Y.M. Alamgir Kabir, Ms Heidi Welberry (CPHCE), Prof John Hall (SPHCM), A/Prof Elizabeth Harris and A/Prof Jane Lloyd (HERDU and CPHCE), Ms Lou-Anne Blunden, Dr Ann-Marie Crozier, Ms Deb Donnelly (SLHD), Prof Fiona Blyth (USYD and SLHD), Ms Katherine Clinch, Mr Tony Jackson (SESLHD), Dr Brendan Goodna (CESPHN)

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The 45 and Up Study is managed by the Sax Institute in collaboration with major partner Cancer Council NSW; and partners: the National Heart Foundation of Australia (NSW Division); NSW Ministry of Health; NSW Government Family and Community Services – Ageing, Carers and the Disability Council NSW; and the Australian Red Cross Blood Service. We thank the many thousands of people participating in the 45 and Up Study. We also thank the Centre for Health Record Linkage for the data linkage.

## Further information

CPHCE website at <https://cphce.unsw.edu.au/research/health-system-integration-and-primary-health-care-development/central-and-eastern-sydney>



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