

institute of  
Health Policy  
& Management

# Health effects of a nursing home admission

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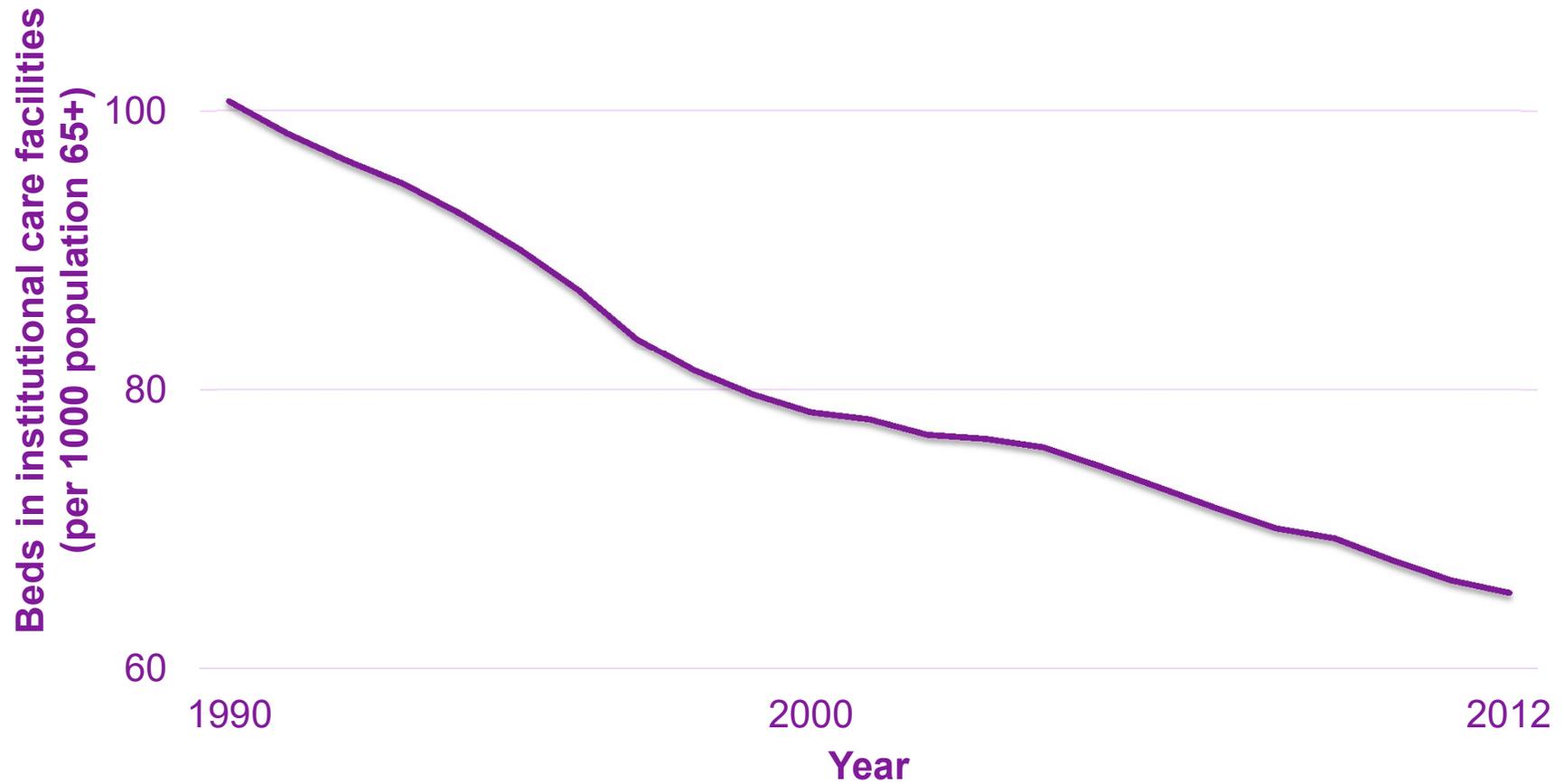
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## Nursing home admissions are major life events

- Is the target group better off by staying home? Or worse?
- What about the costs?
- Important policy issue:
  - Nursing home care costs up to 90000 euro per year;
  - 'Ageing in place' is a major trend.
- But very limited research because of:
  - Self-selection;
  - Data availability;
  - Incremental policy reforms.

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# Relevance (I): number of beds in nursing homes is declining



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## Why could there be an effect?

- Protecting environment;
- Staffed around the clock;
- Major life event;
- Less control → loss of identity;
- Worse living conditions.

→ Do you think it is positive or negative?

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## Empirical strategy

2 unique features of long-term care in NL:

- > 95% of formal care is publicly financed;
- An independent agency determines eligibility for publicly funded long-term care.

→ The assessors' discretionary power is a source of exogenous variation in nursing home admissions.

## Empirical strategy: discretionary power

Assessors are street-level bureaucrats (like police officers, judges, journal editors):

- Apply general rules to specific situations;
  - Interact directly with the public;
  - Require discretionary power: the freedom to make judgment calls.
- 
- Discretionary power means there will be variation in the interpretation of the rules because of variation in:
    - Personal traits;
    - Organizational culture;
    - Circumstances.

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## Discretionary power as an IV

Previously used to analyze the effect of:

- Foster care (Doyle 2007);
- Juvenile detention (Aizer and Doyle 2013);
- Disability insurance benefits (Maestas et al. 2013; French and Song 2013; Dahl et al. 2014; Autor et al. 2015a, 2015b);

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## Data (I)

- All eligibility applications handled by the eligibility assessment agency (CIZ):
  - 45,393 cases (43,746 individuals);
  - 2009-2013;
  - not-yet-admitted individuals aged 65+;
  - request for nursing home;
- 448 assessors (number of cases > 50).

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## Data (II): background characteristics of applicants

Linked to:

- Demographics:
  - Gender;
  - Foreign descent;
  - Partner status;
  - Children and distance to children.
- Income, assets, homeownership;
- Health status:
  - Hospital admissions;
  - Health care spending;
  - Medicine use.
- Mortality register

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## Applicants

- 15% of the applications is for nursing home care;
- 16% of requests for admission are overturned;
- 82% of the applicants eligible for a nursing home admission moves there; 40% of the home care recipients moves after re-applying.

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# The assessment procedure

1. Patients apply for long-term care:
  - Indicate their limitations and other relevant circumstances;
2. A screener reviews the application and either assigns it to an assessor or to a back-office employee:
  - Back office handles simple applications;
  - Assessors specialize, but only to some extent; allocation is random within the group.
3. An assessor reviews the application, gathers additional information, makes a decision;
4. The applicant may appeal.

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## Assessors decide on:

- The information that is collected and used (within pre-set boundaries);
- The type of care;
- The amount of care;
- The length of the eligibility period.

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# Methods

2SLS with:

- Outcome: mortality;
- Endogenous variable: eligibility for a nursing home admission;
- Instrument (for assessor  $j$ ):

$$\textit{Leniency}_j = \frac{\textit{Number of approvals}_j}{\textit{Number of cases}_j}$$

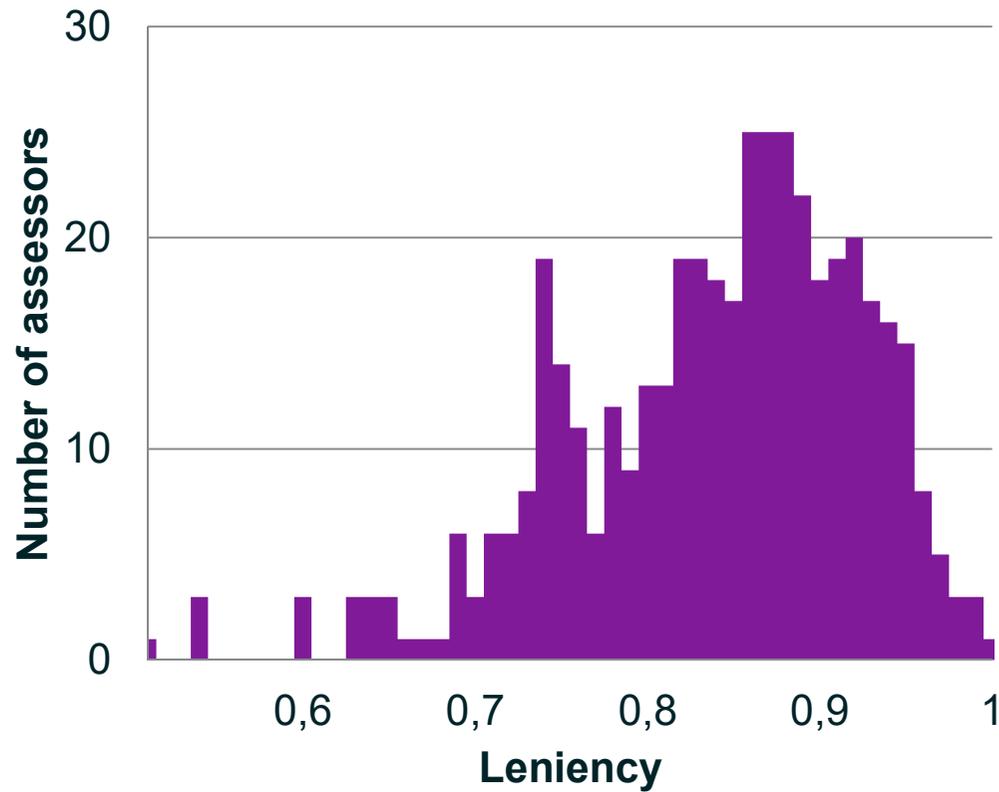
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# Interpretation

- Control group gets home care;
- Intention to treat:
  - Applicants eligible for nursing home care may stay home;
  - Applicants eligible for home care may re-apply;
  - Relevant: this is the major policy instrument.
- LATE, but compliers are most interesting anyway

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Assessors vary in their leniency.  
But applicants usually get what they want



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## Good instrument? Exogeneity

Testable predictions: if observed characteristics are uncorrelated with the instrument, then so may the unobservables.

Prerequisite: a representative set of observables.

1. Prediction: adding covariates does not change the  $b_{leniency}$ .  
Finding: Adding covariates does not affect  $b_{leniency}$
2. Prediction: the leniency measure is not associated with any observable characteristic.  
Finding: small deviations for a few variables (4 out of 169)

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## Good instrument? Monotonicity

- All applicants considered eligible by a strict assessor are also considered eligible by more lenient assessors;
  - Stricter assessors consider only the most frail elderly as eligible;
  - Applicants assessed by a stricter assessor indeed get admitted faster.

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## Effect of leniency on eligibility (first stage)

- Including covariates period, region and time changes  $\beta_{\text{leniency}}$ ; including information on health status, household composition and other characteristics does not.
- $\beta_{\text{leniency}} = 1.027$ ;
- 1 standard deviation stricter assessor  $\rightarrow$  a 7 percentage point lower probability of being eligible.
- Instrument is very strong by all regular metrics (p-values, F-tests, partial R-squared).

*Ezra*

## The compliers, who are they?

- OLS: nursing home admission increases mortality;
- OLS-IV difference may be the result of:
  - Selection bias;
  - Differences between full population and the group of compliers.
- Share of population at the margin =  $\beta_{\text{leniency}}^*$  \* range(leniency)  
→ 50%
- Probability that a complier is in the subgroup relative to the full population is given by:  $\beta_{\text{leniency, subgroup}} / \beta_{\text{leniency, population}}$

*Ezra*

## Effect of eligibility → Effect of an admission

What about **causal** effect of **admission** on health?

- Timing of admission is endogenous, even when eligibility decision is exogenous;
  - Depends on his/her health, household composition etc.
- Joint hazard model for admission and survival:
  - Leniency as covariate in admission model;
  - Eberwein et al. (1997);
  - Work in progress.....

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# Discussion

- The eligibility assessment is an important instrument to allocate the long-term care budget;
- Variation caused by discretionary power is a strong instrument;
- No effect of being eligible for a nursing home admission, small impact on medical care spending;
- Caution: Quality of life/well-being not taken into account.

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