Long-term care provision and hospital bed-blocking: Evidence from a policy reform

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Setting the stage

Long-term care (LTC):

- Care needed by individuals with some degree of functional dependency;
- Includes healthcare, rehabilitation, help with activities of daily living, and accommodation;
- Can be provided either in nursing homes or at home.

Hospital bed-blocking (aka delayed discharges):

- Occurs when a patient is medically ready to be discharged from a hospital but requires some form of aftercare, that is not readily available;
- The patient stays at the hospital until a safe discharge can be made.

This paper

Does the entry of LTC providers alleviate hospital bed-blocking?

Related literature:

- Bed-blocking and substitutability of LTC and acute hospital care
  - Forder (2009); Gaughan et al. (2015, 2017a,b); Costa-Font et al. (2018), among others.
  - Variation in LTC availability from a policy reform.
  - Separate impacts of nursing homes and home-care teams.

- Institutional background
- Data & methods
- Main results & model assumptions
- Conclusion

Institutional background

Hospital care in Portugal:

- Covered by the National Health System;
- Hospitals are paid prospectively in a DRG-type system;
- No incentive to prolong hospital stays.

LTC in Portugal:

- Before 2006: Not within the scope of the National Health System;
- Start of the public LTC Network in 2006;
- 2006 onward: Highly-subsidized, government-funded nursing homes (NH);
- 2008 onward: Teams providing home-care (HC); More on NH and HC
- To enter the LTC Network individuals need a referral; See scheme
- Individuals are matched with providers in their region of residence (ACES).

Data

Emergency inpatient admissions at public hospitals in Portugal 2000-2015:

- Outcome variable: length of stay (LOS) in days;
- Bed-blockers: proxied by information on "underlying social factors influencing health status and contact with health services" (See evolution)
    - Living alone;
    - Having no family to care;
    - Having inappropriate housing/other socioeconomic issues.
- Age, gender, comorbidities, DRG group, patients' residence, etc.;

Data on the roll-out of the public LTC network by the government:

- Entry month of nursing homes (NH) and home-care teams (HC) across ACES regions. (See map)

Empirical approach: DID

$$y_{it} = \alpha_1 BB_i + \alpha_2 PostHC_{mt} + \alpha_3 PostHC_{mt} \times BB_i + \alpha_4 PostNH_{mt}$$
$$+ \alpha_5 PostNH_{mt} \times BB_i + \delta X_i + \gamma_d + \gamma_m + \gamma_t + \varepsilon_{it},$$

y_{it}: LOS of patient i, admitted to the hospital in year t

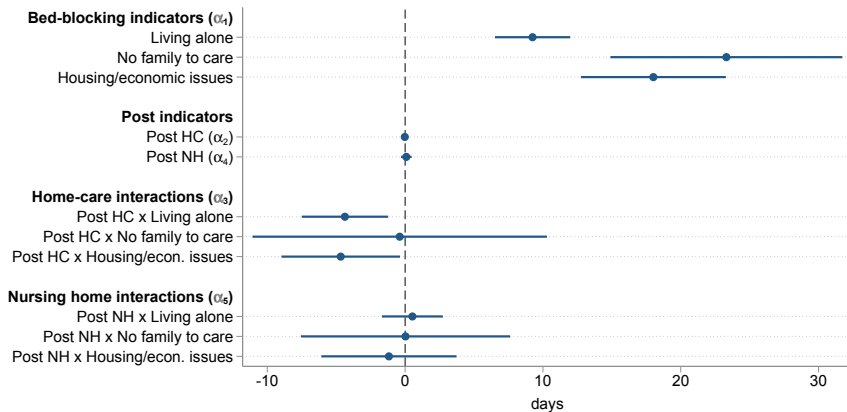$PostNH_{mt}$, $PostHC_{mt}$: indicators for periods after the first NH and HC enters region m

BB_i: vector of indicators for each type of bed-blocker

X_i: vector of indicators for demographics and comorbidities

γ_d, γ_m, γ_t: DRG, region, and year fixed-effects

ε_{it}: error term

Baseline results

Significant heterogeneity by medical diagnosis:

- HC reduce LOS of the average bed-blocker, who is admitted with respiratory conditions;
- NH reduce LOS of bed-blockers with high care needs, such as those admitted with stroke.

Parallel trend assumption

- In the absence of LTC entry, any trends in lengths of stay of bed-blockers and regular patients would, in expectation, have been similar across regions;
- Event-study specifications do not typically suggest pre-trends.
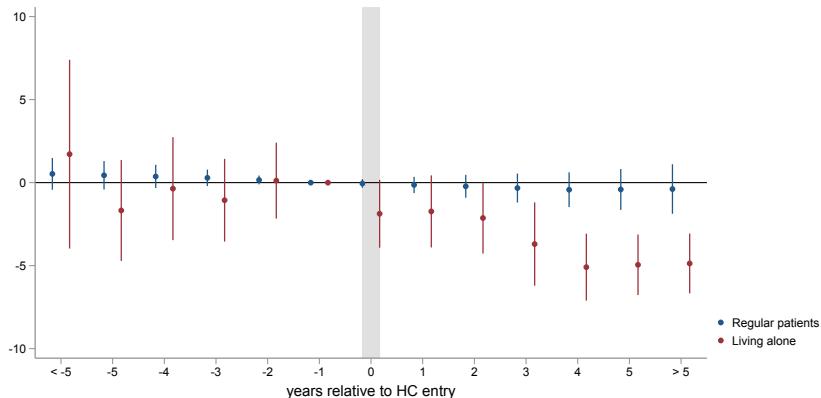
Exogeneity of LTC entry

- Treatment timing is not anticipated by outcomes in earlier periods;
- Violated if entry occurred first in regions where bed-blocking was a bigger concern, ie. higher share of bed-blockers
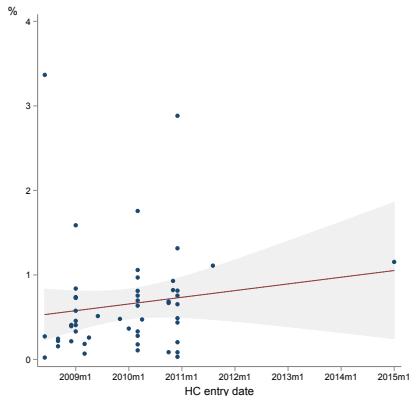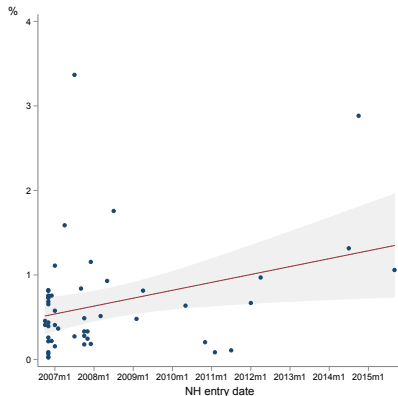
No compositional changes

- Stable composition of treatment and control groups;
- Violated if there are changes in coding frequency of bed-blocking categories upon the entry of the first NH and HC team.

$$BB_i^j = \rho_1 PostNH_{mt} + \rho_2 PostHC_{mt} + \gamma_m + \gamma_t + \epsilon_i$$

	Living alone	No family to care	Housing/ econ. issues
Post NH (ρ_1)	-0.0000	0.0001	-0.0005
	(0.0009)	(0.0003)	(0.0006)
Post HCBS (ρ_2)	0.0010	0.0001	0.0002
	(0.0006)	(0.0003)	(0.0005)
Observations	7,829,912	7,813,584	7,828,093

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conclusion

Does the entry of LTC providers in a region alleviate hospital bed-blocking?

- Yes, the entry of the first home-care team reduces LOS of bed-blockers by 4-5 days;
- The entry of the first nursing home reduces LOS of bed-blockers with high care needs only.

Does it matter? Impact on hospital costs:

- I estimate that bed-blocking imposes a cost-burden € M18.5 per year on hospitals;
- My baseline estimates imply a 30% reduction of this cost burden.

Thank you!

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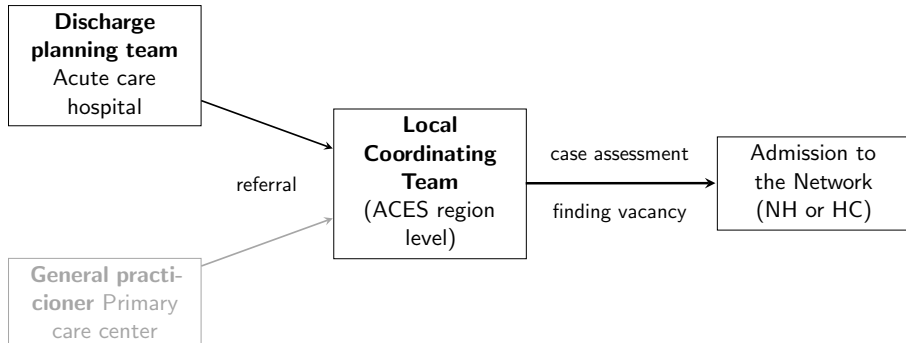
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References I

Joan Costa-Font, Sergi Jimenez-Martin, and Cristina Vilaplana. Does long-term care subsidization reduce hospital admissions and utilization? *Journal of Health Economics*, 58:43–66, 2018.

Julien Forder. Long-term care and hospital utilisation by older people: an analysis of substitution rates. *Health Economics*, 18:1322–1338, 2009.

James Gaughan, Hugh Gravelle, and Luigi Siciliani. Testing the bed-blocking hypothesis: Does nursing and care home supply reduce delayed hospital discharges? *Health Economics*, 24:32–44, 2015.

James Gaughan, Hugh Gravelle, Rita Santos, and Luigi Siciliani. Long-term care provision, hospital bed-blocking, and discharge destination for hip fracture and stroke patients. *International Journal of Health Economics and Management*, 17:311331, 2017a.

James Gaughan, Hugh Gravelle, and Luigi Siciliani. Delayed discharges and hospital type: Evidence from the English NHS. *Fiscal Studies*, 38(3): 495–519, 2017b.

Institutional setting, LTC Network

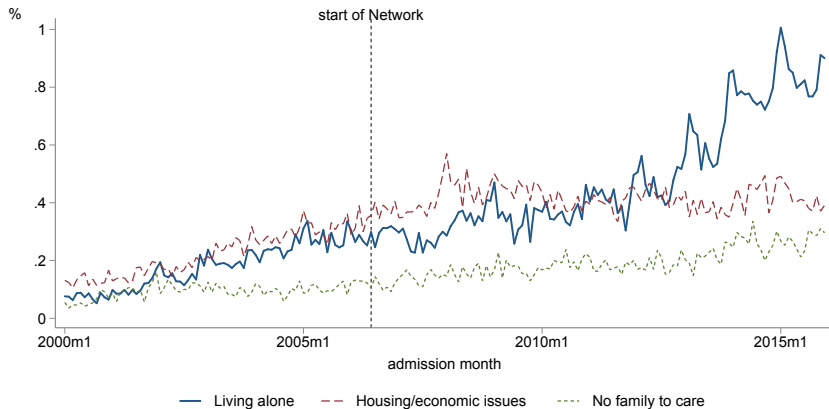|	**Nursing home** (NH)	**Home-care** (HC)
Start of roll-out	2006	2008
Providers	Private	Public
Funding	Public	Public
Setup	Government contracts with existing providers	Teams created in primary care centers
Price	Highly subsidized (means-tested) co-payments	Free
Services	24-hour medical care, rehabilitation, food, hygiene, accommodation, etc.	Preventive care, help with ADLs, food, hygiene, medication, etc.

Go back

Discharge planning team Acute care hospital

referral

Local Coordinating Team (ACES region level)

General practicioner Primary care center

case assessment

finding vacancy

Admission to the Network (NH or HC)

Go back

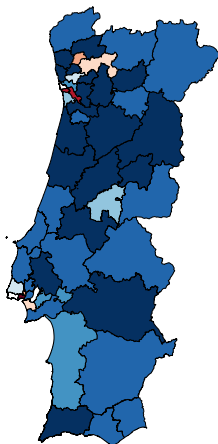# Evolution of share of potential bed-blockers

Entry of the first NH and HC team

Entry year of the NH facility

Entry year of the first HC team
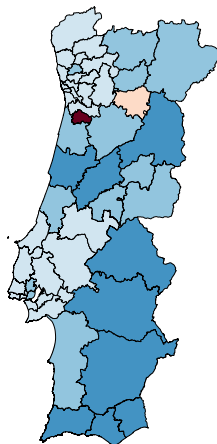
Legend: No data | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015

Go back

Inpatient data: Length of stay

$$y_{it} = \beta BB_i + \delta X_i + \gamma_d + \gamma_h + \gamma_t + \varepsilon_{it},$$

y_{it}: length of stay of patient i, admitted to the hospital year t

BB_i: vector of indicators for each type of potential bed-blocking

X_i: vector of indicators for demographics and comorbidities

$\gamma_d, \gamma_h, \gamma_t$: DRG, hospital, and year fixed-effects

ε_{it}: error term

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