

THE IMPACT OF HOSPITAL BED SUPPLY ON PATIENTS' LENGTH OF STAY

BRENDAN WALSH, SAMANTHA SMITH, MAEV-ANN WREN, JAMES
EIGHAN, SEÁN LYONS



The impact of hospital bed supply on patients' length of stay¹

*Brendan Walsh (ESRI, Trinity College Dublin), Samantha Smith (Trinity College Dublin), Maev-Ann Wren (ESRI, Trinity College Dublin), James Eighan (ESRI), Seán Lyons (ESRI, Trinity College Dublin)

ESRI Research Bulletins provide short summaries of work published by ESRI researchers and overviews of thematic areas covered by ESRI programmes of research. Bulletins are designed to be easily accessible to a wide readership.

INTRODUCTION

There have been large reductions in both the average time patients spend in hospital (length of stay) and hospital bed supply across many countries in recent years. However, less is understood about whether either of these trends has affected the other. While patients' length of stay may fall as hospitals become more efficient, funding cuts and demand pressures may also prompt quicker discharge from hospital in order to free up beds, especially when long waiting lists and busy Emergency Departments exist. During the Great Recession there were substantial cuts in Ireland's health expenditures, resulting in staff reductions and bed closures in hospitals. This study examined how changes to bed supply due to recession-induced healthcare expenditure changes may have affected length of stay for emergency inpatients in Ireland between 2010 and 2015.

DATA AND METHODS

This study used data from the Hospital In-Patient Enquiry (HIPE) system on over 2.2m emergency inpatients discharged from Irish public hospitals between 2010 and 2015. This information was linked to monthly data from the Health Service Executive (HSE) on the number of open hospital beds in each hospital. The study examined whether changes in bed supply, which occurred at different levels and times across hospitals, led to changes in the average length of stay. The analysis took into account patient-level and hospital-level factors including differences in hospital size.

¹ This Bulletin summarizes the findings from: Walsh, B., Smith, S., Wren, M-A., Eighan, J., and Lyons, S., "The impact of inpatient bed capacity on length of stay", *The European Health Economics*, 2021 doi: 0.1007/s10198-021-01373-2. Funding provided by the Health Research Board (Project HRA-HSR-2014-659) is gratefully acknowledged. We thank the Healthcare Pricing Office for facilitating access to the HIPE data and the HSE for providing data on hospital bed supply.

RESULTS

Average length of stay in hospital displayed a U-shape during this period, falling from 2010-2012 when bed supply cuts occurred, and increasing slightly from 2012-2015 when rising health expenditure increased bed supply in Irish hospitals once more. Statistical analyses undertaken at both the patient and hospital level found a large positive relationship between bed supply and length of stay; as bed supply decreased so too did length of stay. To highlight the size of the effect, we estimate that between 2010 and 2012 while length of stay fell by 6.4%, approximately 42% (2.7 percentage points) of this reduction was associated with declines in bed supply. The relationship between bed supply and length of stay was similar across groups regardless of their marital status, private bed status and severity of illness. When bed supply was restricted, there were also increases in bed occupancy rates, reductions in elective admissions and increases in waiting numbers for elective treatment. This suggests that bed supply reductions substantially restricted care that could be provided to patients during this period.

POLICY CONCLUSIONS

The results of this study are consistent with the view that restrictions in bed supply in Irish public hospitals between 2010 and 2015 led to reductions in average length of stay for emergency inpatients. While there may have been efficiency gains in this period, it does not seem that hospitals were able to provide equivalent levels of care with fewer resources (beds and staff). Policymakers have subsequently acknowledged, and acted upon, the apparent need for considerable investment in the supply of acute care beds through the *Health Service Capacity Review* (2018).

These findings strike a cautionary note about the use of length of stay as measure of hospital efficiency. Changes in length of stay should be understood in the context of a wider set of factors affecting a health system. A fall in the average length of stay may be indicative of the lack of resources or available bed supply as opposed to reduced demand for care or the shifting of care to other settings.

Finally, the effects of low bed supply are likely to go beyond shortening length of stay and affecting patient outcomes more generally. This has been most acutely seen during the Covid-19 pandemic. At the beginning of the pandemic, evidence showed Ireland had amongst the lowest per capita supply of hospital beds in general and critical care beds in particular, compared to European peers. This led to the temporary nationalisation of private hospitals, reductions in elective surgeries (and increases in waiting numbers), and a much greater emphasis on increasing hospital capacity.

Whitaker Square,
Sir John Rogerson's Quay,
Dublin 2
Telephone **+353 1 863 2000**
Email **admin@esri.ie**
Web **www.esri.ie**
Twitter **@ESRIDublin**