Patient Outcomes With Hospital-at-Home in Routine Care

Evidence from a Spatial Eligibility Boundary

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MAIN FINDING

Spatial regression discontinuity (RD) offers stronger protection against unmeasured selection, a distinct risk with hospital-at-home patient identification. Our analysis demonstrated lower acute mortality and fewer clinical orders, but higher readmission compared to previous propensity-score matching studies.

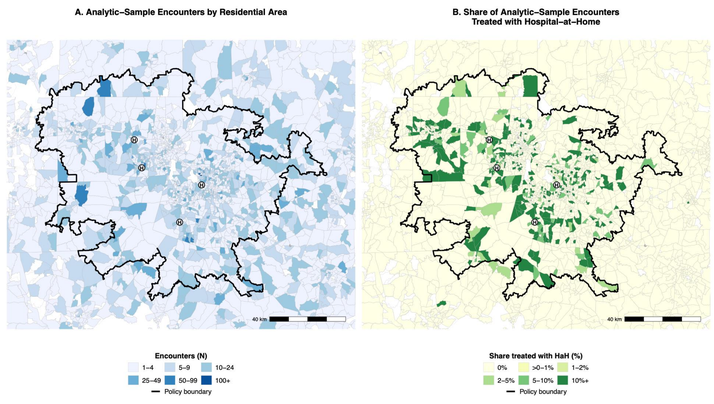
Research question

How does access to Hospital-at-Home (HaH) affect patient outcomes in routine care, and how do conclusions differ across evaluation methods?

Setting and data

58,109 acute-care encounters at four hospitals from September 2021 to February 2026

Adults aged 21+ with a reimbursing payor and in-state residence, in DRGs with at least three HaH discharges. Of these, 12,219 encounters lie within 10 km of the boundary.



Black outlines mark the fixed ZIP-code service-area boundary.

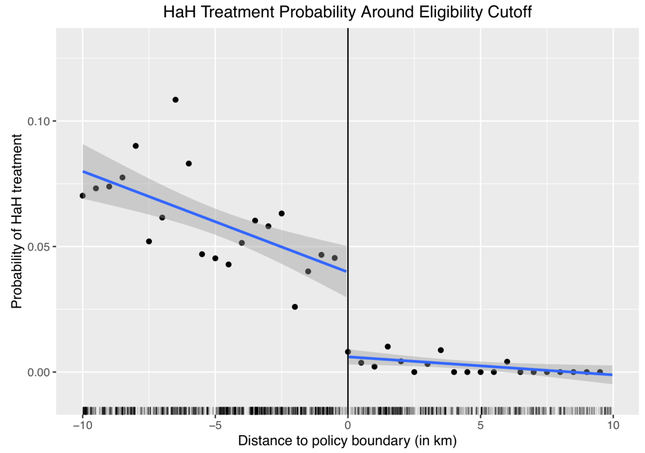
Why spatial regression discontinuity (RD)?

Compare patients just inside and outside the access boundary, before screening, offers, and acceptance. RD offers stronger protection against unmeasured selection than matching on observables.

Identification advantage	Tradeoff
Does not require all treatment confounders to be measured	Requires continuity at the boundary
Covariate balance supports the design	Balance cannot prove continuity or exclusion
Precise uptake jump (~4 pp) from an operational rule	Local effects in one system. Imprecise receipt estimates

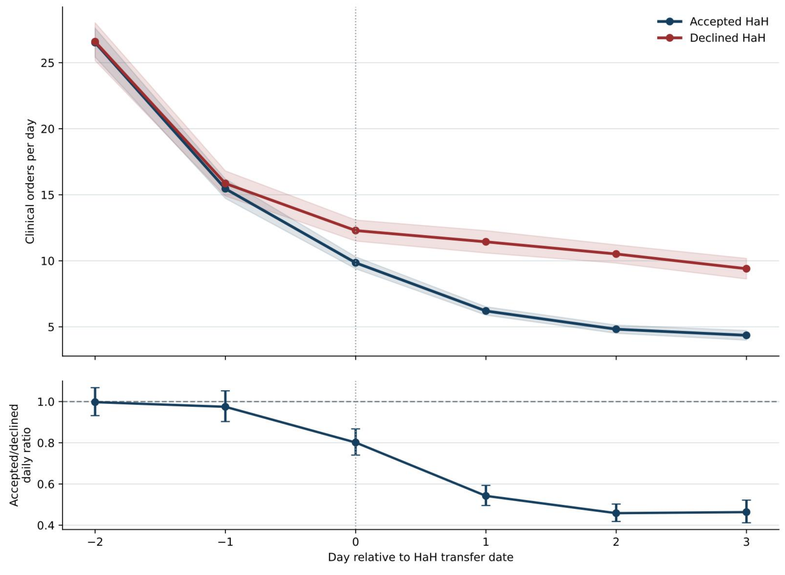
Local linear RD, MSE bandwidths, covariates, ZIP-clustered errors. Receipt effects scale outcome by uptake jumps under exclusion and monotonicity.

The eligibility boundary changes uptake



Negative distance denotes residence inside the boundary.

Clinical orders around HaH transfer



Day 0 is home transfer for recipients and the offer date for decliners. Similar pre-transfer ordering diverges afterward.

RD: 0.28 fewer imaging orders and 0.49 fewer consultations per encounter (both p < 0.05).

Main results: eligibility effects

Local changes at the boundary, regardless of HaH receipt.
Table 1 estimates in percentage points (pp), with 95% CIs.

Mortality during the acute-care episode

-1.7 percentage points
95% CI [-2.7, -0.7]

Inpatient readmission within 30 days

+5.2 percentage points
95% CI [2.8, 7.6]

Combined inpatient-or-ED revisits increase by 3.2 pp. The increase in revisits concentrates in inpatient care.

Clinical orders per encounter

-4.0 orders per encounter
95% CI [-8.3, 0.3]

Which findings change with the method?

Spatial RD access effects vs. adjusted HaH receipt among offered patients (matching / IPWRA)

Outcome	Spatial RD	Offered patients
During-stay mortality	Lower	Lower
Clinical orders	Fewer imaging / consultations	Fewer overall
30-day readmission	Higher	Lower, imprecise
Length of stay	-0.07 days (no clear effect)	+1.1 to +1.2 days
Falls	-0.4 pp (p < 0.10)	+1.3 to +1.4 pp
Institutional post-acute care	-1.1 pp (no clear effect)	-8.9 to -9.0 pp

The RD falls reduction is marginally significant. Offered-patient readmission estimates are not significant at 5%. Different populations and estimands mean divergence may reflect selection or effect heterogeneity.