Patients with hepatocellular carcinoma (HCC) residing in areas with high-utilization of potentially curative treatments had better survival than those in low-utilization areas, after controlling for clinical and tumor-related factors.

We found not only interstate variation but also within-state variation of utilizing potentially curative treatments (ranging from 0% in Paterson-Hackensack areas, New Jersey to 34.5% in Paducah areas, Kentucky).

Title: Geographic Variations of Potentially Curative Treatments for Hepatocellular Carcinoma in the United States: A SEER-Medicare Study

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BACKGROUND
• Hepatocellular carcinoma (HCC) is the dominant histologic type of liver cancer, affecting approximately 20,000 Americans annually. The incidence and mortality of HCC have been increasing in the United States for the past three decades.
• Evidence-based HCC management guidelines have been updated to take full advantage of current treatment options, including transplantation, surgical resection, radiofrequency ablation (RFA), percutaneous ethanol injection (PEI), trans-arterial chemoembolization (TACE), and chemotherapy.
• Potentially curative treatments (transplantation, surgical resection, RFA, and PEI) can markedly improve survivals among patients with early stage HCC.
• Despite the proven benefits of HCC interventions, geographic disparities persist in the utilization of potentially curative treatments. However, no study has linked utilization of potentially curative treatments to HCC survival at the regional level (hospital referral region, HRR).
• HRRs represent regional health care resources where most potentially curative treatments. There are 306 HRRs in the U.S. and their boundaries may cross state borders.

METHODS
• We established a population-based retrospective cohort study using the Surveillance Epidemiology and End Results (SEER)-Medicare database, and identified patients ≥66 years old with HCC diagnosed (Jan 2004 - Dec 2011), and with follow-up to the end of 2013.
• For each patient, we created a dichotomous indicator to assess whether one had any of the potentially curative treatments within 6 months of diagnosis.
• We calculated the proportion of patients undergoing potentially curative treatments for each HRR, then classified HRRs into quartiles, with quartile 1 representing the HRRs of the lowest proportion and quartile 4 the highest.
• We used t-tests for continuous variables and chi-square tests for categorical variables to compare differences in demographic data and clinical data between the highest and lowest quartiles.

RESULTS
• The median proportion of undergoing potentially curative treatments from the lowest-quartile areas to the highest-quartile areas was 6.7% (range: 0, 10.8%), 13.5% (11.1%, 16.2%), 17.4% (16.3%, 20.0%), and 24.5% (20.8%, 34.5%), respectively.
• HR (Q4 vs. Q1) = 0.78 (0.72-0.85) P-value<.01
• HR (Q3 vs. Q2) = 0.85 (0.79-0.92) P-value<.01
• HR (Q2 vs. Q1) = 0.84 (0.78-0.92) P-value<.01
• Lowest- vs. highest-utilization regions: Surgical resection (4.5% vs. 11.1%) RFA/PEI (2.5% vs. 12.3%)
• Proportions of receiving potentially curative treatment: 2.1% (New Mexico) vs. 28.5% (Hawaii)

DISCUSSION
• To increase the utilization of surgical resection and local ablation among eligible patients, especially in the low-utilization areas.
• Factors associated with the access to appropriate care, such as urban residence and high socioeconomic status — within-state variation
• New Mexico: lowest completion rate of high school education + poor economy + health professional shortage + sparsely populated state
• Hawaii: 3rd Richest State Per Capita + ideal health care + densely populated state
•Prompt clinical and policy actions are needed to reduce variations in treatment utilization

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