

Highly competitive geographic areas have a higher annual number of liver transplants

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The annual number of liver transplantation operations increases when transplantation centers are concentrated in geographic areas that are highly competitive, according to findings from a new study published as an "article in press" in the *Journal of the American College of Surgeons (JACS)*. The study, believed to be the first one to demonstrate a link between the volume of liver transplantation and competition for organs and geographic density, will appear in the print edition of the Journal this summer.

Researchers from the Department of Surgery and the Center for Surgery and Public Health at Brigham and Women's Hospital, Boston, retrospectively assessed the effects of market competition and liver transplant center density on the number and outcomes of 53,156 adult liver transplantation operations performed across the United States between 2003 and 2012.

"As we have shown in other studies that apply economic theory and analysis to clinical questions, hospitals and surgeons in competitive markets do things that are more cutting edge and innovative, and that benefit patients by increasing access to advanced techniques and services. But classic market competitive analysis does not take geography into consideration, and in medicine, hospital location and distance traveled to that location can affect the care patients receive and their outcomes," according to study coauthor and associate professor of surgery at Harvard Medical School Louis L. Nguyen, MD, MBA, MPH, FACS.

"This study merges data about the market share and geographic distribution of liver transplantation centers to better understand the way they may affect the use of scarce resources and contribute to the uneven distribution of donor organs in the U.S.," Dr. Nguyen said.

Liver transplantation is a life-saving operation for many patients who have end-stage liver disease because of hepatitis, primary liver cancer, alcoholism, or hepatitis associated with obesity. The five-year survival rate for patients who undergo the procedure is 75 to 80 percent, according to lead author and surgical resident Joel T. Adler, MD, MPH. However, there are wide geographic disparities in access to [liver transplantation](#). More than 1,500 candidates for the operation die each year waiting for a liver transplant and another 1,500 are removed from waiting lists because they are considered to be too ill to have the transplant procedure, according to the Organ Procurement and Transplantation Network (OPTN), a division of the Health Resources and Services Administration.

The researchers collected information about liver transplant centers in each of the country's 45 donation service areas (DSAs) with [liver transplant](#) centers. DSAs define the areas in which organs are allocated and donated, explained Dr. Adler. In addition to clinical variables associated with patient outcomes, the study assessed two aspects of economic performance—the degree of market competitiveness and the concentration of transplantation centers, or density, in each DSA.

As a result of sophisticated statistical regressions, the annual number of liver transplantations was higher in more competitive DSAs—the incidence rate ratio (IRR) was 1.36 and P value was 0.02—and transplant center density was linked with market competition (P

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