



Changes in Health Care Financing & Organization (HCFO)

findings brief

Changes in Emergency Department Access Between 2001 and 2005 Among General and Vulnerable Populations

key findings

- 11.4 million people faced some degree of deterioration in geographic access to emergency care between 2001 and 2005.
- Residents in rural communities have poorer access to emergency departments at baseline and experienced a greater decline in emergency department access than those living in urban communities between 2001 and 2005.
- Deteriorating access to emergency departments is more likely to occur in communities with economic hardship and high shares of Hispanic populations, as well as in rural areas that are part of a designated health professional shortage area.

While emergency departments (EDs) were originally designed for urgent and emergent care, they have become an increasingly important part of the health care safety net in the United States. Between 1995 and 2005, ED visits in the United States increased by 20 percent to 115 million.

In this same time period, the number of EDs in the United States decreased by 23 percent. The decreased ED capacity and increase utilization has resulted in worse ED access, such as overcrowding and long waiting times. In addition, data has shown that vulnerable populations, such as the poor, minorities, and the elderly, have higher ED utilization rates than the general population.

As part of a HCFO funded study, Yu-Chu Shen, Ph.D., of the Naval Postgraduate School Graduate School of Business, and Renee Hsia, M.D., M.Sc., of University of California, San Francisco, examined how geographic access to EDs, measured by driving time, changed from 2001 to 2005.¹ While there are many potential obstacles to

receiving emergency care, including financial and language barriers, the researchers focused on geographic access in light of the important relationship between time to medical intervention and a patient's ultimate health outcome.

The researchers further explored whether vulnerable populations were more susceptible to these changes. They defined vulnerable populations as those who are economically disadvantaged, a racial or ethnic minority, foreign-born, or elderly. In addition, the researchers assessed whether other market- and area-level factors are associated with declined geographic access to the ED.

“Our goal for this analysis is to understand how population access to ED has changed over time, especially [among] vulnerable populations who have heavier reliance on ED for medical care; as well as exploring the relationship between other system level factors and ED access change.” said Dr. Shen.



Robert Wood Johnson Foundation

Changes in Health Care Financing and Organization is a national program of the Robert Wood Johnson Foundation administered by AcademyHealth.

Methods

Community characteristics at the zip code level (such as demographics and economic conditions) were obtained from the 2000 U.S. Census. Information on ED availability, hospital market characteristics (such as ownership and teaching status), and county-level health care market data (such as number of primary care physicians and number of federally qualified health clinics) were obtained through a combination of the American Hospital Association (AHA) Annual Survey and the 2005 Area Resource File. Using zip-code level data from the Census and geographical coordinates of hospital's heliport or physical address, the researchers identified the closest ED for each year and each community by comparing driving time between each community's population center and all operating EDs. The researchers then determined whether the driving times between 2001 and 2005 (1) did not increase, (2) increased by less than 10 minutes, or (3) increased by 10 minutes or more.

The researchers estimated a multinomial logit model to examine the relative risks that access to the nearest ED had changed according to the three categories defined above. The researchers examined each community's economic condition, share of vulnerable populations, primary care market characteristics, and hospital market characteristics. They assessed economic conditions using a community's income distribution and unemployment rate. The vulnerable populations were comprised of African Americans, White Hispanics and other non-White populations, as well as foreign-born individuals and those over the age of 65. Primary care market characteristics included the total general physicians per capita, the number of federally qualified health centers and rural clinics, and whether a community was designated as a health professional shortage area (HPSA). Finally, the researchers examined a variety of hospital market characteristics at the baseline, including the number of EDs, the presence of for-profit, government, teach-

ing, and critical access hospitals within a hospital market (defined as within 15-mile radius). The regression model was weighted by the population of each community to obtain population-based estimates of the effect.

Results

The population among the communities examined by the researchers represented approximately 272 million individuals. At baseline (2001), urban populations had better access to EDs than the rural population, as only 5 percent of urban residents live more than a 30-minute drive from an ED, compared to 24 percent of residents in rural communities.

Between 2001 and 2005, the researchers found that 95 percent of the population experienced no change or improvement in their ED access. The 5 percent who experienced a decrease in their geographic access represented approximately 11.4 million individuals. Regionally, southern states experienced a greater decline in geographic access, with the Midwest experiencing the least decline; and rural communities faced worse decline in ED access than urban communities.

Across both urban and rural areas, communities that experienced increased driving time to the nearest ED by at least 10 minutes tended to be of a lower socioeconomic status (lower income and higher unemployment rate), have a higher percentage of Hispanic population, and a larger presence of for-profit hospitals in the hospital market. The study also showed that urban communities with poorer access to EDs at baseline experienced increased disparity in ED access over time. Rural communities that were in an HSPA county at the baseline were also more likely to experience a decrease in access. On the other hand, greater numbers of federally qualified health centers and rural clinics were associated with a smaller risk of deteriorating ED access in the rural communities, suggesting that the government's effort to address the

health care need in these areas might have a spillover effect on ED access.

Limitations

The researchers acknowledge that their study only examined one type of access to emergency department care—geographic access. While geographic access is an important factor, especially for time-sensitive medical conditions, other factors contribute to ED access problems.

It is possible that the results underestimated the size of the affected population because the researchers could not account for those EDs that experience temporary closure due to ambulance diversion (where EDs are temporarily closed to ambulance traffic due to overcrowding or lack of available resources). In addition, two individuals, particularly in rural areas, could be in the same zip code but travel different distances to reach the same ED.

The use of self-reported AHA survey data to identify the nearest EDs is subject to reporting errors. As long as errors do not systematically vary by the community characteristics examined, the estimated effects should not be biased. Finally, rural areas are defined as zip codes outside the metropolitan statistical areas (MSAs). In some cases, this definition mixes highly urbanized and highly rural regions together, so the observed gap in health care resources between urban and rural could potentially be larger.

Policy Discussion

Findings from this study tell a number of stories. While the researchers found ED access deterioration only affected a small percentage of the communities—representing approximately 11.4 million people—the individuals most affected were those who are most vulnerable to the access change. The poor and minority populations have a higher utilization rate of EDs than the general population, yet these same populations also experienced a worse decline in access between 2001 and 2005.

In addition, the study identified several system level factors associated with higher odds of deteriorating ED access, such as presence of for-profit hospitals in the market and location in HPSA, which showed that government effort to strengthen primary care infrastructure might have beneficial spillover effect in the area's ED access.

This study also demonstrated that, for areas with poor ED access at baseline (such as urban communities with limited operating EDs and rural areas), the gap in ED access is growing compared to areas with better baseline ED access.

“Losing a nearby ED is not necessarily detrimental if the farther ED can absorb the patient load and have a better quality,” said Dr. Shen. “However, what our results point to is that equity in access might be

jeopardized in the current market- and result-driven environment. There is a need for policies that address the decline in ED access among vulnerable populations and the challenges they face in accessing emergency care. Policymaking bodies need to be mindful of the increasing gap in access disparity for certain type of communities.”

Conclusion

This study offers a unique view of the continued evolution of ED care from a population access perspective. While the decline in access affects only a small percentage of the population, Dr. Shen voiced her concern that “worse deterioration in access and greater disparities among those affected is likely to continue without policy intervention.” With more than 11 million people facing some degree of deterioration in access to emergency care, further research is warranted to determine and

quantify whether such deteriorating geographic access affects patient outcomes, especially for time-sensitive conditions.

For More Information

Contact Yu-Chu Shen, Ph.D., at yshen@nps.edu.

About the Author

Christina Zimmerman is a research assistant for the HCFO program. She can be reached at 202-292-6736 or christina.zimmerman@academyhealth.org.

Endnotes

- 1 For additional details on the analysis and complete findings see Shen, Y. and R. Hsia. “Changes in Emergency Department Access Between 2001 and 2005 Among General and Vulnerable Populations,” *American Journal of Public Health*, Vol. 100, No. 8, August 2010, pp.1462-1469.