DESIGN FOR HEALTH

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Key Questions:

Healthcare Access

Metropolitan Design Center

Version 1.0

DESIGN FOR HEALTH is a collaboration between the University of Minnesota and Blue Cross and Blue Shield of Minnesota that serves to bridge the gap between the emerging research base on community design and healthy living with the every-day realities of local government planning. This Healthcare Access Key Question is part of a series with a focus on identifying and interpreting evidence-based research linking public health with planning.

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Overview

The issue of healthcare is one of the most talked about issues in the U.S. and access to healthcare is an important concern in many communities. Since 1946 , with the passing of the Hospital Survey and Construction Act, known as the Hill-Burton Act, federal grants have been provided to improve healthcare facilities and ensure the equal treatment of people without discrimination based on "race, color, national origin, creed, or any other ground unrelated to the individual's need for the service or the availability of the needed service in the facility" (U.S. Department of Health and Human Services 2007). The act ensured that individuals were provided emergency care despite their financial circumstances. It also provided grant funds for hospital construction in order to achieve a standard of 4.5 beds per 1000 persons, with priority for projects that had "relative need of different areas lacking adequate facilities of various types," and the construction of hospitals and facilities "serving areas with relatively small financial resources and, at the option of the State, rural communities" (Hospital Survey and Construction Act 1946).

The existence of a healthcare facility in a community, however, does not always equate with it being accessible to the broader population in a particular community. Many factors affect the degree to which a given facility is used, including but not limited to:

- the availability and relationship to insurance (e.g., in network versus out of network coverage),
- the range of generalized versus specialized services that are provided,
- personal preferences for a doctor, and
- whether it is accessible from a transportation perspective.

While planners may be able to address the fourth consideration through improving transportation-related services and enhancing the population's knowledge of what types of facilities are located where, they have little control over the other three access issues noted above. This issue of transportation is important, however, and recent research on transportation access to healthcare draws on methods from geography to address facilities planning and accessibility. Importantly, facilities aimed at preventive medicine and those focused on acute care may have different facility-siting strategies.

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This bus stop in front of Abbott Northwestern Hospital in Minneapolis, MN, provides access to populations who rely on transit.

Things for certain (or semi-certain)

- The elderly have the highest rate of hospital admission and emergency-room use, so their access to healthcare is critical (Lovett et al. 2002)

  Example: Access to health services—both geographic access and access to a particular system—and revealed accessibility (use of services) were key factors in a study of elderly healthcare in Illinois. The research found that 16.6 percent of the state's elderly population resided in an area beyond a 20-mile radius of hospitals. However, 60 percent of aged populations within metropolitan areas (defined as MSAs or metropolitan statistical areas) were within 3.8 miles of senior facilities while 80 percent of the population outside the MSA were more than 11.3 miles from geriatric facilities (using Euclidian straight-line distances). This calls for greater attention to isolated, rural elderly populations (Lovett et al. 2002).

- Healthcare facility planning can benefit from geographic information system (GIS) optimization modeling, which determines the best location, capacity and cost of new facilities. This is a common decision support tool for forecasting new hospital locations and determining underserved areas. Planners already use GIS data for other tasks and could use it to examine access to healthcare facilities (from clinics to hospitals).

  Example: The Trauma Resource Allocation Model for Ambulances and Hospitals (TRAMAH) is a nationwide optimization modeling project created by the University of Pennsylvania and Johns Hopkins University to help reduce the 40 percent of unnecessary deaths due to insufficient access to well-organized trauma systems. This study also found that there were surpluses of services in urban areas and an overall lack of these services for rural areas (University of Pennsylvania 2007).

  Example: Integrating patient discharge data, patient address ranges and Census data (TIGER/Line files) into ArcInfo GIS allowed researchers to study hospital transport networks in the Charlotte and Mecklenburg County region of North Carolina. By measuring and simulating different scenarios of supply (facility capacity), demand (hospital utilization) and impedance (patient travel costs) for accessibility, and resource allocation, the least cost path could be found. This approach was useful in simulations of doubling demand and special service allocation, such as obstetrics units (Walsh et al. 1997).

Things up in the air

- Accessibility to primary care depends on the location of health centers, doctors' offices and hospitals relative to transit stops and car travel times. While it is difficult to disentangle cause and effect, some people live in rural areas far from healthcare facilities that could provide either preventive or acute care, though these numbers are small. One study, however, found this population is more likely to have doctors it considers to be the usual sources of care than in metropolitan areas (Larson and Fleishman 2003).

  Further, people with cars and access to many doctors do not necessarily use hospitals more—in fact one study found people with cars and many nearby physicians use hospitals (acute-care facilities) less (Arcury, Gesler, et al. 2005). Overall, these and other studies discussed below illustrate the complexity of understanding how people use different kinds of services (e.g., preventive and acute care), considering the interactions among factors such as income, demographics and transportation access. The various approaches to measurement and the interactions among the different factors make it difficult to identify specific improvements to enhance healthcare access.

  Example: In a U.K. study of East Anglia, a GIS analysis of transit options used car ownership, road network, travel speeds, and bus and community transport information as indicators of accessibility in different population densities. Using a 800 m walking buffer to and from bus stops, and straight-line distances on roadways, they found 5 percent of the population lived in areas without bus service and more than 10 minutes away from facilities by car. They also found that, "the highest proportions of people without a car and aged 75 years and over, the most materially deprived populations and the highest values of age-standardized limiting long-term illness all occurred in the parishes with no bus service and no community transport" (Lovett et al. 2002, 108).

Example: In a study of rural Appalachian communities in North Carolina, researchers "found that size of activity space, as well as distance to a doctor, was not a significant predictor of number of visits to a physician over a 12-month period," similar to a previous study by Nemet and Bailey (2000). This could, however, be due to predisposing factors like age (elderly) and gender (women) in individuals, whose activity patterns are small, but their amounts of care are large.

Example: In a study of rural and urban disparities in healthcare, a nationwide Medical Expenditure Panel Survey found that when broken down into Urban Influence Codes (metro areas >1 million, < 1 million; adjacent towns > 10,000, < 10,000; rural towns > 2,500 and < 2,5000) the most rural areas, concentrated primarily in Midwest states, had significantly fewer outpatient visits. This was despite having 23.1 percent of the population in poor or fair health, 52.8 percent with priority conditions and twice the odds of reporting a usual source of care physician than larger populations. These groups also averaged two fewer annual doctor visits overall (Larson and Fleishman 2003).

- Acute care findings are mixed based on different predisposing, enabling and need factors. Predisposing factors (e.g., distance and mobility) and enabling factors (e.g., transportation, income and insurance access), interact with need factors (e.g., health status and preventive behavior) to give mixed results in studies about trauma service access (Arcury, Gelser, et al. 2005).

  Example: In a study of rural North Carolina, multivariate analysis of the results of a healthcare location and utilization survey found that, "distance is not significant in determining the number of chronic care and acute care visits" (Arcury, Gesler et al. 2005, 149). The number of primary care delivery points within participants' routine activity space, as well as number of cars in a household, were negatively related to the number of acute care visits, which may support the use of good preventive care. Income, poor physical health and chronic conditions, however, were correlated with more acute care visits (Arcury, Gesler, et al. 2005).

  Example: In the same study of rural North Carolina but reported in a separate research article, findings suggest that having a driver's license or a friend or relative to routinely provide transportation increased the number of chronic and regular care visits to health facilities, when controlling for personal and health characteristics. In the study, a small number of participants also had access to public transportation to travel to health facilities. These individuals had even higher numbers of chronic care visits (Arcury, Preisser, et al. 2005, 35).

  Example: Even when public transportation is available, there may be various barriers for people to use it in accessing healthcare facilities. In a small study of 20 pregnant, low-income women in Detroit who were users of the Healthy Baby Service, a door-to-door van service to facilitate better access to prenatal care, a number of concerns were raised about public transportation. These concerns included, "cost, unreliable bus schedules, long traveling times, bad weather conditions, and safety at bus stops, "which then became deterrents in getting sufficient prenatal care" (McCray 2000, 23-24).

  Example: Children might also be affected by lack of access to healthcare. In addition to barriers to healthcare, such as language issues, long waits in physicians' offices and lack of insurance, transportation problems can be a factor in decisions by parents of Latino children to not bring their child in for medical visits. These findings are based on a cross-sectional survey of parents of 203 children visiting a Latino pediatric clinic in a one year period at an inner city hospital (Flores et al. 1998, 1122).

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