



Access to Health Care Services in Rural Maine

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Introduction

The health care industry has often been cited as one of the fastest growing in Maine as in the rest of the US. If this is the case, where does Maine stand in terms of accessibility of hospitals and health services in rural areas? The central question of this study is "What are the primary barriers to improving accessibility and availability to high quality health care services for the people of rural Maine?"



Motivation

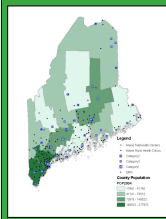
Cardiovascular disease is the leading cause of death in Maine, causing 4 out of every 10 deaths in the state. The standard driving time to transport a person having a heart attack to a hospital is 30 minutes. The motivation for this study was to examine if health services were geographically accessible and available to rural areas.



The term **health care availability** is defined as, "what resources are available and in what amount for delivering an intervention". Health care availability is related to, "the capacity of a health system to service the size of the target population. **Health care accessibility** measures, "the geographic access of resources". In some cases, health care resources might be available but geographic distance may be a barrier to access.

Methods

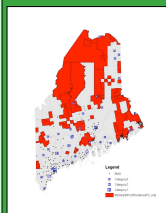
The project began with the creation of a geodatabase using ESRI Arc GIS 9.3 software. Examining health related data using a GIS allowed for the identification of the geographic range of a health facility catchment area (US DHHS), which is a term the federal government uses to represent a population potentially or actually visiting a health care facility for services.



Population and Accessibility

Data files were collected and imported from Maine Office of GIS (MEGIS) for Maine county and town boundaries, hospitals, and EMS rescue stations. Maine population data from MEGIS was imported and symbolized into four classes. Hospital features were symbolized according to size/capacity (number of beds) and type of facility (critical care). Telehealth centers and rural health clinics datasets from U.S. Dept. Of Health and Human Services (U.S. DHHS) were collected and imported.

The above map illustrates that in areas of smaller population there are fewer, smaller capacity hospitals. It is important to note, more rural areas do not have access to the same level of critical care facilities as central and southern Maine.



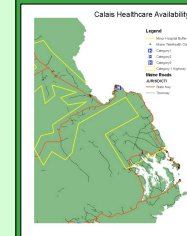
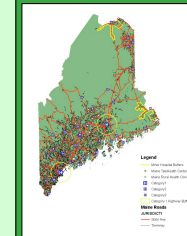
Health Care Availability

To visualize available health services around the state, a Maine county boundary file (MEGIS) was used as a base map. Health Professional Shortage and Medically Underserved Areas data (U.S. DHHS) were collected and imported. A spatial intersection was performed on these two vector files to visualize areas of the state in most need of improved health services. Features from the above population map were added to layout to visualize locations of facilities and buffers were added for critical care hospitals.

Medically underserved areas of Maine are concentrated primarily in northwestern and northeastern regions, but there are scattered towns throughout the state in need of improved health services.

Results and Discussion

Critical Care in Rural Maine



In order to evaluate accessibility of critical care services, drive times based on road class were estimated. A base map was created using the Maine county file (MEGIS). EMS Rescue unit and the modified Hospital point were added. A road class line file was imported and symbolized by highway (55 mph) or town road (35 mph). Polygon buffers were created for hospitals using a 30 minute drive time.

For example in the Calais region, people residing in the outlying areas (beyond buffer) cannot reach critical care hospitals within the 30 minute standard drive time.

Conclusions and Future Work

This study hopes to illustrate that northwestern and northeastern areas of Maine are critically underserved in health care services. There are also areas where people cannot safely reach a hospital in adequate time if in need of critical care.



Literature and Acknowledgements

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Dolloff, Aimee. "Healthcare's rural realities." *UMaine Today* Jan/Feb 2009: 14-15.

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