



Cell phone and Broadband Connectivity throughout Maine

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Introduction

This project explores cell phone signal and broadband coverage throughout the State of Maine. The main objective of this study is to identify populated areas and evaluate if they have adequate coverage.

This project will identify areas within the state that need greater access to these important telecommunication resources to improve public safety and health in rural Maine.



Motivation

Public Safety

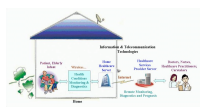
This study hopes to provide state leaders with more detailed information of the areas that need better access to these types of essential services.



Gaps in communication coverage are potentially a safety hazard. Individuals having a auto breakdown or an accident, often need to use their cell phone to get assistance, they will need adequate coverage to do so.

Public Health

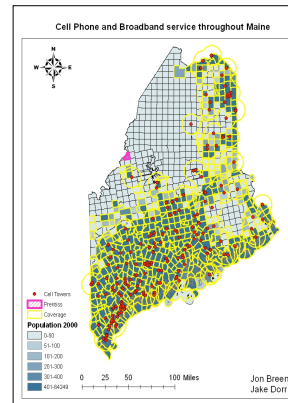
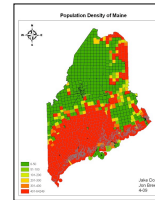
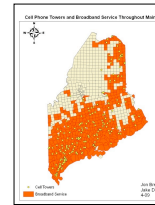
This study also hopes to bring attention to the benefits of health care services through telemedicine, especially for rural communities. Telemedicine is a process where medical information is transferred via telephone, the internet or other technological networks. This technology allows health professionals to consult with one another, as well as conduct remote medical procedures or examinations.



Methods

A geodatabase was created for this project using ESRI Arc GIS 9.3. Tiger line files for Maine roads were downloaded from the U.S. Census Bureau, merged into one large shape file and imported into the project. A base map was created by downloading and importing shape files for cell phone towers (point) and broadband coverage (polygon) from Maine Office of GIS (MEGIS).

In order to evaluate population density, a shape file containing population data by town was also imported from MEGIS.



A 10 mile buffer was created for the cell phone layer to estimate signal range. This value was given as an average range for a commercial cell phone tower in the literature.

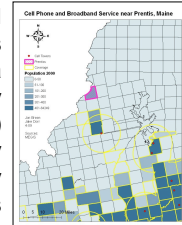


The broadband and cell phone (with buffers) layers were joined with union and the new layer was added to the project. Finally, a selection by location to identified all towns with more than 50 residents outside of the new broadband and cell phone signal coverage areas. The symbolization and color were then adjusted to be ensure clarity for the viewer.

Results and Discussion

The preliminary results of the study found that only the Town of Prentiss located in western Maine seems to be in need of improved cell phone and broadband access based on publicly available data.

This is a surprising finding, considering that many Maine citizens experience frustration in acquiring a cell phone signal while driving around rural areas of the state. However, the data used was only available at very coarse level (did or did not have) and did not account for many factors that could alter the quality or the costs of service that is available.



Conclusions and Future Work

Based on our data, this study found that most of the populated areas in Maine are provided with cell phone and broadband coverage at least at a basic level. Future work could include getting finer scale data, including elevation differences along with signal interruptions to get better estimates of cell phone tower signal strength along road networks and near rural health clinics.



Literature and Acknowledgements

Maine Office of Innovation (2009) *Maine Innovation Index*. Maine Department of Economic and Community Development. Augusta, ME.

We would like to thank Ray Voyer, Ms. Doore, and Mrs. Chernosky for their support during this project.