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Assessing Telehealth in Maine using GIS

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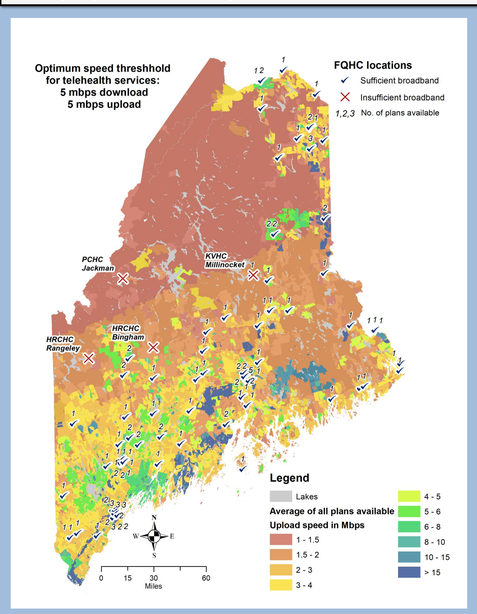
Introduction

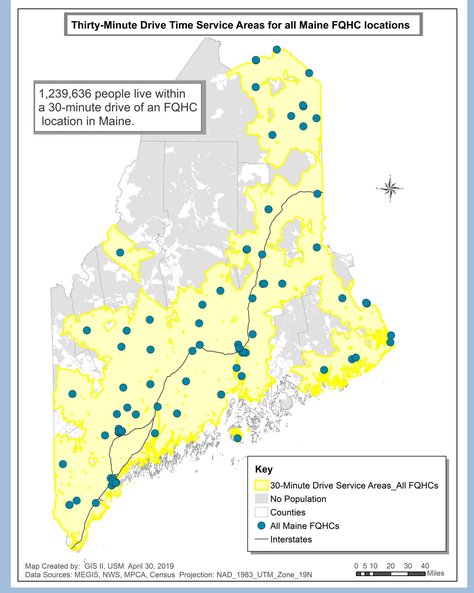
- Telehealth is the delivery of health services remotely through electronic or telecommunication mediums
- The current state of Telehealth coverage in Maine was examined
- Federally Qualified Health Centers (FQHCs) specifically were studied
- Data on FQHCs was obtained from the client, the Maine Primary Care Association
- Services offered at individual FQHCs were examined
- Maps were created using Geographic Information System (GIS) software
- Healthcare provider shortage areas and other areas with demographics that may benefit more from telehealth were mapped
- Internet speeds were mapped to see if FQHCs have the internet capacity for telehealth
- The issue of telehealth access is especially important today with the COVID-19 pandemic

Maps

Maps pictured are just a few out of dozens of maps created, selected to show a variety of topics mapped



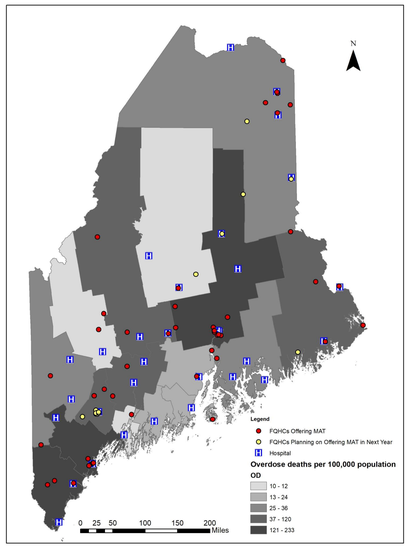
Scan the code above or go to https://arcg.is/1CuOPX to view additional maps and entire project.



Ongoing Work

- Collaboration with the MPCA to implement recommendations
- Working with the Muskie School of Public Service at USM to evaluate and map the capacity of the health system for Medicaid expansion in Maine
- Mapping health facilities such as healthcare facilities, and nursing homes to incorporate them into the model
- Incorporating services such as ICU beds, respirators, and health care providers into the model
- Developing an analysis of the data targeting challenges arising from the current COVID 19 emergency.

Overdose Rates & Medication Assited Treatment Availibilty



Map 1

Health facilitates and health needs

- Overdose rates per 100,00 people per county
- FQHCs that offer treatment for opioid use or are planning to
- Hospitals

Map 2

Internet speeds

- Average available upload speeds
- How many internet providers at each FQHC
- Which FQHCs may not have internet fast enough for telehealth

Map 3

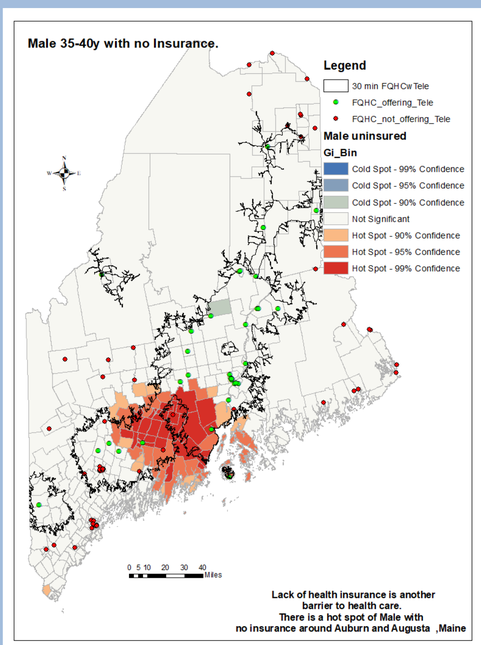
Drive time to FQHCs

- Most people live within 30 minutes of FQHC
- Many outlying areas have no people living there

Map 4

Insurance

- Lack of insurance is another barrier to care
- Some areas are hot spots with many uninsured people



Discussion

- Types of services offered at FQHCs vary widely. Some offer only basic services such as primary care, while others offer more such as dental care, mental health services and more specialties
- Internet speeds and the number of internet providers vary across the state. Most FQHCs do have sufficient internet speed for telehealth
- Maine has many areas with high rates of poverty and elderly people, and other health issues. Many of these areas are also underserved by medical providers
- FQHCs are designed to help bring medical care to underserved areas, but are faced with limitations such as difficulty recruiting providers, especially specialists
- Telehealth is potentially a way to bring medical care and specialties to underserved areas lacking providers. Providers located remotely can connect directly with the patient in an underserved area, if more FQHCs offered telehealth there would be more access to care

Methods

- The locations of healthcare facilities were obtained from the state of Maine
- Information on the FQHCs, including what services each center offer was obtained from the client, this was compiled in spreadsheets, and mapped
- Internet speed information was obtained from the Federal Communications Commission and mapped
- Demographic information, including poverty and health discrepancies, was obtained from multiple and mapped
- Access to FQHCs, such as the amount of time needed to drive to, was mapped

Results

- FQHCs are already located in regions that have been identified as shortage areas for medical professionals and healthcare in general
- Telehealth services have the potential to play a key role in providing access to care in areas of high demand.
- The results of the analysis on Telehealth availability in Maine can be grouped into three general categories: Access, Demand and Capacity.
- If all of Maine's 96 FQHCs offered Telehealth services, Maine's residents, particularly those in underserved areas, would have better access to a wide range of healthcare services
- Assuming that all services were offered via telehealth at their local FQHC, people would not have to travel far to receive services

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References

Daly, M. R., Mellor, J. M., & Millones, M. (2018). Defining Primary Care Shortage Areas: Do GIS-based Measures Yield Different Results? *The Journal of Rural Health,35*(1), 22-34. doi:10.1111/jrh.12294
Granger, C. L., Wijayarathna, R., Suh, E., Arbane, G., Denehy, L., Murphy, P., & Hart, N. (2017). Uptake of telehealth implementation for COPD patients in a high-poverty, inner-city environment: A survey. *Chronic Respiratory Disease,15*(1), 81-84. doi:10.1177/1479972317707653
Harju, A. (2018, November 30). Cost- effectiveness of telemedicine- based integrated care for treating mental illness in rural FQHCs. Retrieved from https://pubs.lib.umn.edu/index.php/phr/article/view/1569
Holyk, T., Pawlovich, J., Ross, C., & Hooper, A. (2017). The role of telehealth in improving continuity of care: The Carrier Sekani Family Services primary care model. British Columbia Medical Journal, 59(9), 459–464. Retrieved from https://search-ebscohost-com.ursus-proxy-1.ursus.maine.edu/login.aspx?direct=true&db=a9h&AN=126333218&site=ehost-live
Musa, G. J., Chiang, P., Sylk, T., Bavley, R., Keating, W., Lakew, B., . . . Hoven, C. W. (2013). Use of GIS Mapping as a Public Health Tool—From Cholera to Cancer. Health Services Insights,6. doi:10.4137/hsi.s10471
Parks, M. J., Slater, J. S., Rothman, A. J., & Nelson, C. L. (2015). Interpersonal Communication and Smoking Cessation in the Context of an Incentive-Based Program: Survey Evidence From a Telehealth Intervention in a Low-Income Population. *Journal of Health Communication,21*(1), 125-133. doi:10.1080/10810730.2015.1039677
Perdew, C., Erickson, K., & Litke, J. (2017). Innovative models for providing clinical pharmacy services to remote locations using clinical video telehealth. American Journal of Health-System Pharmacy, 74(14), 1093–1098. https://doi-org.ursus-proxy-1.ursus.maine.edu/10.2146/ajhp160625
Schootman, M., Gomez, S. L., Henry, K. A., Paskett, E. D., Ellison, G. L., Oh, A., . . . Berrigan, D. A. (2017). Geospatial Approaches to Cancer Control and Population Sciences. *Cancer Epidemiology Biomarkers & Prevention,26*(4), 472-475. doi:10.1158/1055-9965.epi-17-0104
Shaw, N., & Mcguire, S. (2017). Understanding the use of geographical information systems (GIS) in health informatics research: A review. *Journal of Innovation in Health Informatics,24*(2), 228. doi:10.14236/jhi.v24i2.940
US Census Bureau. (2018, October 03). TIGER/Line with Selected Demographic and Economic Data. Retrieved from https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-data.html
US Census Bureau. (2016). Tiger/Line with Selected Demographic and Economic Data. Retrieved on April 30, 2019. https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-data.html
Uscher-Pines, L., Bouskill, K., Sousa, J., Shen, M., & Fischer, S. (2019). Experiences of Medicaid Programs and Health Centers in Implementing Telehealth. doi:10.7249/rr2564
Willis, H. (2018). Telehealth Takes Root in Rural Georgia. U.S. News - The Civic Report, C12–C14. Retrieved from https://search-ebscohost-com.ursus-proxy1.ursus.maine.edu/login.aspx?direct=true&db=a9h&AN=133063019&site=ehost-live
Xu, Y., Fu, C., Onega, T., Shi, X., & Wang, F. (2017). Disparities in Geographic Accessibility of National Cancer Institute Cancer Centers in the United States. *Journal of Medical Systems,41*(12). doi:10.1007/s10916-017-0850-0