Mapping healthcare accessibility across communities in Central Appalachia, including Virginia’s New River Valley, throughout the Covid 19 pandemic.

**Introduction:**

Healthcare accessibility is a critical determinant of overall well-being which influences not only individual health outcomes but also the broader public health landscape. According to the Appalachian Regional Commission it was found that Appalachia performed worse than the national average in 33 out of 41 health indicators **(1).** The Central Appalachia, encompassing parts of West Virginia, Eastern Kentucky, Southwest Virginia, East Tennessee, and Western North Carolina, covers 29,773 square miles and has about 2 million residents **(2).** In regions like Central Appalachia, where economic challenges and geographic barriers are prevalent, ensuring equitable access to healthcare is particularly vital. This area, characterized by its rural terrain and dispersed population, faces unique challenges in providing timely and adequate healthcare services to all residents. Multiple studies have compared health status within the 420 Appalachian counties to areas outside its federally defined boundaries, by examining indicators like depressive disorders and physical conditions such as diabetes **(3).** These challenges make the study of healthcare accessibility in such regions not only significant but also urgent, as disparities can have far-reaching consequences for population health

Healthcare access is a complex term, involving the health system, population characteristics, and service use and satisfaction, and is influenced by individual and community factors **(4).** In rural areas like Central Appalachia, where healthcare facilities are often scarce, even slight changes in accessibility can significantly impact healthcare-seeking behaviors. According to Andersen et al., healthcare access is shaped by predisposing factors (e.g., age, race, disability) and enabling factors (e.g., income, insurance, employment, education), with the latter being more modifiable **(4).** Populations in these areas are particularly vulnerable to disruptions in healthcare access, which leads to delays in seeking care and, consequently, worse health outcomes.

* Done - Healthcare accessibility varies across space and time, with critical downstream effects on detection of outbreaks, treatment of disease, and effort cost of visiting the doctor
* Done - This becomes especially important in rural areas, where doctors can often be difficult to access, and where wages, public transportation, and insurance may make regular doctor visits challenging
* Healthcare accessibility can also change during major natural disasters and events such as the COVID-19 pandemic
* Previous studies have underscored both of these healthcare accessibility challenges
* However, less is known about how these factors interact: What happens to healthcare accessibility patterns in rural areas during major events in the USA?
* It’s also important to note how healthcare trips vary from other types of trips. How did change in healthcare accessibility patterns differ from overall travel patterns?
* Here, we examine healthcare accessibility across southwest Virginia:
  + How did overall healthcare utilization change from before and during the COVID-19 pandemic?
  + How did the healthcare utilization patterns themselves change (e.g. did distances traveled change?)
  + What characterized areas that were least likely to access healthcare?
  + What characterized areas that changed the most during the pandemic?
  + How did these changes differ from changes in travel to other types of locations?

Figures:

Interesting examples of specific months:

April 2020: Month after the start of the pandemic, reduced mobility to everywhere & healthcare centers

A screenshot of a computer screen

AI-generated content may be incorrect.

May 2020: Healthcare visits up in some areas, general travel down

A screenshot of a computer generated image

AI-generated content may be incorrect.

Sept 2020: Continued pattern; general trips rose some, HF trips rose a in a lot of places

A screenshot of a map

AI-generated content may be incorrect.

Regression results:

A computer screen shot of a number

AI-generated content may be incorrect.

For healthcare facility trips, trips reduced in more urban areas

A computer screen shot of a black screen

AI-generated content may be incorrect.

Meanwhile, for all trips, trips increased in more urban areas.

A graph of different colored lines

AI-generated content may be incorrect.

**Here’s how healthcare trips varied with other trip types.**

A graph showing a number of different colored lines

AI-generated content may be incorrect.

**A graph showing different colored lines

AI-generated content may be incorrect.**

**Finally, a comparison of trips to healthcare facilities and all trips over time, stratified by urbanization. Notably, the healthcare trips didn’t vary much based on urbanization, but all trips did.**

**References:**

1. Marshall JF, Thomas L, Lane NM, et al. Health Disparities in Appalachia [Internet]. Appalachian Regional Commission; 2017. [cited 2021 July 7]. Available from: <https://www.arc.gov/report/health-disparities-inappalachia/>
2. <https://www.thestayproject.net/about-central-appalachia>
3. Morrone, M., Cronin, C. E., Schuller, K., & Nicks, S. E. (2021). Access to health care in Appalachia: perception and reality. *Journal of Appalachian health*, *3*(4), 123.
4. Andersen, R. M., Yu, H., Wyn, R., Davidson, P. L., Brown, E. R., & Teleki, S. (2002). Access to medical care for low-income persons: how do communities make a difference? *Medical care research and review*, *59*(4), 384-411.