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Project Proposal

For this project, I would like to attempt to do a network model with the Westchester County public transit system. With the rise in urbanization and the increase of population in cities, public transportation needs are amplified and almost necessary for a wider range of people from different socio-economic factors. Transportation design and planning should take into consideration this change in public transit use, and ensure that equity is established from origins to destinations within the network.

The idea of this model is to capture assess accessibility of transportation through a multimodal network (walking, bus routes, and subway routes). Accessibility is defined as the ability to reach goods, services, and activities. Since there are a wider variety of people utilizing public transit, it’s important that transportation equity is a priority in transportation planning to better serve our community. After this is accomplished, it would be interesting to generate updated routes to minimize the accessibility disparity throughout the county.

The first step would be to construct a multimodal network of Westchester County, using pedestrian walkways, bus routes, and railways. Time permitting, I would love to do all three together, however, I’m willing to start with just walkways and bus routes and expand from there. A big factor for modeling accessibility is time, and works equally well as a constraint in a transportation network as well. Commuting time as compared to different socio-economic factors can be used to demonstrate this disparity, however I think I will stick to just using rent and housing prices per neighborhood.

The next step would be to identify passenger behavior using a passenger survey of some sort. This can help classify and identify the different types of people that ride the system, and their general origins and destinations related to the bus routes. Such a survey exists for Westchester County from 2016, which is recent enough. The final step would be assessing areas of low and high accessibility based on travel times and origins and destinations and then figuring out the extension of routes that maximizes the accessibility coverage while minimizing overall route length.

Overall, the main question to be answered here would be: what is the current transit accessibility of Westchester County, NY for different socioeconomic groups, and how can we alter the existing routes such that accessibility is maximized in the county while route lengths and complexity are minimized?