Impacts of Transit-oriented Development on Public Transit Accessibility

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Transit-oriented development is a sustainable strategy to create resilient, livable, and connected communities and combat inequity and car-dependency during rapid urbanization. Many cities around the globe prove that transit-oriented development can enhance physical accessibility of public transit services and improve life quality (Ann, Jiang, & Yamamoto, 2019; Cooke, Behrens, & Zuidgeest, 2018; Lyu, Bertolini, & Pfeffer, 2020; Papa & Bertolini, 2015). As one of the fastest growing metropolitan areas in the US and the fastest in the Midwest (Orner, 2021), population in Central Ohio is expected to reach 3 million by 2050 (LinkUS, 2022). Despite rapid population and economic growth, issues like traffic congestions and lower house affordability also emerge due to car-dependency. LinkUS Columbus initiative is introduced as a strategic plan to tackle these problems: it is a transformational prosperity and mobility initiative that aims to promote equitable mobility options and ensure access to employment and housing in Columbus, Ohio (LinkUS, 2022). The core of the initiative is to add multiple rapid transit corridors to enhance the accessibility and reliability of existing public transit services. However, the initiative at its current stage still lacks evidence-based scientific support for these major changes in the schedule. Several questions remain unanswered:

* What are the impacts of the changes proposed by LinkUS on the accessibility of transit users? The accessed opportunities include employments, healthcare, and food.
* What are the social equity implications of these schedule changes?
* Can the initiative make public transit services in Columbus more competitive compared to other modes of transportation in terms of travel time and accessibility?
* Which corridors can contribute more to the accessibility of the public transit?

These questions are imperative yet complicated due to the time-dependent and nonlinear nature of public transit systems. We hope to answer these questions with both scientific authenticity and accessible visualization, and we think Conveyal is a perfect platform for our research questions. We would like to request the access to Conveyal via the CoCARS program.

Links to GTFS feeds (Central Ohio Transit Authority, 2021):

GTFS static: <https://www.cota.com/data/cota.gtfs.zip>

GTFS real-time trip update: realtime.cota.com/TMGTFSRealTimeWebService/TripUpdate/TripUpdates.pb

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