Out of all of the sectors of the economy, transportation is the sector with the highest percentage of emissions (United States Environmental Protection Agency). One of the best ways to reduce household emissions is to switch car commuting to using public transportation, saving about 48,000 pounds of CO2 emissions per person per year (APIA). But simply providing transport infrastructure isn't enough to reduce transportation emissions. The access to transit at either end of a transit journey, usually termed as the first-and-last mile, has been recognized as one of the major barriers to improving transit accessibility (Zuo et al.).

research shows that commutes longer than 30 minutes have adverse effects on health and productivity (Vitality Health). In order to provide adequate public transportation access, there should be enough options to maximize the amount of people within this 30 minute window. Specifically, we want to focus on how to increase accessibility to public transportation in the Boston area using cyclicing.

In order to investigate this topic, we gathered geolocation data for bike docks in Boston, and geolocation and trip data for T stops from the MBTA`s official website. We assigned each bike station its nearest train station. Then, we found the time it takes to get from each station to the busiest station in Boston, which we found to be South Station. With this data, we could assign each station and dock with a commute time. This gives us a radius around every bike dock and T stop, equal to the distance you can cover walking in 30 minutes minus each bike dock's commute time.

Upon investigation it was found that most stations have a bike sharing station within 1 mile of it. Some major stations had multiple biking docks within reasonable walking distance . This increases accessibility and area covered for certain stations with more than average number of bike docks. Installation of bike docks near stations that currently have 1-2 would increase transit access and reduce commute time for less accessible neighborhoods of boston.

Works Cited

APIA. "Public Transportation Reduces Greenhouse Gases And Conserves Energy." Internet Archive, 2008, https://archive.org/details/greenhouse_brochure/page/n1/mode/2up?view=theater. Accessed 14 April 2023.

United States Environmental Protection Agency. "Sources of Greenhouse Gas Emissions | US EPA." Environmental Protection Agency, 2021, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions. Accessed 14 April 2023.

Vitality Health. "Long commutes costing firms a week's worth of staff productivity." Vitality, 22 May 2017, https://www.vitality.co.uk/media/long-commutes-costing-a-weeks-worth-of-productivity/. Accessed 14 April 2023.

Zuo, Ting, et al. "First-and-last mile solution via bicycling to improving transit accessibility and advancing transportation equity,." Cities, vol. 99, no. 2020, 2020. Science Direct,

https://www.sciencedirect.com/science/article/abs/pii/S0264275119305347?casa_token=dOLp1NDMobgAAAAA:3NiqCSxKvbAXhTZdGVtcI07VppXhuddFz1SEfF_KruVJVhYf_VcSyllYyB13yV_o0XtIM2rjHA. Accessed 14 April 2023.