California Community Colleges: Student Transportation and Carbon Emissions

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California’s system of community colleges is the largest system of higher education in the world; it is comprised of 110 college campuses and over 2.5 million students. Each day millions of students make the daily commute to the campuses. This commute impacts the students in the form of time spent commuting as well as the monetary cost of owning and driving an automobile. The commute also has an environmental impact upon the local community. This project focuses on one of those environmental impacts, the carbon emissions from the automobiles. The impacts upon the students and the community are directly linked to the distance traveled. By performing network analysis within a geographic information system (GIS) to estimate the distances which students travel to campus it was possible to provide estimates of the daily impact of the commute upon the students and the communities through which they travel.

The results were mapped at the campus and district levels. Each map contains the campuses or districts within a region and one of the following estimates: total vehicle miles traveled, average vehicle miles traveled, average transit time, total transit cost, average transit cost, total vehicle carbon emissions, and average vehicle carbon emission. The estimates are presented in the map as well as categorized into 4 classes using Jenk’s Natural Breaks.

An additional set of maps was produced showing the commuting zones of the individual campuses. Each map displays the commuting zones based on the transit time of the closest 50% and 90% of commuting students. The 90% threshold was set to eliminate questionable commute times from the analysis. Where possible, campuses in close geographic proximity to each other are shown together to display the overlapping zones.