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Changes in When and Where People Are Spending Time in Response to COVID-19

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Abstract : The COVID-19 pandemic has resulted in a significant change in driving behavior as people respond to the new environment. However, existing methods for analyzing driver behavior, such as travel surveys and travel demand models, are not suited for incorporating abrupt environmental disruptions. To address this, we analyze a set of high-resolution trip data and introduce two new metrics for quantifying driving behavioral shifts as a function of time, allowing us to compare the time periods before and after the pandemic began. We apply these metrics to the Denver, Colorado metropolitan statistical area (MSA) to demonstrate the utility of the metrics. Then, we present a case study for comparing two distinct MSAs, Louisville, Kentucky, and Des Moines, Iowa, which exhibit significant differences in the makeup of their labor markets. The results indicate that although the regions of study exhibit certain unique driving behavioral shifts, emerging trends can be seen when comparing between seemingly distinct regions. For instance, drivers in all three MSAs are generally shown to have spent more time at residential locations and less time in workplaces in the time period after the pandemic started. In addition, workplaces that may be incompatible with remote working, such as hospitals and certain retail locations, generally retained much of their pre-pandemic travel activity.

Keywords : COVID-19, driver behavior, GPS data, signal analysis, telework
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