Teenager Travel Behavior and Technology Use: Analysis of students from five high schools in Vermont and California

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BACKGROUND

GOAL
- Examine teenagers' travel behavior for their most common destination – going to and from school
- Understand how the use of technology influences this travel behavior

DATA
Survey data from five high schools, three in Northern California and two in Vermont, are used to identify the mode choice to and from school, socio-demographic characteristics, and technology use among the sampled teenagers.
- It is known that travel behavior is directly related to users' personal characteristics (age, gender), surrounding social characteristics (household, family, friends), the built environment (neighborhood type, infrastructure accessibility) and the virtual environment (pones, the internet)

STEPS
- Defining common variables (socio-demographic) in High School surveys in California and Vermont
- Further built environment data processing is developed in this study

RESEARCH QUESTIONS

Q1 What factors influence teenagers' travel mode choice to and from school?
- Drive alone
- Ride
- Bus
- Walk/Bike

Q2 What factors influence teenagers in using technology for arranging transportation?

TECHNOLOGY USE FOR TRANSPORTATION
Number of days a week used

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DATA

SURVEY DATA
California (Designed and developed by UC Davis)
- Davis High School (Yolo County)
- Sequoia High School (San Mateo County)
- Tamalpais High School (Marin County)
N = 2900

Vermont (Designed and developed by Dr. Lee and Dr. Cope)
- South Burlington High School
- Champlain Valley Union High School (Chittenden County)
N = 145

GEOGRAPHIC DATA
U.S. Census Data
Esri roads and highways

OUTCOME VARIABLES
- Mode choice to/from school
- Technology use for transportation

PREDICTIVE VARIABLES
- Age
- Gender
- Parent's education
- Number of siblings
- Driving license
- Car ownership
- Curfew
- Smartphone ownership
- Distance to school
- Job access
- Neighborhood income
- % of young population in neighborhood
- Land use: residential, mixed use
- Infrastructure available
- Population density

EXPECTED RESULTS
- Definition of significant variables that affect travel mode choice of teenagers
- Study what makes teenagers use technology for transportation purposes
- Interpret model outcomes to improve mobility options and suggest transportation alternatives to encourage active transportation
- Potential policy changes and design alternatives could be suggested based on the results

DESCRIPTIVE STATISTICS

METHODOLOGY
- Data geocoding
- Geospatial analysis
  - Service area calculation
  
Example: Davis HS (Yolo County)

NEXT STEPS

MODEL DEVELOPMENT
- Multinomial logistic regression (Q1)
- Ordinal Logistic Regression (Q2)

MODEL INTERPRETATION
- Identification of significant variables
- Coefficient interpretation
- Conclusions and Discussion

SOFTWARE: GIS, R