



Impact of number of autonomous vehicles on highway traffic congestion

Presented by

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Purpose of the study

- Effectivity of the inclusion of Autonomous vehicles on the current condition on highway traffic management from consumer viewpoint .

Significance of the study

- An Average American Car commuters lose 90 hours yearly due to traffic congestion.
- This also accounts for an annual fuel waste of 1.9 Billion gallons.
- Growing Traffic management issue should be addressed in order to maintain an efficient transportation infrastructure and system.





Research Question

What is the impact of
the number of
autonomous vehicles
on highway traffic
congestion?

Limitation of study

Respondents are U.S. drivers aged 25-65 in 2021. The views of younger and older drivers are not included, which may result in a data set that does not completely reflect the views of actual drivers.

The study applies only to autonomous vehicles belonging to the passenger class vehicles .

The study asks respondents only about their perception of the effect of autonomous vehicles on traffic flow on interstate highways.

The questionnaire asks respondents to consider only Level 2 autonomous vehicles, but respondents with limited experience of autonomous vehicles may not be able to distinguish between level 1 and level 2 autonomous vehicles in making their judgments.

The questions in the questionnaire may be open to multiple interpretations.

The study may lack relevance for the entire population of the U.S, considering the small sample size

Literature review



Fredrich (2016) showed the effects of autonomous vehicles on a segment of a highway and an intersection with a traffic signal.



Abraham (2016) Carried out a survey to investigate an automobile driver's understanding towards autonomous vehicles, its technological advancements, and acceptance as an alternative transportation.



Jafarya (2018) Showed the need for developing communication between autonomous vehicles (AVs) through review of works of various researchers in the Automotive field of study.



Gigi (2020) Studied the connection between customer perception towards innovative future of Tesla's electric cars and its features.

Findings

- The acceptance of Autonomous vehicles is higher in American older adults.
- Females U.S Car drivers perceive Autonomous vehicles with skepticism with respect to its safety and controllability (Crash Avoidance)
- Six in ten (57%) Americans say they would like to have a clear understanding of who will be legally responsible in the event of a crash with a self-driving vehicle.
- Half (51%) of the Americans think that autonomous vehicles could be a viable alternative for conventional self-driven vehicles.

Research Design

- Quantitative research design under Correlational type of methodology
- Independent variable (X) - Number of Autonomous vehicles
- Dependent variable (Y)- Traffic congestion

Population and sample size

- U.S Vehicle owner/driver
- 100 Respondents recruited from Automotive Dealerships across Pittsburg, KS and Joplin, MO

Role of researcher

- Data Collection
- Data analysis

Data collection method

Survey consisting of 15 closed-ended question.

Ordinal Scale of measurement (Scale 1-5)

Data Analysis

Data analysis using group mean Comparison .

Validity and Reliability

Aim to secure high validity and reliability through efficient Tri-angulation.



Thank you

