A SURVEY OF PUBLIC OPINION ABOUT AUTONOMOUS AND SELF-DRIVING VEHICLES

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Abstract - *This survey examined public opinion regarding self-driving-vehicle technology In India. The survey was taken between ages 18-50 years old people in India.*

The main findings were as follows:

1. *The majority of respondents had previously heard of autonomous or self-driving vehicles, had a positive opinion of the technology, and had high expectations about the benefits of the technology.*

2. *However, the majority of respondents expressed high levels of concern about taking a Ride in self-driving vehicles, they had security issues related to self-driving vehicles and self-driving they said self-driving vehicle will not perform good as well as real human drivers.*

3. *People responding also addressed about their concern about vehicles driving without human driver's controls, self-driving vehicles moving while it is unoccupied and self-driving commercial vehicles, busses, and taxis.*

4. *The majority of respondents expressed a desire to have this technology in their vehicle List. However, a majority were not willing to pay extra for the technology.*

1. INTRODUCTION

1) Experiments have been conducted on automated driving systems (ADS) since at least the 1920s trials began in the 1950s. The first semi-automated Vehicle was developed in 1977, by Japan's Mechanical Engineers, which required Lane streets and used two cameras on the vehicle and a computing machine.

A self-driving car can be defined as "A computer-controlled car that drives itself. The Scientist says self-driving Vehicles are "cars or trucks in which presence of human driver is never required for the safety purpose this are also known as 'Autonomous' or 'driverless' cars/Vehicles, they combine sensors and software to control, navigate, and drive the vehicle. Fundamentally, an autonomous vehicle has a computing machine that can take over some or all the duties of human drivers and unchain the vehicle's driver to do other tasks, like entertaining themselves, or doing nothing at all or any other task. Of course, the phrase "take over the duties of driving" does not imply simplistic functionality; even if those duties just translate to parking, there are myriad inputs, variables, and decision-making processes that have to be taken into account.
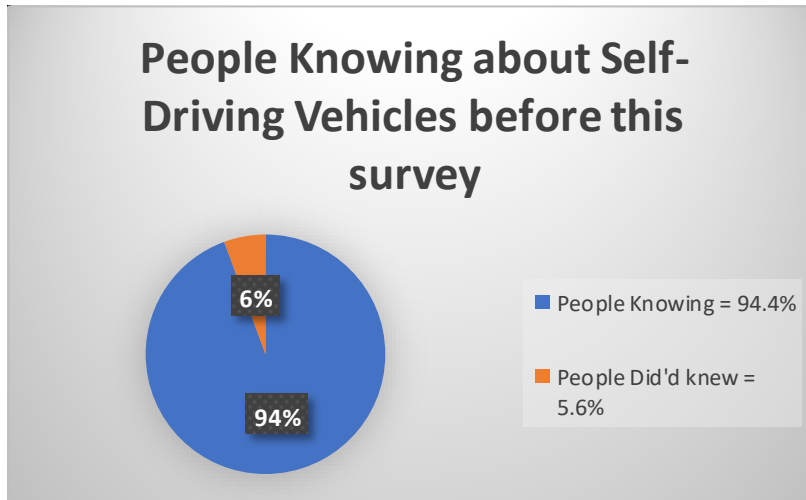
2. Method and Material

An online survey was conducted using Google Forms, A questionnaire was developed to examine several key Points related to autonomous and self-driving vehicles.

The main Points addressed were as follows:

1) Awareness and general opinion about autonomous and self-driving vehicles
2) Awareness with current autonomous vehicles technology on their own vehicle(s)
3) Expected benefits of self-driving vehicles
4) Concerns about using self-driving vehicles
5) Concerns about different possible implementations of self-driving vehicles
6) Overall interest in owning and willingness to pay for self-driving-vehicle technology

3. QUESTIONARIES AND ANALYSIS

3.1- *"Had you ever heard of autonomous or self-driving vehicles before participating in this survey?"*
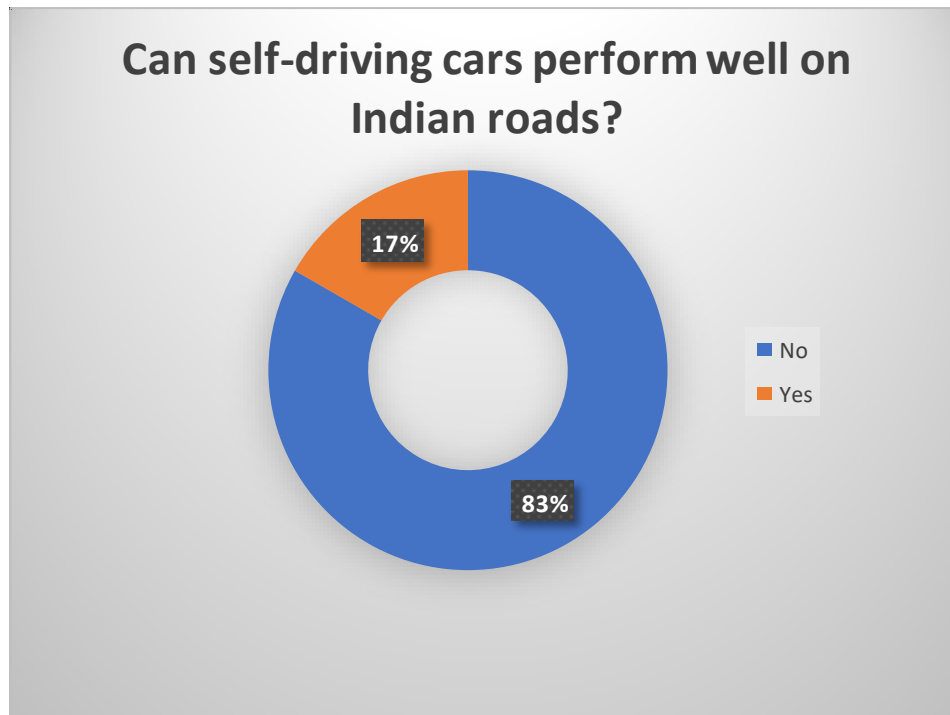

Analysis: Following Pia Chart show a complete summary of responses for people knowing this technology, most respondents had a positive impression of the technology with total 93.9% people having knowledge of self-driving /Autonomous vehicles Approximately 6.1% of respondents didn't had any idea of this technology. People who had previously heard of autonomous or self-driving vehicles Believed to expect crash-reduction benefits and better fuel economy. These Peoples were also not very concerned about learning to use self-driving vehicles and less concerned about self- driving vehicles moving around while unoccupied. Those people who had previously heard about this technology were interested in having this vehicle. Conversely, those respondents who didn't heard about self-driving vehicles were not interested or were not comfortable to ride or own this vehicle.

3.2: *"How safe would you feel being a Passenger in self-driving vehicle?"*

Response	Percentage
Extremely Safe	33.33
Somewhat safe	55.56
Not so safe	11.12
Not at all safe	0

Analysis: As per my research Most of the people feel safe as the have voted 33.33 and 55.56 percentage for being extremely safe and somewhat safe remaining 11.12% don't feel safe with this technology

3.3: *"Can self-driving cars perform well on Indian roads?"*

Analysis: As shown in the pia diagram most of the response collected in the respected survey are negative which says the Autonomous or Self-Driving Vehicles are not ready or suitable for Indian roads or real-life conditions in India. Estimated 82.9% people out of all respondent are saying Autonomous vehicles are not ready for Indian roads other 17.1% people are on the positive side and think this technology can perform well in India.

3.4: *"How likely do you think it is that the following benefits will occur when using completely self-driving vehicles?"*

Expected benefit	Response	Percentage
Fewer crashes	Very likely	25.3
	Somewhat likely	42.4
	Somewhat unlikely	21.6
	Very unlikely	10.7
Improved emergency response to crashes	Very likely	24.1
	Somewhat likely	44.2
	Somewhat unlikely	20.3
	Very unlikely	11.4
Traffic Violation	Very likely	19.2
	Somewhat likely	20.5
	Somewhat unlikely	42.9

	Very unlikely	17.4
Lower vehicle emissions	Very likely	22.2
	Somewhat likely	46.3
	Somewhat unlikely	22.1
	Very unlikely	9.4
Better fuel economy	Very likely	27.3
	Somewhat likely	44.4
	Somewhat unlikely	19.2
	Very unlikely	9.1
Lower insurance rates	Very likely	42.3
	Somewhat likely	30.6
	Somewhat unlikely	22.7
	Very unlikely	4.4

Analysis: Here couple of benefits were displayed to the people in the survey and their opinions were collected of how likely they are for the specific benefit when using complete self-driving vehicles. Most of the people think that this technology can reduce the crashes as they have voted very likely and somewhat likely 67.7% remaining are in the negative side that is 32.3, also 68.3% of total respondent feel Autonomous vehicles can Improved emergency response to crashes. Most of the votes are for the emergency response that is 68.3% positive response other benefits asked were Less Traffic Violation, Lower vehicle emissions, Better fuel economy, Lower insurance rates and in most cases, people replied positive and the remaining who responded negative were because lack of confidence and due to incomplete technology for all scenarios in India.
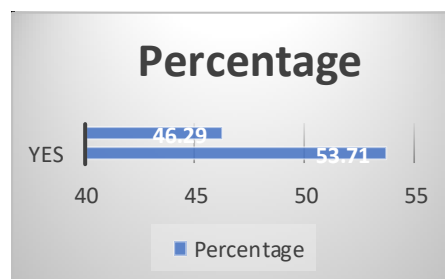
*3.***5**: "*How concerned you are about the issues given below related to self-driving vehicles?*"

Possible concern	Response	Percentage
Safety consequences of equipment failure or system failure	Very concerned	48.3
	Moderately concerned	31.5
	Slightly concerned	15.4
	Not at all concerned	4.8
System security (from hackers)	Very concerned	48.3
	Moderately concerned	25.4
	Slightly concerned	18.2
	Not at all concerned	8.1
	Very concerned	37.6

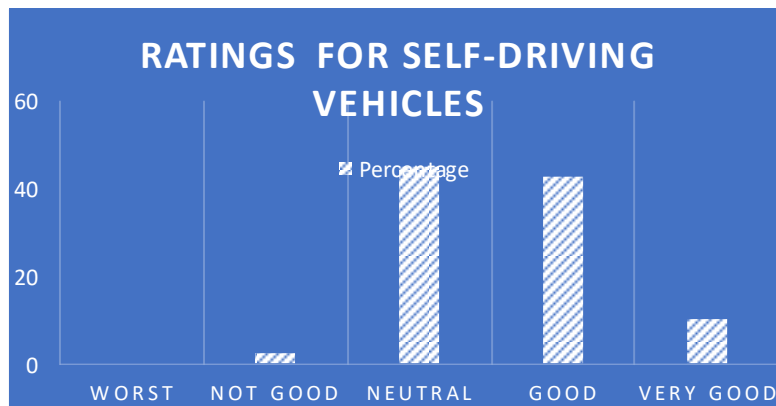| Data privacy (location and destination tracking)	Moderately concerned	31.8
	Slightly concerned	21.1
	Not at all concerned	9.5
System performance in poor weather	Very concerned	41.2
	Moderately concerned	32.9
	Slightly concerned	21.2
	Not at all concerned	4.7
Self-driving vehicles getting confused by unexpected situations	Very concerned	52.1
	Moderately concerned	27.5
	Slightly concerned	14.9
	Not at all concerned	5.5

Analysis: Respondents were asked: "*How concerned you are about the issues given below related to self-driving vehicles?*" They were asked to select "very concerned," "moderately concerned," "slightly concerned," or "not at all concerned" for each concern in a list of scenarios involving different methods of using self-driving vehicles. Given table shows a complete summary of responses by People. Very concerned was voted the most in the given concern list. In general, respondents were most concerned about riding in a vehicle with no driver controls and about commercial vehicles that are completely self-driving.

3.6: "*According to you is it worth spending extra money on the Autonomous technology than manual vehicles?*"

Analysis: Respondents were asked: "*According to you is it worth spending extra money on the Autonomous technology than manual vehicles?*" Most of the people are satisfied with the technology and are willing to own one which about 53.71% of total respondent, remaining gave negative response for this technology and preferred Manual vehicles over self-driving or autonomous vehicles, it may be because of lack of confidence on this technology because it is not yet fully build for all the Possible Conditions.

3.7: *"How would you rate Self-Driving or Autonomous according to you?"*

Analysis: Respondents were asked: "*How would you rate Self-Driving or Autonomous according to you?*"

And surprisingly most of them were neutral which 46% out of total respondent, 44% were voted for Good and remaining 9% for very good and 1% for not good. According to analysis most of the people were found confused although they were interested in the technology but were not so confident about the results how this technology will perform in India keeping the road conditions, frequent traffic violations done by people and weather conditions in mind.

4. DISSCUSSIONS

Human drivers versus self-driving vehicles: A large percentage of respondents said they had concerned that self-driving technology will not perform as good as human drivers. Overall, 89.6% said they had some level of concern ("very/moderately/slightly concerned") about self-driving vehicle performance compared to human drivers. Lack of confidence was noticed form the respondent for the technology Respondents who had previously heard of autonomous or self-driving vehicles were ready to expect crash-reduction benefits and better fuel-economy. These people were also less concerned about learning how to use self-driving vehicles, and less concerned about self- driving vehicles moving around while unoccupied. Those having previously heard of self-driving vehicles were more likely to say that they were interested in having this technology on their vehicles. Contrariwise, those who had not previously heard of self- driving vehicles were more likely to say they would not ride in such vehicles.

5. FINDINGS

1.   People should be educated about this latest technology so that they can start believing in this self-driving vehicle.
2.   Most respondents had previously heard of autonomous or self-driving vehicles and had a positive opinion for the technology with high expectations about the benefits from the technology.
3.   As Self driving vehicles follow the road lane markings to drive by itself, most of the roads are still not ready for this technology yet.
4.   Traffic rules should be improved and strictly followed to bring this technology in India.
5.   Most of the people were interested in technology but could not afford it due to its higher prices.

6. CONCLUSION

This survey examined public opinion regarding self-driving-vehicle technology in India, somewhere there could be Pause/Stop in day to day accidents and death rates due to this accidents by adopting this technology, People knowing this technology gave positive feedback and were mostly concern about the price of the vehicles but as per the technology and the features provided by this vehicles price is worth it.

REFERENCES

[1] https://www.synopsys.com/automotive/what-is-autonomous-car.html

[2]https://www.researchgate.net/publication/304555238_A_survey_of_public_opinion_about_connected_vehicles_in_the_US_the_UK_and_Australia

[3] https://trid.trb.org/view.aspx?id=1323295

[4] https://www.scribd.com/document/235874600/UMTRI-2014-21