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Self-driving cars should be allowed on roads in the US

Self-driving cars are not some futuristic technology; in fact some vehicles have already equipped with automatic features such as stop-and-go control system in Audi cars, an automatic distance control system regulates the speed and the interval to the vehicles ahead. Recently, companies like Mercedes and Google announced the fully autonomous cars, which use sensors and radar to detect obstacles and are controlled by computers. However, the self-driving vehicles are not ready to be sold because it requires having more testing on the road. Currently, only Florida, California, Washington D.C., Nevada, and Michigan enable to test these vehicles on roads. If autonomous cars are going to drive on the road, people may concern on the safety problem. Nevertheless, the US government has regulations to restrict the testing. For example, Parsons (2012) reported that the Nevada government required autonomous cars must have a minimum travel of 10,000 miles before going to public road. I believe that self-driving vehicles should be allowed on roads in the future due to the three main reasons including reducing car accidents, increasing road capacity and reducing oil fuel consumption.

Self-driving cars can probably reduce the incidence of fatal traffic accidents. National Highway Traffic Safety Administration (2015) reported that over 90 percent of the accidents were caused by human errors including recognition, decision and performance errors. In other words, drivers may make mistakes when they need to determine the conflict situation such as pedestrian walking through road when the traffic light is green, changing the gear stick in different condition and planning the driving route on real time. Since autonomous cars have different lasers, radars and camera, the vehicles can determine the safety reaction accurately. For example, the cars can predict the movement of the other cars, pedestrians and cyclists at the same time. It is difficult for human drivers to aware all the things at the moment so driverless cars may drastically reduce the accident toll. A study from Fagnant and Kockelman (2015) claimed that at least 40% of the fatal accidents would be reduced if the self-driving cars are used. This illustrates that autonomous vehicles would not make human errors and it may overcome many obstacles in complex environment such as fog and snow. Self-driving cars may be more accurate and have quicker decision than human drivers and help prevent car accidents made by human errors.

Autonomous vehicles may increase the road capacity due to three factors including increasing speed limit, reducing headway distance and traffic congestion. Human require a longer reaction time compared with the self-driving cars, which are faster and accurate. Since the spacing between the cars requires more due to human reaction time, this possibly lowers the highway efficiency. Tientrakool, Ho and Maxemchuk (2011) argued that the road capacity would increase 273% if all the self-driving vehicles use sensors and vehicles-to-vehicles (V2V) communication system on the road, which vehicles could communicate together. This means that autonomous cars can possibly predict the lead’s vehicles braking and acceleration, and they allow the following cars to have a smoother braking and accurate speed adjustment. As a result, the headway distance may greatly be reduced and this can increase the road capacity. In addition, Federal Highway Administration (as citied in Fagnant and Kockelman, 2015) estimated that 25% of traffic congestion were caused by traffic incidents and half of them are cars crashes. Autonomous vehicles could provide a safety travel and reduce the traffic congestion. Also, the speed limits can be increased as reaction time of driverless vehicles is much shorter than that of human drivers and it may produce a reliable travel times. Reducing the traffic congestion probably allows more vehicles to pass through the highway.

Driverless vehicles probably reduce the oil consumption due to two main reasons including smaller vehicles size and new mobility services. Since autonomous cars are equipped with the accurate sensors and lasers, many safety requirements can be removed. MacKenzie (as citied in Wadud, MacKenzie & Leiby, 2016) estimated that removing the safety features would lower the fuel consumption by 5.5%. Wadud, MacKenzie and Leiby (2016) estimated that the fuel consumption would probably be reduced by 18% if consumers switch to smaller vehicles, which use new light materials. This indicates that the driverless cars would possibly reduce the fuel consumption by 23% in total if consumers switch from traditional vehicles to smaller driverless cars. In addition, if autonomous vehicles could communicate with parking infrastructure to have drop-offs and pickups services, this helps promote the car sharing. According to Fagnant and Kockelman (2015), self-driving cars could replace 9% to 13% of the privately owned and household-owned cars. This demonstrates that fewer private cars on the road would possibly reduce the oil consumption. Martain and Shaheen (as citied in Wadud, MacKenzie & Leiby, 2016) estimated that car sharing services may reduce 8.8% of the carbon dioxide emission. Reducing the oil consumption would reduce the carbon dioxide emission and global warming effect.

In conclusion, self-driving vehicles would probably reduce car accident and oil consumption and increase road capacity. Although self-driving cars seem ready to sell on the market, they require more testing in order to improve the performance. Besides, the US government should consider more about the regulations on the self-driving cars. I believe that driverless vehicles would probably replace all traditional cars in the future and it would possibly change the travel modes in society.

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