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Moving the Nation COMTO

The Future of **Transportation:**

Autonomous vehicles, transportation networking companies & public transit

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Coffee thermos and mobile device in hand, you sit relaxed in the back seat on your way to work. The automated car you are in waits for the light to change from red to green then begins to move through the urban landscape. In the next 3-15 years, autonomous vehicles (AVs) will be the norm for commuting and other trips.

The economics of removing drivers will reduce the traveler's cost of getting from point A to point B. Hybrid and fully electric AVs will further reduce cost and have a positive impact on the environment. They are also expected to greatly improve safety.

According to the National Safety Council, in 2017 an estimated 40,000 people in the U.S. died from automobile accidents, up 6 percent from 2015, and this number continues to grow annually. In addition, more than 2 million people each year are injured or disabled because of auto accidents. Clearly, these numbers are going in the wrong direction.

Most automobile accidents are caused by human error (e.g., speeding, distracted drivers, and driving under the influence).

Peter Hancock of *The Conversation* says, "Eliminating this error would, in two years, save as many people as the country lost in all of the Vietnam War." But as Hancock points out, comparing safety statistics of the preliminary testing of AVs in good weather to human-driven vehicles on different roadways in various weather conditions is not an even comparison. Despite these inconsistencies, the general public needs to be educated about the increased safety associated with AV adoption, yet accidents will not be eliminated by AVs, and automated and electric cars will not resolve congestion problems.

Another trend that will continue to shape transportation is the proliferation of transportation network companies (TNCs), such as Lyft and Uber, the majority of which provide rides in downtown urban centers or to airports. The San Francisco County Transportation Authority reports in "*TNCs Today*" that TNCs travel an average distance of 3.3 miles in San Francisco, and significant numbers of TNC vehicle trips occur on both weekdays and weekends.

As TNCs adopt newer vehicles and establish AV fleets, we can surmise that TNCs will be more available and at some point become routine in daily commutes. TNCs are already seen as a good solution for the last mile to major rail or bus rapid transit lines. The removal of drivers from the TNC business model will further disrupt the standard taxi, limo and parking models as well as reduce travel costs.

Looking at the San Francisco Bay Area Rapid Transit District (BART) system that moves more than 400,000 people over the San Francisco/Oakland Bay Bridge every day, it would not be feasible to put that many people into AVs/TNCs crossing the Bay Bridge on a daily basis. Transit planners are looking at alternatives such as building a second tunnel under the San Francisco Bay and ferry service. The situation is similar in New York and other major urban centers throughout the U.S.

A BART train leaving San Francisco

Greater investment is needed in the major rail and bus infrastructure already in place.

For example, the eBART East Contra Costa extension to Antioch that BART opened on May 26, 2018 provides much-needed service for commuters. Ridership is 3,000 people per day; however, the new station only has 1,000 parking spaces. The parking lot fills early in the morning, causing some people to continue to drive, seek parking at another BART station or park in the surrounding neighborhoods. Many riders rely on a kiss-and-ride drop-off or a TNC. In 5-10 years, use of AVs and TNCs will most likely offset this parking shortage at the Antioch station and throughout the BART system.

Even if AVs/TNCs solve some public transit parking issues and make restaurant valet parking obsolete, they cannot handle the growing demand for transportation as the population rises. To have the greatest efficiency, protect the environment, reduce congestion and improve mobility, AVs, TNCs and public transit must work together, and public and private organizations will need to invest in the infrastructure to make this possible.

That way, you can get dropped off by your AV, board the high-speed train, then travel from San Francisco to LA in under three hours, coffee thermos in hand while catching up on some reading. You will get to the meeting on time, safely and relaxed. What a great way to move through the day!

Autonomous cars