

Open to a World of Possibility

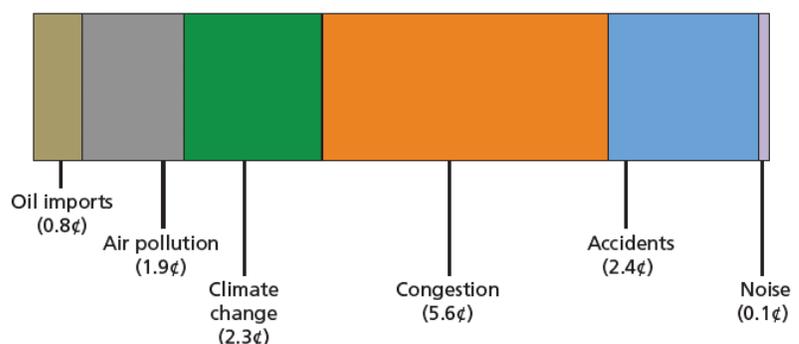
EDGE RESEARCH INSIGHTS | OCTOBER 2016

Understanding How An Idea Like Autonomous Vehicles Changes So Much

It's a world of possibility out there. We have to keep both our eyes and our minds open for it. One such idea is autonomous vehicles. It seems like every day there is another mention of them in the headlines. Ride-sharing service Lyft has a 10-year plan where it is thought that private car ownership will “all but end” by 2025. Granted, they have a bias but they are not the only ones making bold predictions – and strides. Google, Uber, Tesla, GE, Volkswagen, GM – virtually everyone is thinking about how they get active in the space. The complexity is not only in thinking through the technology to enable a fully autonomous vehicle, but also through its integration into global infrastructure, manufacturing, materials, energy, legislation, insurance and all aspects is far more than we can comment on in this brief space. We know because we read a 216 page report from the RAND Corporation on the topic with lots of thoughts but even more questions.

But it does give food for thought. Think about a few simple facts shared in their report. In the United States alone, there were 5.3mm car crashes resulting in 2.2mm injuries, 32,000 fatalities, and billions of dollars of private and social costs in 2011. Since driver error is responsible for a large proportion of the crashes, it is anticipated that autonomous vehicles could save society significant financial and human capital (approximately 39% of fatalities involved alcohol use by one of the drivers). Safer and less congested driving conditions imply that we can use lighter materials to build cars and run them more efficiently with higher average speeds and lower peak speeds to conserve fuel. That said, the impact on total fuel consumption is uncertain as efficiency gains may be balanced against more vehicle miles traveled as unserved populations (youth, seniors, disabled) are brought into the system. Think about the improvement in mobility, especially for the unable or unwilling to drive like those too young to learn or senior citizens. Consider the

An Estimate of the Per-Mile Externalities Associated with Driving an Automobile



NOTE: Estimates are in 2010\$ and based on NHTSA (2012a) values. GHG emissions use the central value from the U.S. Interagency Working Group on the Social Cost of Carbon (2013). Emissions factors are well-to-wheel for a 24.8-mpg vehicle using data from Argonne National Laboratory (2012).

RAND RR443-2.1

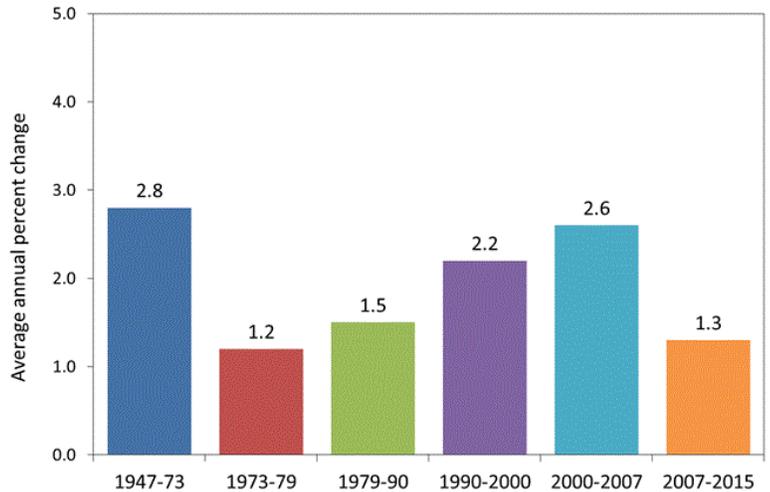
Source: RAND Corporation

Mind Open to a World of Possibility

impact on land usage as it is estimated that 31% of the central business districts of 41 major cities is used for parking. Calculate the amount of financial capital that might be released by having fewer, more highly utilized vehicles or the human capital repurposed to other productive labors as basic driving tasks can be automated.

Innovation like autonomous vehicles leads to productivity gains in our economy. Said differently, new ideas enable us to produce more with less. Productivity growth has been a challenge for the US economy these past several years as the benefits from the digital age are absorbed. In fact, productivity growth as measured by the US Labor Department (hourly output per worker) has actually been falling in recent quarters. In an advanced economy like the US, we need new ideas such as autonomous vehicles to grow productivity and result in an increasing quality of life.

Productivity change in the nonfarm business sector, 1947-2015



Source: U.S. Bureau of Labor Statistics

Granted, there is a far leap between our current automobile transportation today and a future of fully autonomous, no-human-required vehicles but progress can be quicker than you may think. After all, the first Apple iPhone was announced on January 9, 2007 and was first sold into the market on June 29, 2007. It is currently estimated that there are over 2 billion smartphones in the world today. In less than ten years, how much has having a little computer in your pocket changed your world?

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Will Skeeane is one of Edge Capital's Partners and co-manages our Investment Team. His responsibilities include working with the team to develop the firm's investment philosophy and outlook, identify attractive investment opportunities for clients, and allocate the resources of the firm to ensure our clients receive the highest level of service. He communicates our thinking on economic and investment matters in several local and national media outlets, including CNBC and the Wall Street Journal.

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