



## *THE 90% FALLACY*

An overview created by Walker Consultants



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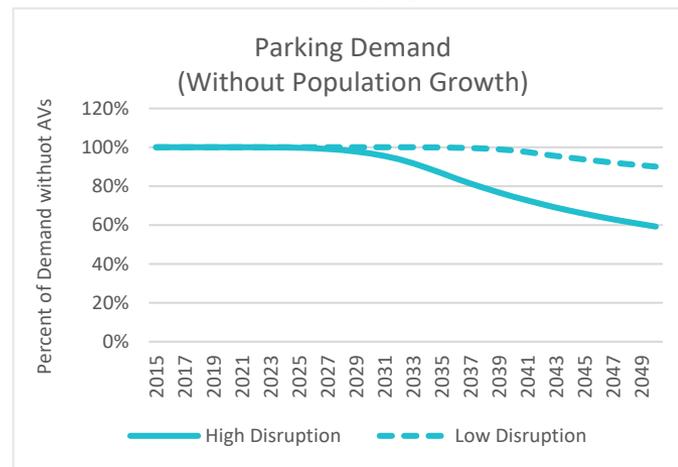
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<https://www.theverge.com/2016/9/19/12981448/self-driving-car-guidelines-obama-fox-x-dot-nhtsa>

### How much might parking demand decrease due to AV technology?

There are numerous articles, many of which reference one of a half-a-dozen research studies, discussing a 90% reduction in cars and/or parking resulting from the wide-spread adoption of Autonomous Vehicles (AVs). Walker Consultants has studied the original research reports and interviewed the responsible researchers, and has found the information is often taken out of context. The studies look at trips within a specific, usually limited area (say, ten square miles) and assume that every trip that stays within that area will be made by a shared AV, which is basically a pooled ride-sharing service like Uberpool, (not the more widely-used private ride version UberX) where unrelated people get in and out of the vehicle along the way. To extrapolate that to an entire city and further to an entire country, and assume that 90% of Americans will choose pooled ride-sharing is simply not realistic. Many of the trips to a particular site will come from a much wider geographic area and at least some will not find pooled rides acceptable.

We estimate that the realistic overall maximum reduction, **nationally**, in parking demand is about 40% at a high disruption scenario, and as low as 10% in a low disruption scenario. The impact at a specific site will likely vary by geographic location, land use and density; it will likely be greater in the urban core, and much lower in rural areas. The consensus view of academics, business and technology executives, and the leading international consultancies, is that AVs will be available for U.S. consumer purchase within the next five years. However, it will be several decades before AVs represent a majority of vehicles on our roads. We have an existing legacy population of more than 256 million vehicles with an average life of 11.5 years.

Most of the AV projections today are only for vehicle sales. We have created a projection of vehicles on the road based on nationally recognized consultants' projections of AV sales<sup>1</sup> as well as historic vehicle scrappage rates.<sup>2</sup>

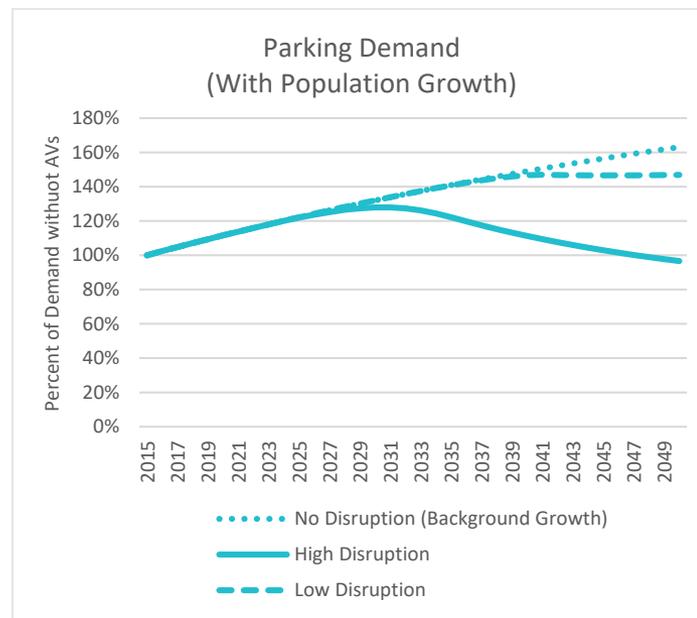


The graphs further reflect a vehicle sales mix by 2040 of 2/3 of sales to private individuals and 1/3 to ride-sharing services; however there is an overall reduction in car sales due to the fact that each AV operated for ride-hailing will replace several private vehicles. There are two primary sources of the 40% limit. The University of Michigan<sup>3</sup> estimated that automobile ownership in the U.S. could decline from 2.1 vehicles per household today to 1.2 vehicles per household, a reduction of 43%, simply because one AV could handle all household trips (that is, without any TNC service). The reduction will vary by area, with urban downtown vehicle ownership likely declining much more than that in rural areas. Using the Ann Arbor, Michigan data from NHTS and covering an area of 130 square miles, Columbia University<sup>4</sup> estimated that if everyone who could use a ride-hailing service does, vehicles on the road in Ann Arbor could be reduced by 49%. Both studies represent the same population that could give up driving **and parking** at destinations due to the pattern of family travel.

Taking all of these variables into consideration, our view is that parking demand reductions will vary by geographic area and land use and range from 10-40% but not be fully realized until 2050 or later. Another factor that is often ignored in articles is continued population growth and economic development. The U.S. population is about 325 million today and is projected by the Census Bureau to increase to 400 million by 2050. This growth will stimulate real estate development and mobility needs, including parking. Therefore, we created a second graph with the same assumptions but assuming population growth occurs. This graph would apply to a downtown, airport or campus where the overall activity, and in turn, parking demand, tends to grow over time, versus a parking structure serving a specific land use or residential complex which would experience reductions similar to the graph without population growth, albeit adjusted for the density and location of the specific site.

## REFERENCES

1. Gao, P., Kaas, H.-W., Mohr, D., & Wee, D. (2016, January). Disruptive Trends that will Transform the Auto Industry. Retrieved from McKinsey & Company: <http://www.mckinsey.com/industries/automotive-and-assembly/our-insights/disruptive-trends-that-will-transform-the-auto-industry>
2. IHS Markit. (2016). Vehicles Getting Older. Retrieved from HIS Markit: <http://news.ihsmarkit.com/press-release/automotive/vehicles-getting-older-average-age-light-cars-and-trucks-us-rises-again-201>
3. Schotettle, B, and Sivak, M. (2015) *Potential Impact of Self-Driving Vehicles on Household Vehicle Demand and Usage*. Ann Arbor MI: University of Michigan Transportation Research Institute.
4. Burns, L.D., Jordan, W.C. & Scarborough B.A. (January 27, 2013). *Transforming Personal Mobility*. New York, NY: The Earth Institute, Columbia University.



## ABOUT THE AUTHOR

**Walker Consultants** is the global leader in providing parking consulting and design services. Founded in 1965, we pioneered the field of parking consulting. Today the firm has over 300 employees delivering a wide range of parking planning, design, engineering, and restoration services.

We serve a broad spectrum of markets including healthcare, education, government, aviation, residential, retail and commercial development, entertainment, hospitality and athletic venues. This diversity allows our staff the luxury of collaborating with a large cross section of client types and developing best practices for their specific development needs, helping them unlock the potential of their projects.