How Automated Delivery Could Shape the Future of Local Commerce

2:00-2:45pm ET

Speakers: Alia Verloes and Matthew Lipka
Moderator: Paul Lewis

NEXT WEBINAR
Transportation Spending and Planning in the Time of COVID
Wednesday, Sept. 16
1:15pm ET
Economic Impacts of Autonomous Delivery Services in the US

September 10th, 2020

Eno Center for Transportation Webinar

How Could Automated Delivery Shape the Future of Local Commerce?
Defining Delivery Autonomous Vehicles

Generally, delivery AV services can be classified into three categories:

- Last-mile personal delivery device for sidewalks
- Autonomous vehicles for the road
- Drones delivering by air

Scope of this study: autonomous vehicles for the road
Research question

‘What are the potential direct and wider economic impact of delivery AV services to the US economy?’
Methodology

• Scenario based approach
• Sizing the US Demand for delivery AV services between 2025-2035
  o Develop delivery AVs deployment scenarios
  o Demand analysis (US, California and Texas)
  o Estimate number of delivery AVs required to meet the demand
• Analyze Economic Impacts and Benefits of delivery AV services sector
  o Direct economic impacts for the US economy
  o Wider impacts including safety; emissions and time savings
• Develop Recommendations
Scenario based approach

Delivery AV Deployment Scenarios

Key factors Considered for scenario development:

- Congestion and transport emissions
- Evolving attitude toward car ownership
- Autonomous Vehicles policy trends
- Increased adoption of online shopping

Conservative Scenario
- Very limited shift from private vehicles to AVs;
  - Limited government support;
  - Limited consumer acceptance toward delivery AV services
  - Moderate consumers’ willingness to pay extra for AV delivery services

Gradual Scenario
- Slow shift from private vehicles to AVs, with a steady increase in the use of shared autonomous vehicles (SAVs);
  - Government support remains modest;
  - Acceleration of consumers’ willingness to pay extra for delivery.

Disruptive Scenario
- AV technology evolves faster, supporting an accelerated shift from private vehicles to SAVs and a quicker and broader deployment of delivery AVs services;
  - Proactive government support to deploy AVs;
  - Delivery practice and consumers’ willingness to be high due to reduced cost of delivery.
Sizing the US Demand for Delivery AV Services

US Demand for delivery AV services by 2035

In-scope trips that could move to delivery AVs

• 306 billion trips are made annually by private vehicles in the US
• 40% are made for shopping and errands purposes (i.e. 540B VMT annually)
• By 2035 for the Gradual Shift scenario, 23% of these in-scope VMT could be replaced by delivery AV services (i.e. 191B VMT for shopping and errands)

Number of delivery AVs required to meet the demand for those services

Delivery AV Number of Vehicles Demanded (’000s of vehicles), US - All Scenarios

3.1 million delivery AVs would be required to meet the demand in 2035 (Gradual Shift Scenario)
COVID-19 potential impacts on future demand for delivery AV services

COVID-19 has triggered short-term acceleration and amplification of the following elements:

• E-commerce experiencing growth in categories such as groceries;
• Acceleration of experiments and evaluation of delivery services;
• On the supply side: more appetite for delivery; AV companies launching delivery initiatives

It is still too early to determine whether these changes will be permanent
Total Economic Impacts (2025-2035)

Gradual Shift Scenario

Direct Economic Impacts
$3.4 trillion

Wider Economic Impacts
$0.719 trillion

Total Economic Impacts
$4.1 trillion
Direct Economic Impacts (2025-2035)

Gradual Shift Scenario

- Total Economic Activity worth $3.4 trillion could be potentially generated in the US economy across different sectors (retail, automobile manufacturing, warehousing and storage, etc.)

- 60% ($2.0 trillion) is expected to consist of additional Value Add to GDP

- ~34 million job-years generated between 2025 and 2035:
  - 72% of the new jobs created would be direct employment by the delivery AV services sector (i.e. staff to operate the services).
  - $1M investment in this sector creates roughly 25-26 new jobs
Wider Benefits (2025-2035)

Gradual Shift Scenario

- 244K injury-causing road crashes could be avoided between 2025 and 2035
- 21B hours of driving trips for shopping and errand purposes could be saved between 2025 and 2035
- 407M short tons of CO2 emissions saved between 2025 and 2035
- $719B total estimated reduction in costs associated with road safety, time savings, and emissions avoided between 2025 and 2035
Looking ahead, Steer has prepared the following recommendations:

1. Increase of experimentation and testing
2. A more harmonized regulatory environment
3. Develop community outreach and engagement
4. Ensuring equitable job creation
5. Work closely with the wider mobility ecosystem to complement multi-modality
6. Assist to the best of their abilities local governments and communities in the COVID-19 crisis
Thank you

Please contact:

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Q&A Session

What are your questions?