



OFFICE OF **INSPECTOR GENERAL**

UNITED STATES POSTAL SERVICE

Methodology Report: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last-Mile Delivery

RARC Report

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USPS OIG SURVEY REPORTING

The U.S. Postal Service Office of Inspector General's (OIG) public opinion research projects are different from other OIG products in that they are designed to be useful to a general audience while also meeting the technical disclosure standards required by the field of survey research.

The content of this survey's reporting is divided across three separate products. Each product has been designed to be readable as a stand-alone report, and can be accessed through the links below:

- Those with interest in national findings on the research topic should focus on the [Summary Report](#).
- Those with interest in in-depth reporting for several relevant subgroups should also review the [Detailed Subgroup Findings Report](#).
- Those interested in the technical details surrounding the collection of the data used for this project should review the [Methodology Report](#).

Most of the slides in the reporting for this survey are designed so that they can be consumed on their own. This way, if someone takes out one slide and shares it, they can understand the findings presented without needing to see the entire report. For that reason, the footnotes found on each slide include important details that might be different from what a general audience is used to seeing, such as notes about any statistical testing that was performed, or the full text of any question whose results are reported on the slide.

General audience members will be most interested in the findings presented at the top of each page of a report. As you move down any given slide, the information presented gets more detailed and technical.

Note: Throughout this report, Amazon.com, UPS, and FedEx are used to identify companies about which survey data was collected. Amazon.com is the registered trademark of Amazon.com, Inc. UPS is the registered trademark of United Parcel Service of America, Inc. FedEx is the registered trademark of Federal Express Corporation. These trademarks and their respective logos are used for identification purposes only and their use is not meant to imply in any way that the registered holders of the trademarks sponsor or endorse this report or the services of the U.S. Postal Service.

METHODOLOGY

The U.S. Postal Service Office of Inspector General (OIG) fielded a confidential online survey targeting a nationally representative sample of 18-75 year-old residents of the 50 United States and the District of Columbia. Respondents were selected from an opt-in Internet panel, solicited by email, and incentivized to complete the survey on the OIG's online survey platform by the sampling services provider Research Now, per their standard sampling procedures. The survey was conducted in English.

Quota sampling procedures were employed during the survey field period in order to improve the representativeness of the data collected. Quotas were employed on age, gender, nativity within ethnicity, race, education, geographic subregion, and ecommerce participation.

With the exception of ecommerce participation, data were weighted prior to analysis according to U.S. Bureau of the Census population estimates on all quota variables, as well as on income and employment status. Ecommerce participation was weighted to reflect a national probability general population telephone survey's results regarding the proportion of Americans that had purchased something online in the previous month. All data and sample sizes in this research's reports are weighted.

Field Dates: April 24 – April 30, 2017

Total Respondents: 2,830

Median Interview Length: 14 minutes 48 seconds

95% confidence interval (National Sample): +/- 1.8%*

*This interval is being provided as a benchmark. +/- 1.8% is the size of the confidence interval that would be calculated from a probability sample of n=2,830. Like most online research, this study uses a non-probability sample. The actual interval is likely to be somewhat larger, as other sources of error may also impact findings.

METHODOLOGY

DETAILED NOTES AND LIMITATIONS

Overview

The OIG researchers employed best practices in designing and implementing the methodology employed here. Nevertheless, the findings of survey research projects can be affected by varying factors, including the wording of questions, answer choices, and the order of questions asked to respondents.

Research in the public opinion field also demonstrates that point estimates can vary across survey modes (online, in person, by phone, etc.) based both on how respondents interact with those modes, and on the degree to which each mode is able to achieve a representative sample of data for analysis.

Note on Subject Matter

It is notable that the subject matter of this research is extremely new, and so respondents were asked to judge a concept that few — if any — would have actually encountered firsthand. Responses provided here, then, might vary from respondents' perceptions if they were to gain experience with the actual concept.

Data Quality

Prior to analysis, steps were taken to improve the quality of all of the data analyzed for reporting. While collecting responses, the survey employed three “attention check” questions that respondents had to answer correctly in order to finish the survey, as well as one “attention check” question asked at the end of the survey that required respondents to briefly describe what the survey had been about. Then, prior to analysis, the data were cleaned to remove partial responses, responses by “straight liners” who did not provide high quality data,

“speeders” who completed the survey unrealistically quickly, unqualified respondents, terminated respondents, inattentive respondents, and respondents who did not complete the entire survey.

Sampling Approach: Detail and Limitations

The OIG completed this research with respondents reached through sampling services provider Research Now's non-probability online survey panel. Research Now solicited and compensated respondents using their standard procedures.

Online surveys completed with non-probability panels are limited in that not all members of the population being studied — in this case, residents of the United States — are eligible for selection. For example, not all residents of the United States are online, nor are they all members of the panel used for the research. In addition, this study was only offered in English, and so it could not reach those who were not able to take the survey in the English language. The extent to which population members can not be reached through the sample frame used for the study leads to a phenomenon known as coverage error.

Additionally, for all survey research there exists the possibility that those who fail to respond to a survey solicitation might be different than those who do respond, which, if present, leads to an effect known as nonresponse bias.

Finally, respondents acquired through online panels “opt-in” to research. If those who choose to participate in online surveys are different than those who do not choose to participate in online surveys, then the opinions collected might not reflect those of the population of interest — a phenomenon known as self-selection bias.

METHODOLOGY

DETAILED NOTES AND LIMITATIONS

Quota Sampling and Weighting

This research attempts to adjust for the effects of coverage error, nonresponse bias, and self-selection bias through employing (1) quota sampling, where responses from different demographic groups are collected until their proportionate representation in the sample matches the population, and (2) the application of weights that take into account each respondent's demographic characteristics in proportion to the population of interest when calculating statistics for analysis and reporting.

For this study, quotas were employed on age, gender, nativity within ethnicity, race, education, geographic subregion, and ecommerce participation. With the exception of ecommerce participation, data were weighted prior to analysis according to U.S. Bureau of the Census population estimates on all quota variables, as well as on income and employment status. Ecommerce participation was weighted to reflect a national probability general population telephone survey's results regarding the proportion of Americans that had purchased something online in the previous month. Weighting was performed through iterative proportion fitting, also known as "rim weighting."

This "model-based" approach requires that the underlying data are sufficiently representative of the population to be effectively responsive to the adjustments completed. Further, this approach requires that sound assumptions be made regarding the relationship between the variables chosen for setting quotas or weights and respondents' attitudes towards the subject being investigated. Consequently, point estimates reported may

or may not vary from those collected using alternate methods of survey design and implementation.

Statistical Testing

There is some controversy regarding the statistical testing of data derived from online "opt-in" panel research, and the literature on the topic is rapidly evolving.

The statistical testing included in this research's reporting was performed per standard industry approach. Through this approach, traditional statistical tests were used to determine the probability that a difference between two percentages observed in the sample would have occurred by chance if the population proportions were equal.

It is also notable that reporting a "margin of error" for non-probability samples is increasingly controversial in the field of survey research. For this study, a simple random sample the size of the National Sample (n=2,830) would have a 95 percent confidence interval of +/- 1.8 percent. Given that this is a non-probability sample, estimates cannot be exactly calculated, and would likely be somewhat higher. Other sources of error may also impact findings. This research's reporting avoids specifying with terms such as "margin of error" or "margin of sampling error," and instead uses the more generic term "confidence interval."

Appendix A

Public Perception of Self-Driving Technology for Long-Haul Trucking and Last-Mile Delivery Questionnaire



Appendix A:

Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery Questionnaire

Preface

The full text of the Public Perception of Self-Driving Vehicles for Logistics Applications survey is presented below. When reviewing the survey text, it is important to note that text that is **[Bracketed and in bold]** denotes instructions for the programmer preparing the survey for respondents online and were not shown to respondents. It should also be noted that respondents were compelled to answer all questions in the survey, that no “back” button or question numbers were presented to respondents, and that just one question was presented on each screen that respondents saw online. Finally, all answers by respondents who were “terminated” for answering in ways that disqualified them from the survey were redirected back to the sample provider’s website and their answers were not included in the data collected.

Section I: Screener

[Text Box - Introduction]:

Thank you for clicking through to this survey!

Your thoughtful participation in this survey will help improve the products and processes that people like you interact with every day by helping business and government leaders understand your needs and interests.

Your individual feedback is confidential, so you should feel comfortable expressing your honest opinions. This survey should take about 15 minutes to complete.

Your feedback really does make a difference – ***so let’s begin!***

- S1.** To start, do you live in the United States?
- a. Yes
 - b. No **[TERMINATE]**

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

S2. Which state do you live in?

[DROP DOWN LIST OF STATES – TERMINATE IF “OTHER” – RECODE INTO SUBREGION]

S3. Which of the following best describes the area where you live?

- a. A city or urban area
- b. A town or suburban area
- c. A small town
- d. A rural area
- e. A remote area with few other nearby residents

S4. Are you...

- a. Male
- b. Female

S5. What is your age in years?

[Open-ended numeric. TERMINATE IF <18 OR >75]

S6. Are you of Hispanic, Latino, or Spanish origin?

- a. Yes
- b. No

[ASK S7 IF YES AT S6]

S7. Were you born in the United States?

- a. Yes
- b. No

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

S8. How would you describe yourself? *For the purposes of this question, persons of Spanish/Hispanic/Latino origin may be of any race.*

[RANDOMIZE LIST, ANCHOR MORE THAN ONE/OTHER/PREFER NOT TO ANSWER]

- a. White or Caucasian
- b. Black or African American
- c. Asian or Pacific Islander
- d. Native American or Alaska Native
- e. More than one race
- f. Other
- g. Prefer not to answer

S9. What is the highest level of education that you have completed?

- a. Left school before completing high school – no diploma
- b. High school graduate – high school diploma or the equivalent (for example: GED)
- c. Some college, but no degree
- d. Associate degree
- e. Bachelor’s degree
- f. Master’s degree
- g. Doctorate or Professional degree, such as PhD, DDS or JD

S10. Are you currently...

- a. Employed full-time for pay
- b. Employed part-time for pay
- c. Not currently employed for pay, but actively looking for paid work
- d. Not currently employed for pay, and not looking for paid work
- e. Disabled or otherwise unable to work
- f. Retired
- g. Other (Please specify):

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ASK S11 IF EMPLOYED AT S10. RANDOMIZE LIST, ANCHOR OTHER]

S11. Which of the following best describes the type of work you do?

- a. Government
- b. Healthcare
- c. Education
- d. Marketing, advertising or marketing research **[TERMINATE]**
- e. Mailing industry/Supply chain/Logistics
- f. Information technology
- g. Telecom
- h. Automotive or related industries
- i. Energy
- j. Legal
- k. Manufacturing
- l. Accounting
- m. Other

S12. When, if ever, was the last time that you or someone in your household placed an order online for a physical product that was to be delivered to your home, or to the home of someone else?

When answering, please think of the last time you ordered any product online, even if it has not yet been delivered. Was that order placed within the...

- a. Past day
- b. Past week
- c. Past month
- d. Past 3 months
- e. Past 6 months
- f. Past year
- g. More than one year ago
- h. Never
- i. Not sure

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

S13. Paying attention and reading the instructions carefully is critical. If you are paying attention please choose Orange below.

[RANDOMIZE LIST]

- a. Red **[TERMINATE]**
- b. Orange
- c. Blue **[TERMINATE]**
- d. Silver **[TERMINATE]**
- e. Green **[TERMINATE]**
- f. Yellow **[TERMINATE]**

[IF TERMINATED DURING SCREENER: Text Box]:

We're sorry, but unfortunately you do not meet the qualifications for this survey.

We sincerely thank you and appreciate your time, dedication, and continued participation in online research!

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

Section II: Main Questionnaire

[RANDOMIZE BRANDS]

Q1. How familiar are you with the following organizations?

[Scale: Extremely familiar, Very familiar, Moderately familiar, Slightly familiar, Not at all familiar]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

[ASK Q2 FOR ALL BRANDS SLIGHTLY FAMILIAR+ AT Q1. SKIP IF NOT AT ALL FAMILIAR WITH ANY BRAND AT Q1. RANDOMIZE BRANDS.]

Q2. How positive or negative is your overall impression of the following organizations?

[Scale: Very positive, Somewhat positive, Neither positive nor negative, Somewhat negative, Very negative]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

[ASK Q3 FOR ALL BRANDS SLIGHTLY FAMILIAR+ AT Q1. SKIP IF NOT AT ALL FAMILIAR WITH ANY BRAND AT Q1. RANDOMIZE BRANDS.]

Q3. Overall, how innovative do you feel the following organizations are?

[Scale: Extremely innovative, Very innovative, Moderately innovative, Slightly innovative, Not at all innovative]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

Q4. When, if ever, was the last time that you visited a post office and went inside?

When answering, please think of the last time you visited a post office and went inside, even if you did not complete any business while you were there. Was your last visit to a post office within the...

- a. Past day
- b. Past week
- c. Past month
- d. Past 3 months
- e. Past 6 months
- f. Past year
- g. More than one year ago
- h. Never
- i. Not sure

Q5. Have you ever used a ridesharing service like Uber or Lyft?

For the purposes of this question, please do not include the use of taxis in your answer.

- a. Yes
- b. No
- c. I'm not familiar with ridesharing services/not sure what this is
- d. I'm not sure if I have ever used one of these services

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ASK Q6 IF YES AT Q5]

Q6. How often do you typically use a ridesharing service like Uber or Lyft?

For the purposes of this question, please do not include the use of taxis in your answer.

- a. Daily
- b. Weekly, but not every day
- c. Monthly, but not every week
- d. Several times per year, but not every month
- e. Once per year or less often
- f. I have never used a ridesharing service

Q7. Have you ever taken a taxi?

For the purposes of this question, please do not include the use of ridesharing services in your answer.

- a. Yes
- b. No
- c. I'm not sure

[ASK Q8 IF YES AT Q7]

Q8. How often do you typically take a taxi?

For the purposes of this question, please do not include the use of ridesharing services in your answer.

- a. Daily
- b. Weekly, but not every day
- c. Monthly, but not every week
- d. Several times per year, but not every month
- e. Once per year or less often
- f. I have never taken a taxi

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

Q9. How often, if ever, do you personally drive a car?

- a. Daily
- b. Weekly, but not every day
- c. Monthly, but not every week
- d. Several times per year, but not every month
- e. Once per year or less often
- f. I do not drive

[ASK Q10 IF EVER DRIVE AT Q9. SELECT ALL THAT APPLY. ROTATE ANSWERS WITH NEITHER/NOR ANCHORED AND EXCLUSIVE]

Q10. Which of the following best describes you? *Please select all that apply...*

- a. I have regular access to my own car(s)
- b. I have regular access to one or more cars belonging to someone else in my household
- c. I have regular access to one or more cars through my work
- d. I have regular access to one or more cars through a car sharing service (Zipcar, Enterprise CarShare, etc.)
- e. I have regular access to one or more cars belonging to someone else outside of my household
- f. Other (Please specify):
- g. None of the above

[ASK Q11 IF OWN A CAR AT Q10. SELECT ALL THAT APPLY. ROTATE ANSWERS WITH OTHER AND "NO CAR" ANCHORED AND EXCLUSIVE]

Q11. Which of the below best describes the car(s) that you own? *Please select all that apply.*

- a. I bought/purchased my car(s)
- b. I lease my car(s)
- c. I received the car(s) from someone else/was given my car(s)/inherited my car(s)
- d. Other (Please specify):
- e. I do not own a car

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ASK Q12 IF DRIVE LESS THAN DAILY AT Q9. SELECT ALL THAT APPLY. ROTATE ANSWERS WITH NONE AND OTHER ANCHORED, AND WITH NONE EXCLUSIVE]

Q12. Which, if any, of the following are reasons why you do not drive a car more often?

[Scale: Major Reason, Minor Reason, Not a Reason]

- a. I am concerned about safety
- b. I use taxis or ridesharing services like Uber or Lyft instead
- c. I use public transportation instead
- d. Parking is too difficult or expensive
- e. Car upkeep is too expensive (gas, maintenance, insurance, etc.)
- f. Buying or leasing a car is too expensive
- g. I am physically unable to drive
- h. Environmental concerns
- i. I do not need to drive more often
- j. No real reason
- k. Other

[DISPLAY Q12a IF OTHER SELECTED AT Q12]

Q12a. For what other reason(s) do you not drive a car more often?

[Open-ended]

Q13. Have you seen or heard anything about organizations developing self-driving cars?

- a. Yes, I have seen or heard a lot about this
- b. Yes, I have seen or heard some information about this
- c. Yes, I have seen or heard a little bit about this
- d. No, I have not seen or heard anything about this

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ASK Q14 IF “YES” AT Q13]

Q14. Based on any information that you have seen or heard, how much do you like or dislike the idea of self-driving cars?

- a. I like the idea very much
- b. I like the idea somewhat
- c. I neither dislike nor like the idea
- d. I dislike the idea somewhat
- e. I dislike the idea very much

Q15. Based on any information that you have seen or heard, how interested would you be in someday purchasing or leasing a self-driving car for yourself?

- a. Very interested
- b. Somewhat Interested
- c. Slightly interested
- d. Not at all interested
- e. Not sure/not informed enough to say **[SET APART VISUALLY IF POSSIBLE]**

[SELECT ALL THAT APPLY. ROTATE ANSWERS WITH DON’T KNOW, NONE AND OTHER ANCHORED, AND WITH DON’T KNOW AND NONE EXCLUSIVE]

Q16a. Based on any information that you have seen or heard, which, if any, of the below appeal to you about the idea of self-driving cars?

Please select all that apply

- a. I could do other things, like sleep, read, or use my phone, while the car is driving
- b. I might not need to own or lease my own car/as many cars
- c. I want the latest technology
- d. I am unable to drive or it is difficult to drive, and self-driving cars could give me better access to transportation
- e. I think self-driving cars would be safe
- f. I think self-driving cars would be more environmentally friendly
- g. Self-driving cars could give people safer access to transportation when drunk/intoxicated
- h. I think self-driving cars would get me to my destination more quickly
- i. Other (Please specify):
- j. I do not know enough about the technology to say
- k. The idea of self-driving cars does not appeal to me

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE LIST. SKIP Q16b IF NONE OR DON'T KNOW AT Q16a. SHOW ITEMS IN Q16b THAT WERE SELECTED AT Q16a]

Q16b. And which of the following would most appeal to you about the idea of self-driving cars?

Please select the one item below that would most appeal to you.

- a. I could do other things, like sleep, read, or use my phone, while the car is driving
- b. I might not need to own or lease my own car/as many cars
- c. I want the latest technology
- d. I am unable to drive or it is difficult to drive, and self-driving cars could give me better access to transportation
- e. I think self-driving cars would be safe
- f. I think self-driving cars would be more environmentally friendly
- g. Self-driving cars could give people safer access to transportation when drunk/intoxicated
- h. I think self-driving cars would get me to my destination more quickly
- i. Other (Please specify): **[IF ENTERED AT Q16a, TEXT WILL BE PIPED IN]**

[SELECT ALL THAT APPLY. ROTATE ANSWERS WITH NONE AND OTHER ANCHORED, AND WITH DON'T KNOW AND NONE EXCLUSIVE]

Q17a. Based on any information that you have seen or heard, which, if any, of the below concern you about the idea of self-driving cars?

Please select all that apply

- a. I think self-driving cars would not be safe
- b. I think self-driving cars might be too expensive
- c. I trust my driving skills more than self-driving technology
- d. I feel the technology is too new and unproven
- e. I am afraid that the self-driving technology could be hacked
- f. I enjoy driving and would not want to give it up
- g. I feel the new technology would be too complicated/confusing
- h. I think self-driving cars would not be environmentally friendly
- i. Other (Please specify):
- j. I do not know enough about the technology to answer
- k. Nothing concerns me about self-driving cars

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE LIST. SKIP Q17b IF NONE AT Q17a. SHOW ITEMS IN Q17b THAT WERE SELECTED AT Q17a]

Q17b. And which of the following would most concern you about the idea of self-driving cars?

Please select the one item below that would most concern you.

- a. I think self-driving cars would not be safe
- b. I think self-driving cars might be too expensive
- c. I trust my driving skills more than self-driving technology
- d. I feel the technology is too new and unproven
- e. I am afraid that the self-driving technology could be hacked
- f. I enjoy driving and would not want to give it up
- g. I feel the new technology would be too complicated/confusing
- h. I think self-driving cars would not be environmentally friendly
- i. Other (Please specify): **[IF ENTERED AT Q17a, TEXT WILL BE PIPED IN]**

Q18. Based on any information that you have seen or heard, how safe or unsafe do you feel self-driving cars would be compared to cars driven by people?

- a. Self-driving cars would be much more safe
- b. Somewhat more safe
- c. About the same
- d. Somewhat less safe
- e. Self-driving cars would be much less safe
- f. Not sure/not informed enough to say **[SET APART VISUALLY IF POSSIBLE]**

Q19. Have you seen or heard anything about organizations considering the use of self-driving vehicles for the transportation of mail or packages in the future?

- a. Yes, I have seen or heard a lot about this
- b. Yes, I have seen or heard some information about this
- c. Yes, I have seen or heard a little bit about this
- d. No, I have not seen or heard anything about this

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ASK Q20 IF “YES” AT Q19. RANDOMIZE ORDER, ANCHOR OTHER AND I DON’T RECALL OPTION]

Q20. According to what you have seen or heard, which, if any, of the following automakers are considering the use of self-driving vehicles for the transportation of mail or packages in the future?

Please select all that apply.

- a. Tesla
- b. Ford
- c. Honda
- d. FCA/Chrysler Group (Chrysler, Dodge, Jeep, Ram, Fiat, etc.)
- e. BMW/Mini Cooper
- f. Audi
- g. Mercedes Benz
- h. General Motors (Chevrolet, GMC, Buick, Cadillac, etc.)
- i. Toyota Group (Toyota, Lexus, Subaru, Isuzu, etc.)
- j. Hyundai-Kia
- k. Other (Please specify):
- l. I do not recall the name of the automaker
- m. I do not recall seeing or hearing about this idea

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ASK Q21 IF “YES” AT Q19. RANDOMIZE ORDER, ANCHOR OTHER AND I DON’T RECALL OPTION]

Q21. And according to what you have seen or heard, which, if any, of the following non-automaker organizations are considering the use of self-driving vehicles for the transportation of mail or packages in the future? *Please select all that apply.*

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Google
- e. Amazon
- f. Uber
- g. Lyft
- h. Walmart
- i. Other (Please specify):
- j. I do not recall the name of the non-automaker organization
- k. I do not recall seeing or hearing about this idea

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

Section III: Concept Tests

TWO CONCEPTS (A AND B) SHOWN. RANDOMIZE ORDER OF CONCEPT SHOWN. BALANCE SAMPLE ON DEMOGRAPHICS AND DRIVERLESS CONCEPT LIKING AND AWARENESS FOR “SAW FIRST/SAW SECOND” FOR ANALYSIS.]

[Text Box –Introduction for First Concept Shown]:

Some organizations have been exploring the idea of using self-driving vehicles for the transportation of mail or packages in the future.

We will now ask for your brief feedback about two concepts, where each concept describes a way in which a delivery organization might incorporate self-driving vehicles in the future.

[Text Box –Introduction 2]:

Now we will ask for your brief feedback about one more concept for how organizations might incorporate self-driving vehicles into the transportation of mail or packages in the future.

[Text Box –Introduction 1a]:

Concept: Self-Driving Long-Haul Trucks

Organizations use large trucks to carry mail or packages between warehouses that are located around the country. At these warehouses, mail and packages are sorted before being delivered to their final destinations, such as your home.

In the future, self-driving vehicles could be used for these long trips on highways between warehouses. They would likely look much like trucks used today:



Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

A1. Were you able to see the picture of this truck?

- a. Yes
- b. No

[Text Box – Introduction 2a]:



Under this approach, the truck would use a number of onboard sensors to drive itself on highways, along with whatever other traffic might be present on the road.

A driver would still stay in the vehicle, completing paperwork or other tasks in a space behind the seating area, and even resting overnight while the truck carries its cargo to its destination.

The driver would take over operation of the truck when exiting the highway for refueling, or when approaching its final destination.

[RANDOMIZE LIST]

A2. Paying attention and reading the instructions carefully is critical. If you are paying attention please choose Red below.

- a. Red
- b. Orange **[TERMINATE]**
- c. Blue **[TERMINATE]**
- d. Silver **[TERMINATE]**
- e. Green **[TERMINATE]**
- f. Yellow **[TERMINATE]**

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

A3. How much do you like or dislike the idea of organizations using self-driving trucks as we just described for the highway portion of the long trips between warehouses?

- a. I like the idea very much
- b. I like the idea somewhat
- c. I neither dislike nor like the idea
- d. I dislike the idea somewhat
- e. I dislike the idea very much

[RANDOMIZE LIST]

A4. To what extent do you agree or disagree with the following statements about using self-driving trucks as we just described for the highway portion of the long trips between warehouses?

[Scale: Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree]

- a. The concept would be safe
- b. The concept would be environmentally friendly
- c. The concept would lead to lower shipping prices
- d. The concept would lead to faster delivery of mail or packages

A5. When, if ever, do you expect that companies might start to use self-driving trucks as we just described for the highway portion of the long trips between warehouses?

- a. Within the next year
- b. Within the next 3 years, but not the next year
- c. Within the next 5 years, but not the next 3 years
- d. Within the next 10 years, but not the next 5 years
- e. Within the next 20 years, but not the next 10 years
- f. More than 20 years
- g. Never

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[ON PC's, RESPONDENTS DRAG AND DROP RANKINGS, ON TABLETS AND MOBILE DEVICES RESPONDENTS CLICK IN ORDER OF RANKINGS.]

A6. Please rank the following organizations from 1 to 4, where 1 is the organization you would most trust to use self-driving trucks for the highway portion of the long trips between warehouses, and 4 is the organization you would least trust to use self-driving trucks for the highway portion of the long trips between warehouses.

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

[RANDOMIZE BRANDS]

A7. Would your overall impression of the following organizations be more or less positive if you knew that they would be using self-driving trucks for the highway portion of the long trips between warehouses?

[Scale: Much more positive, Somewhat more positive, About the same, Somewhat less positive, Much less positive]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

[RANDOMIZE BRANDS]

A8. How innovative would you feel that the following organizations were if you knew that they would be using self-driving trucks for the highway portion of the long trips between warehouses?

[Scale: Extremely innovative, Very innovative, Moderately innovative, Slightly innovative, Not at all innovative]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

A9. How safe or unsafe do you feel self-driven long-haul trucks would be compared to long-haul trucks driven by people?

- a. Self-driven long-haul trucks would be much safer
- b. Somewhat safer
- c. About the same
- d. Somewhat less safe
- e. Self-driven long-haul trucks would be much less safe
- f. Not sure/not informed enough to say **[SET APART VISUALLY IF POSSIBLE]**

[RANDOMIZE LIST, ANCHOR OTHER AND NONE]

A10. Which, if any, of the following would you be concerned about if companies were to use self-driving trucks for the highway portion of the long trips between warehouses?

Are you concerned that the self-driving trucks...

Please select all that apply.

- a. ...might malfunction and damage property
- b. ...might malfunction and damage the mail or packages that it is carrying
- c. ...might malfunction and injure someone
- d. ... might not be as safe as trucks driven by people
- e. ...might lead to an increase in traffic on the roads
- f. ...might be intentionally used to injure people or property
- g. ...might be damaged by others
- h. ...the truck and/or the mail or packages it's carrying might be stolen
- i. ...might navigate itself to the wrong address
- j. Other (Please specify):
- k. I am not concerned about any of these

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE LIST. SKIP A11 IF NONE AT A10. SHOW ITEMS IN A11 THAT WERE SELECTED AT A10]

A11. And which of the following would you be most concerned about if a company were to use self-driving trucks for the highway portion of the long trips between warehouses?

Please select the one item below that you would be the most concerned about.

- a. ...might malfunction and damage property
- b. ...might malfunction and damage the mail or packages that it's carrying
- c. ...might malfunction and injure someone
- d. ...might not be as safe as trucks driven by people
- e. ...might lead to an increase in traffic on the roads
- f. ...might be intentionally used to injure people or property
- g. ...might be damaged by others
- h. ...the truck and/or the mail or packages it's carrying might be stolen
- i. ...might navigate itself to the wrong address
- j. Other (Please specify): **[IF ENTERED AT A10, TEXT WILL BE PIPED IN]**

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

CONCEPT B

[Text Box –Introduction 1b]:

Concept: Self-Driving Delivery Trucks

Delivery trucks are used to carry mail or packages from central warehouses to their final destinations, such as your home. You have most likely seen these kinds of delivery trucks in your neighborhood as they transport mail and packages to you and your neighbors.

In the future, self-driving vehicles could be used to make the delivery of mail or packages to their final destinations more efficient. The self-driving vehicles would likely look much like the delivery trucks used today:



[RANDOMIZE LIST]

B1. Paying attention and reading the instructions carefully is critical. If you are paying attention please choose Silver below.

- a. Red [TERMINATE]
- b. Orange [TERMINATE]
- c. Blue [TERMINATE]
- d. Silver
- e. Green [TERMINATE]
- f. Yellow [TERMINATE]

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[Text Box – Introduction 2b]:



Under this approach, the truck would use a number of onboard sensors to drive the mail or packages to their final destinations, along with whatever other traffic might be present on the road.

A delivery person would still stay in the vehicle, sorting mail or packages and completing paperwork in the space behind the driver's seating area, while the delivery truck carries its cargo to its final delivery point, such as your home.

The delivery person would then get out of the vehicle to complete the delivery of the mail or packages, similar to how they do now.

B2. Were you able to see the picture of the delivery truck above?

- a. Yes
- b. No

B3. How much do you like or dislike the idea of organizations using self-driving trucks as we just described for the delivery of mail or packages to their final destinations?

- a. I like the idea very much
- b. I like the idea somewhat
- c. I neither dislike nor like the idea
- d. I dislike the idea somewhat
- e. I dislike the idea very much

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE LIST]

B4. To what extent do you agree or disagree with the following statements about using self-driving trucks as we just described for the delivery of mail or packages to their final destinations?

[Scale: Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree]

- a. The concept would be safe
- b. The concept would be environmentally friendly
- c. The concept would lead to lower shipping prices
- d. The concept would lead to faster delivery of mail or packages
- e. The concept would lead to more frequent delivery of my mail or packages

B5. When, if ever, do you expect that companies might start to use self-driving trucks as we just described for the delivery of mail or packages to their final destinations?

- a. Within the next year
- b. Within the next 3 years, but not the next year
- c. Within the next 5 years, but not the next 3 years
- d. Within the next 10 years, but not the next 5 years
- e. Within the next 20 years, but not the next 10 years
- f. More than 20 years
- g. Never

[ON PC's, RESPONDENTS DRAG AND DROP RANKINGS, ON TABLETS AND MOBILE DEVICES RESPONDENTS CLICK IN ORDER OF RANKINGS.]

B6. Please rank the following organizations from 1 to 4, where 1 is the organization you would most trust to use self-driving trucks for the delivery of mail or packages to their final destinations, and 4 is the organization you would least trust to use self-driving trucks for the delivery of mail or packages to their final destinations.

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE BRANDS]

B7. Would your overall impression of the following organizations be more or less positive if you knew that they would be using self-driving trucks for the delivery of mail or packages to their final destinations?

[Scale: Much more positive, Somewhat more positive, About the same, Somewhat less positive, Much less positive]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

[RANDOMIZE BRANDS]

B8. How innovative would you feel that the following organizations were if you knew that they would be using self-driving trucks for the delivery of mail or packages to their final destinations?

[Scale: Extremely innovative, Very innovative, Moderately innovative, Slightly innovative, Not at all innovative]

- a. United States Postal Service (USPS)
- b. United Parcel Service (UPS)
- c. Federal Express (FedEx)
- d. Amazon

B9. How safe or unsafe do you feel self-driven delivery trucks would be compared to delivery trucks driven by people?

- a. Self-driven delivery trucks would be much safer
- b. Somewhat safer
- c. About the same
- d. Somewhat less safe
- e. Self-driven delivery trucks would be much less safe
- f. Not sure/not informed enough to say **[SET APART VISUALLY IF POSSIBLE]**

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE LIST, ANCHOR OTHER AND NONE]

B10. Which, if any, of the following would you be concerned about if companies were to use self-driving trucks for the delivery of mail or packages to their final destinations?

Are you concerned that the self-driving trucks...

Please select all that apply.

- a. ...might malfunction and damage property
- b. ...might malfunction and damage the mail or packages that it's carrying
- c. ...might malfunction and injure someone
- d. ...might not be as safe as trucks driven by people
- e. ...might lead to an increase in traffic on the roads
- f. ...might be intentionally used to injure people or property
- g. ...might be damaged by others
- h. ...the truck and/or the mail or packages it's carrying might be stolen
- i. ...might navigate itself to the wrong address
- j. Other (Please specify):
- k. I am not concerned about any of these

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

[RANDOMIZE LIST. SKIP B11 IF NONE AT B10. SHOW ITEMS IN B11 THAT WERE SELECTED AT B10]

B11. And which of the following would you be most concerned about if a company were to use self-driving trucks for the delivery of mail or packages to their final destinations?

Please select the one item below that you would be the most concerned about.

- a. ...might malfunction and damage property
- b. ...might malfunction and damage the mail or packages that it's carrying
- c. ...might malfunction and injure someone
- d. ...might not be as safe as trucks driven by people
- e. ...might lead to an increase in traffic on the roads
- f. ...might be intentionally used to injure people or property
- g. ...might be damaged by others
- h. ...the truck and/or the mail or packages it's carrying might be stolen
- i. ...might navigate itself to the wrong address
- j. Other (Please specify): **[IF ENTERED AT B10, TEXT WILL BE PIPED IN]**

Q22. In just a couple of words, what was this survey about?

[Open-ended]

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

Section IV: Demographics

[Text Box]: Now we would like to ask you a few final questions for classification purposes.

D1. Which of the following describes the type of home you currently live in?

In answering this question, please focus just on your primary residence, as opposed to any second home or investment properties.

- a. Mobile home
- b. One family house detached from any other house
- c. One family house attached to one or more houses
- d. Building or house with 4 or fewer apartments
- e. Building with 5 to 49 apartments
- f. Building with 50 or more apartments
- g. Other (Please specify):

D2. What is your marital status?

- a. Single/member of an unmarried couple (never married)
- b. Married
- c. Divorced
- d. Widowed
- e. Separated

D2. What is your marital status?

- a. Single/member of an unmarried couple (never married)
- b. Married
- c. Divorced
- d. Widowed

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

D2a. Including yourself, how many people live in your household?

When answering, please include any children over which you might have partial custody, as well as anyone who you think would identify your household's address as their primary residence, even if they are temporarily away.

[Open-ended numeric]

[ASK D2b IF 2+ RESIDENTS IN HH AT D2a]

D2b. Which, if any, of the following people also live in your household?

Select as many as apply. When answering, please include any children over which you might have partial custody if they ever reside in your home.

- a. A child/children for whom you are the parent or guardian
- b. Your parent(s) or guardian(s)
- c. Your grandparent(s) or great grandparent(s)
- d. Your sibling(s)
- e. Roommate(s) or Housemate(s)
- f. Your spouse/significant other
- g. Other (Please specify):
- h. None of these

[ASK D2c IF PARENT OR GUARDIAN AT D2a]

D2b. Please select the ages of all the children for whom you are the parent or guardian that live in your household. *Select as many as apply.*

When answering, please include any children for whom you are the parent or guardian, including those over which you might have partial custody.

- a. Under 1 year
- b. 1-4 years
- c. 5-7 years
- d. 8-10 years
- e. 11-13 years
- f. 14-17 years
- g. 18 and older

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

D3. What was your total household income before taxes during the past 12 months?

- a. Less than \$25,000
- b. \$25,000 to \$34,999
- c. \$35,000 to \$49,999
- d. \$50,000 to \$74,999
- e. \$75,000 to \$99,999
- f. \$100,000 to \$149,999
- g. \$150,000 or more
- h. Prefer not to answer

Section V: End Page

[Text Box]:

That is the end of the survey—thank you for your participation!

Questionnaire: Public Perception of Self-Driving Technology for Long-Haul Trucking and Last Mile Delivery

Appendix B

Links to Additional Reporting



Links to Additional Reporting

The content of this survey's reporting is divided across three separate products. Each product has been designed to be readable as a stand-alone report, and can be accessed through the links below:

- Those with interest in national findings on the research topic should focus on the [Summary Report](#):
 - <https://www.uspsoig.gov/sites/default/files/document-library-files/2017/RARC-WP-17-011.pdf>
- Those with interest in in-depth reporting for several relevant subgroups should also review the [Detailed Subgroup Findings Report](#).
 - <https://www.uspsoig.gov/sites/default/files/document-library-files/2017/RARC-WP-17-011-A.pdf>
- Those interested in the technical details surrounding the collection of the data used for this project should review the [Methodology Report](#).
 - <https://www.uspsoig.gov/sites/default/files/document-library-files/2017/RARC-WP-17-011-B.pdf>

Appendix C

External Review Certification



Chase H. Harrison Ph.D.
Somerville, MA 02143

United States Postal Service Office of Inspector General (OIG)
Risk Analysis Research Center
1735 N Lynn St
Arlington, VA 22209

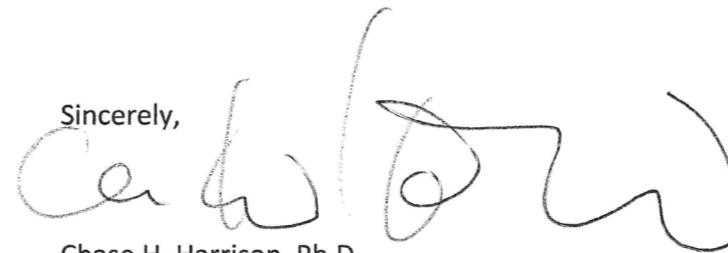
July 18, 2017

To Whom It May Concern;

I certify that I have reviewed the survey methodology and reporting for the USPS OIG's paper regarding public perception of the use of self-driving technology for long-haul trucking and last-mile delivery.

I am confident that this report and its underlying methodology meet the professional standards typically employed for online opt-in market and survey research, and that researchers have provided the documentation required by the American Association for Public Opinion Research's guidelines for public disclosure.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chase Harrison', written in a cursive style.

Chase H. Harrison, Ph.D.

Appendix D

Management's Comments



KEVIN L. McADAMS
VICE PRESIDENT, DELIVERY OPERATIONS



August 28, 2017

PAOLA PISCIONERI
DIRECTOR, GLOBAL AND DIGITAL
RARC, USPS OIG

SUBJECT: Public Perception of Self-Driving Vehicles for Logistics
(Project Number 2017RARC003)

Thank you for providing the Postal Service with an opportunity to review and comment on this report. The growing activities surrounding autonomous vehicles is very stimulating and as you note may some day provide the ability to incorporate self driving vehicles into our operations.

Your survey and analysis of the public's perception of self driving technology for long-haul trucking and last mile delivery reveals interesting facts about the differences in millennium's, Generation X and Baby Boomers opinions. We are also aware the perception may change over time as this technology expands into different markets and public interation becomes more frequent.

The potential positive effect on the USPS image as an innovative company in every region is intriguing and something to be considered in our future investments as we find ways to deliver our brand.

A handwritten signature in blue ink, appearing to read "Kevin L. McAdams".

Kevin L. McAdams

cc: CARM

475 L'ENFANT PLAZA SW
WASHINGTON, DC 20260-1600
202-268-6500
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POINTS OF CONTACT

Research Methodology Point of Contact

For any additional information regarding this project's methodology, please contact:

Email: SurveyResearch@uspsoig.gov

Phone: 703-248-7833

Mail:

United States Postal Service Office of Inspector General (OIG)
Risk Analysis Research Center
1735 N. Lynn St.
Arlington, VA 22209

Media or General Inquiries Point of Contact

For any other inquiries regarding this project, please contact Agapi Doulaveris:

Email: adoulaveris@uspsoig.gov

Phone: 703-248-2286