SURVEY ON WHETHER THE U.S. AUTOMOTIVE MARKET IS PREPARED TO RECEIVE THEENTRY OF AUTONOMOUS FORD VEHICLES

Prepared For

FORD MOTOR CO.

By

RBS CONSULTING, INC.

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EXECUTIVE SUMMARY

Objectives & Method

This study endeavored to investigate whether Ford should enter the autonomous vehicle market in the near future by answering the following questions: (1) whether and to what extend current or soon-to-be, non-commercial customers in the automotive market are interested in purchasing autonomous Ford vehicles within the 12 months following the completion of this survey; (2) which market segments, if any, have the highest interest in purchasing autonomous vehicles within the 12 months following the completion of this survey; and (3) which factors significantly impact potential customers' intent to purchase autonomous vehicles. To collect and analyze data relevant to the aforementioned research objectives, this Team disseminated a fifteen-question survey, using Google Forms, which was conducted with a random sample of forty-six persons whom viewed, completed, and submitted the questionnaire online.

Recommendations & Findings Highlights

RBS Consulting Co. recommends that Ford confirm the findings of this study by retesting the data with a much larger randomly selected sample size. Provided that this study's findings are confirmed, we recommend that Ford enter the autonomous vehicle market, focusing its marketing resources on (1) significant market segment predictive factors, which include income, occupation, and one's trust level in autonomous vehicle technology and on (2) market segment product preferences, which include vehicle price and select luxury vehicle features. This recommendation is based on the following three findings:

1. There is indeed noteworthy interest in acquiring autonomous vehicles on the part of current or soon-to-be, automotive consumers.
2. Analysis of our survey data suggests that Ford should focus its marketing resources on the following market segments: income, occupation, and their level of trust in autonomous vehicle technology.

3. Factors that significantly correlate with survey takers' interests in acquiring autonomous vehicles include the following: vehicle price compared to man-driven vehicles and luxury vehicle features.

INTRODUCTION

This document summarizes marketing research undertaken by RBS Consulting Co., investigating whether Ford should enter the autonomous vehicle market in the near future.

Background on Ford Motor Company

Ford, headquartered in Dearborn, Michigan, is one of the largest automotive manufacturers in the world, manufacturing and distributing automobiles across six continents.[i] Ford primarily operates in North America, Europe, Asia Pacific, South America, the Middle East, and Africa.[ii] The company reported revenues of $39,146 million for the first quarter of 2017, an increase of 1.3% over the previous quarter.[iii] The company is now seeking to enter the emerging autonomous automotive market.

Statistical Analysis Approach

RBS Consulting, Inc. statistically analyzed its survey data using IBM's SPSS software, "a comprehensive, easy-to-use set of data and predictive analytics tools for business users, analysts and statistical programmers."[iv] Data analyses, findings, tables, figures, and the RBS Consulting Co.'s interpretations of these items are found in the following section of this report.

ANALYSIS & FINDINGS

Consumer Interest in Acquiring Autonomous Vehicles

There is indeed noteworthy interest in acquiring autonomous vehicles on the part of current or soon-to-be, automotive consumers. Approximately 61% of survey respondents indicated an interest level of three or four on survey question four—which translates to a response of "high" or "very high" interest—when asked their respective, personal interests in their next vehicle being a self-driving vehicle.[v]

In addition to data on respondents' interest in acquiring autonomous vehicles, our research has also indicated potential consumers' preferred (1) vehicle type, (2) vehicle features, and (3) activities while in transit. When asked to rank their preferred autonomous vehicle type from most to least preferred, data indicated the following order: pickup truck, hatchback, four-door sedan, a tie between sedan and SUV, and, once again, pickup truck.[vi] Similarly, when asked to rank from most to least likely activities that respondents would likely engage in while riding in an autonomous vehicle, data indicated the following: resting / sleeping, a tie between movies /music and laptop use, reading / writing, and resting / sleeping.[vii]

Market Segmentation

Analysis of our survey data suggests that Ford should focus its marketing resources on the following market segment factors: income, occupation, and level of trust in autonomous vehicle technology.

Income

Income, as indicated by the ANOVA data in "Table 7" of this report, is a significant factor in predicting respondents' interest in acquiring an autonomous vehicle for their next vehicle purchase or lease.[viii] This data holds a significance value of 0.001.[ix]

Occupation

Occupation is also a highly significant factor in predicting respondents' interest in acquiring an autonomous vehicle. As shown in the ANOVA data in "Table 8" of this report, respondents whom self-identified as either "[s]elf [e]mployed" or "[b]usiness [o]wner" were more likely express noteworthy interest in purchasing autonomous vehicles as their next vehicle purchase or lease.[x]

Autonomous Vehicle Technology Trust Level

After conducting a two-tailed Pearson Correlation involving survey question five's trust level and question four's autonomous vehicle acquisition interest, this team determined that respondents' trust levels served as highly significant predictors of respondents' respective interests in having their next vehicle be an

autonomous vehicle. The correlation is deemed to be significant, as its "P" value was 0.578, which is well over the 0.01 significance threshold.[xi]

Product Factors Correlated to Customer Decision

The factors that significantly correlate with survey takers' interests in acquiring autonomous vehicles include (1) vehicle price as compared to man-driven vehicles and (2) key luxury vehicle features.

Autonomous Vehicle Price

After conducting a two-tailed Pearson Correlation test involving survey question nine's vehicle cost difference and question four's autonomous vehicle acquisition interest, this team determined that there is a significant correlation between the price increase / difference between an autonomous vehicle and the respondents' interest in acquiring an autonomous vehicle for their next vehicle purchase or lease. From this, we extrapolate that the cost difference between an autonomous vehicle and man-driven vehicle will significantly impact consumers' interest in acquiring autonomous vehicles. Our histogram depicts that the majority of respondents are unwilling to pay a difference exceeding $5,000.[xii]

Included Luxury Features

Also, a two-tailed Pearson Correlation analyzing the importance of Wi-Fi, Bluetooth connectivity, and voice controls being integrated into autonomous vehicles revealed that each of the three features were highly significant.[xiii] This suggests that respondents, by and large, prefer these features be integrated into any autonomous vehicle they would consider purchasing.

LIMITATIONS OF RESEARCH

Respondent Errors

In order to reduce the likelihood of respondent error, which may occur when respondents misinterpret questions, RDS Consulting prepared and tested three drafts of this survey prior to releasing it to the public. Each drafting phase involved the application of guidelines that minimize these errors.

Sampling Size & Sampling Error

Given the tremendous financial resources involved in R&D and vehicle program launch, a study's sample size should be representative of the automotive market. Forty-six respondents fall short of reaching that high burden. Also, selection error, or "the sampling error for a sample selected by a nonprobability method,"[xiv] occurs when the respondents to a survey do not accurately represent the population from which they are selected. Our tendency to select respondents whom are most accessible certainly played a role in this study's sample. The sample should be representative of Newark, New Jersey, but, the 46 participants received access to the survey by virtue of either knowing a member of RDS Consulting Co. or knowing someone that knows a member of RDS Consulting Co. Therefore, the final sample may not be fully representative of Newark New Jersey's population.

RECOMMENDATIONS

Based upon the aforementioned findings, RBS Consulting Co. recommends that Ford confirm the significance of this study's findings by re-testing and re-analyzing this survey data with a much larger randomly selected sample size. Provided that this study's findings are confirmed, we recommend that Ford enter the autonomous vehicle market, focusing its marketing resources on (1) significant market segment predictive factors, which include income, occupation, and consumer trust levels in autonomous vehicle technology and on (2) market segment product preferences, which include vehicle price and select luxury vehicle features.

Table 1
Age & Autonomous Vehicle Interest Correlation

Survey Q3. Age

ANOVA

4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.922	3	1.641	1.485	.232
Within Groups	46.405	42	1.105		
Total	51.326	45			

Inference: Age does not play a significant factor for choice of autonomous vehicle ownership.

Table 2
Autonomous Vehicle Interest & Vehicle Features Correlation

Q.10 How important are below features for your autonomous vehicle?

Correlations

		10. How 3 are the below features in your Auto0mous Vehicle? [a. Wifi]	10. How 3 are the below features in your Auto0mous Vehicle? [b. Bluetooth Connectivity]	10. How 3 are the below features in your Auto0mous Vehicle? [c. Voice Control]
10. How 3 are the below features in your Auto0mous Vehicle? [a. Wifi]	Pearson Correlation	1	.407**	.629**
	Sig. (2-tailed)		.005	.000
	N	46	46	46
10. How 3 are the below features in your Auto0mous Vehicle? [b. Bluetooth Connectivity]	Pearson Correlation	.407**	1	.322*
	Sig. (2-tailed)	.005		.029
	N	46	46	46
10. How 3 are the below features in your Auto0mous Vehicle? [c. Voice Control]	Pearson Correlation	.629**	.322*	1
	Sig. (2-tailed)	.000	.029	
	N	46	46	46

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Inference: The correlation coefficient for all the factors are highly significant. Therefore, the response value is highly correlated with the above-mentioned factors.
Conclusion: We should add all the 3 three features to our autonomous vehicle

Table 3
Autonomous Vehicle Interest & Vehicle Price

Q.9 How much would you be willing to pay, above the price of a human-driven vehicle, for a self-driving vehicle?

Oneway

ANOVA

4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.315	3	3.438	3.521	.023
Within Groups	41.011	42	.976		
Total	51.326	45			

```
ONEWAY @9.Howmuchwouldyoubewillingtopayabovethepriceofahumandrivenvehic BY
    @4.Bymarkingintheboxesonthescalebelowindicateyourpersonalinteres
  /MISSING ANALYSIS.
```

Correlations

		4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?	9. How much would you be willing to pay, above the price of a human-driven vehicle, for a self-driving vehicle?
4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?	Pearson Correlation	1	.368*
	Sig. (2-tailed)		.012
	N	46	46
9. How much would you be willing to pay, above the price of a human-driven vehicle, for a self-driving vehicle?	Pearson Correlation	.368*	1
	Sig. (2-tailed)	.012	
	N	46	46

*. Correlation is significant at the 0.05 level (2-tailed).

Inference: Price is a significant factor in the launch plan of FORD autonomous vehicle.

Conclusion: Ford should consider overhead price of the autonomous vehicle appropriately to drive sales.

Table 4
Autonomous Vehicle Interest & Technology Trust Level

Q.5. By marking in the boxes on the scale below, indicate your overall level of trust in autonomous vehicle technology in transportation.

Correlations

		4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?	5. Indicate your level of trus in autonomoius vehicle technology in transportatio n
4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?	Pearson Correlation	1	.578**
	Sig. (2-tailed)		.000
	N	46	46
5. Indicate your level of trus in autonomoius vehicle technology in transportation	Pearson Correlation	.578**	1
	Sig. (2-tailed)	.000	
	N	46	92

**. Correlation is significant at the 0.01 level (2-tailed).

Inference: By Bivariant Correlation, we see that the predictor Trust is highly significant factor for a customer to purchase an autonomous vehicle.

Table 5
Autonomous Vehicle Interest & Brand Loyalty

Q3. Is the vehicle you own or plan to acquire a Ford?

Correlations

		4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?	3. Is the vehicle you own or plan to acquire a Ford?
4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?	Pearson Correlation	1	.159
	Sig. (2-tailed)		.291
	N	46	46
3. Is the vehicle you own or plan to acquire a Ford?	Pearson Correlation	.159	1
	Sig. (2-tailed)	.291	
	N	46	46

Inference: Since the Pearson correlation value is close to zero, this factor is highly insignificant.
Conclusion: Brand loyalty is not that big a factor for a customer to buy autonomous vehicle. So, we can say that a person who is driving a different vehicle right now can switch to Ford autonomous vehicle in future.

Table 6
Autonomous Vehicle Interest & Safety Factors

Q6. In the table below, please indicate the importance of each of the following safety factors on your willingness to purchase or lease a self-driving (autonomous) vehicle.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.707	.840		2.032	.049
	6. In the table below, please indicate the importance of each of the following safety factors on your willingness to purchase or lease a self-driving (auto0mous) vehicle. [a. The auto0mous vehicle being equipped with manual override features]	-.258	.298	-.183	-.865	.392
	6. In the table below, please indicate the importance of each of the following safety factors on your willingness to purchase or lease a self-driving (auto0mous) vehicle. [b. Crash test safety statistics being equal to or superior to human-driven cars]	.653	.372	.441	1.756	.087
	6. In the table below, please indicate the importance of each of the following safety factors on your willingness to purchase or lease a self-driving (auto0mous) vehicle. [c. Crash avoidance safety statistics being equal to or superior to human-driven cars]	-.183	.391	-.130	-.468	.642
	6. In the table below, please indicate the importance of each of the following safety factors on your willingness to purchase or lease a self-driving (auto0mous) vehicle. [d. Vehicle sensor sensitivity / durability]	.062	.279	.048	.223	.825

a. Dependent Variable: 4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?

Inference: The safety features are insignificant factors and does not play a major role for a customer's buying intention.

Conclusion: This could mean that customer trusts the autonomous technology and these safety features are not carry much significance over their choice of purchase.

Table 7
Autonomous Vehicle Interest & Income

Q.14 INCOME

ANOVA

4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.395	3	5.798	7.177	.001
Within Groups	33.931	42	.808		
Total	51.326	45			

Inference: This factor is highly significant so people lying in higher income brackets are more likely to purchase Ford autonomous vehicles.

Table 8
Autonomous Vehicle Interest & Occupation

Q.15 OCCUPATION

ANOVA

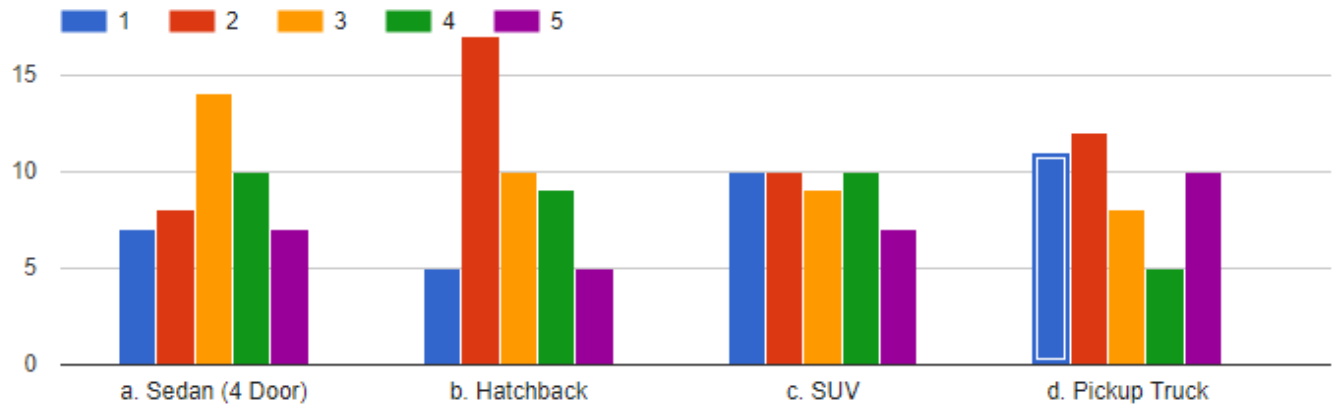
4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (auto0mous) vehicle for you next vehicle purchase or lease?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	20.835	3	6.945	9.566	.000
Within Groups	30.491	42	.726		
Total	51.326	45			

Inference: This factor is highly significant and people belonging to Self employed and Business owner category are more likely to buy autonomous vehicles.

Figure 1
Respondents' Vehicle Ranking By Type

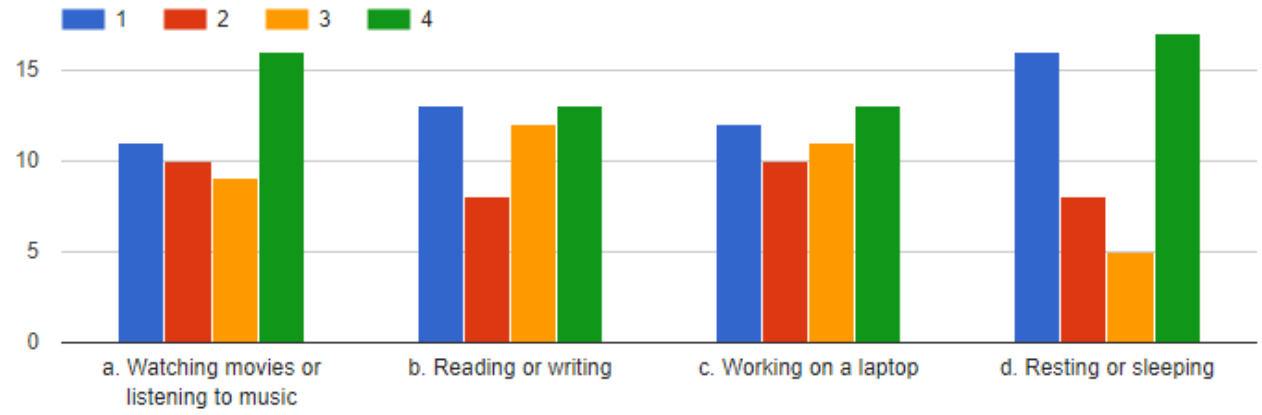
Q.11. Please rank the following vehicles styles, indicating your preferences regarding the type of autonomous vehicle you are most interested in. (One [1] being your favorite option and five [5] being your least favorite option).



Inference: We can see that the most popular choice amongst customers for autonomous vehicle is Pickup truck and least one is Hatchback.
Conclusion: So, this will help Ford to decide upon their production line.

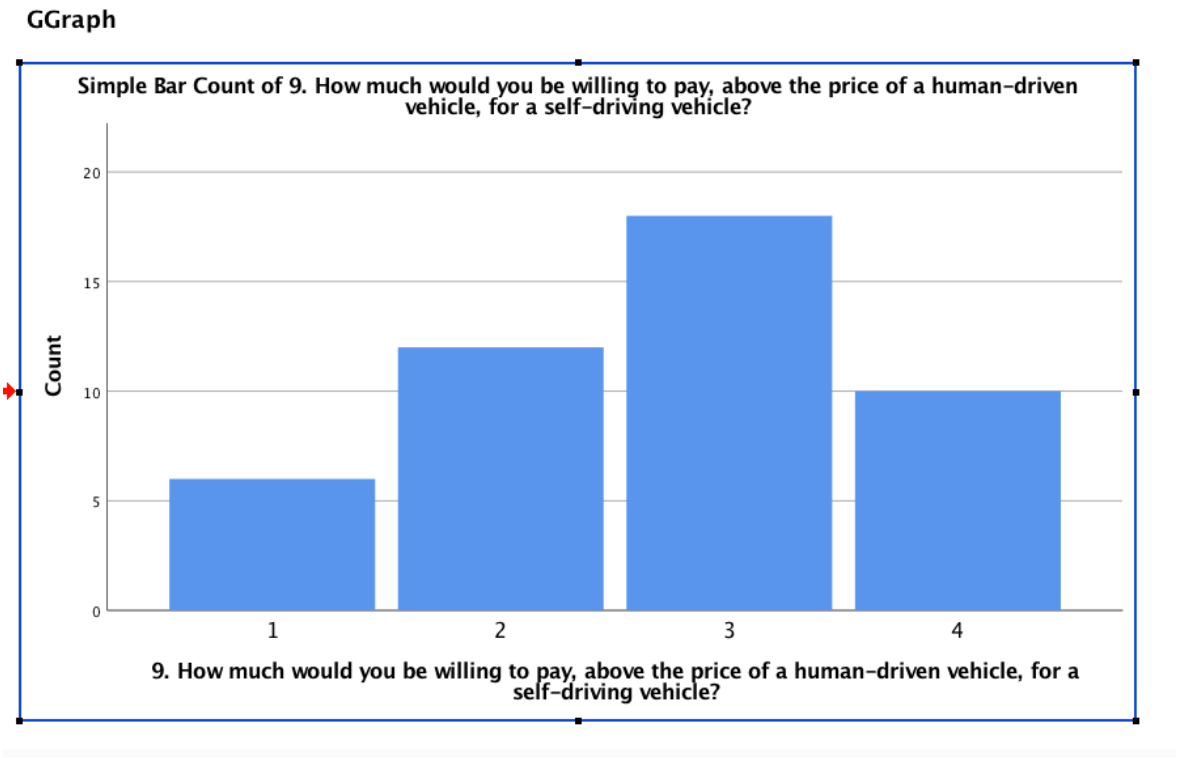
Figure 2
Respondents' Vehicle Activity Ranking

Q.12. What activities are you likely to engage in while riding in an autonomous vehicle? Please rank each of the following, one (1) being most likely, and four (4) being least likely.



Inference: All these statistics suggest that these features can be included in the vehicle

Figure 3
Respondents' price differences



Inference: From the above anova table, Price is a significant factor in the launch plan of FORD autonomous vehicle. Histogram depicts that maximum number of respondents can't exceed their budget beyond $5000.
Conclusion: Ford should consider overhead price of the autonomous vehicle appropriately to drive sales.

FORD Autonomous Vehicle Survey

* Required

1. **1. Do you currently own or lease a vehicle?** *
   Mark only one oval.
   - ◯ YES
   - ◯ NO

2. **2. Do you plan to lease or purchase a vehicle within the next 12 months?** *
   Mark only one oval.
   - ◯ YES
   - ◯ NO

3. **3. Is the vehicle you own or plan to acquire a Ford?** *
   Mark only one oval.
   - ◯ YES
   - ◯ NO

4. **4. By marking in the boxes on the scale below, indicate your personal interest in acquiring a self-driving (autonomous) vehicle for you next vehicle purchase or lease?** *
   Mark only one oval.

	1	2	3	4	
Very Low	◯	◯	◯	◯	Very High

5. **5. By marking in the boxes on the scale below, indicate your overall level of trust in autonomous vehicle technology in transportation.** *
   Mark only one oval.
   - ◯ Very Low
   - ◯ Somewhat Low
   - ◯ Undecided
   - ◯ Somewhat High
   - ◯ Very High

6. **6. In the table below, please indicate the importance of each of the following safety factors on your willingness to purchase or lease a self-driving (autonomous) vehicle.** *
Mark only one oval per row.

	Unimportant	Somewhat Important	Important	Highly Important
a. The autonomous vehicle being equipped with manual override features				
b. Crash test safety statistics being equal to or superior to human-driven cars				
c. Crash avoidance safety statistics being equal to or superior to human-driven cars				
d. Vehicle sensor sensitivity / durability				

7. **e. Other**

8. **7. Please indicate your level of comfort with the idea of riding in an autonomous vehicle in poor weather conditions?"** *
Mark only one oval.

- Do Not Know
- Not Comfortable
- Somewhat Comfortable
- Comfortable
- Very Comfortable

9. **8. In the table below, please indicate the importance of each of the following financial factors on your willingness to purchase or lease a self-driving (autonomous) vehicle.** *
Mark only one oval per row.

	Unimportant	Somewhat Important	Important	Highly Important	Column 5
a. Autonomous vehicle technology maintenance costs					
b. Insurance premiums above human-driven vehicle rates					
c. Insurance liability allocation from self-driving vehicle collisions					

10. **d. Other**

11. **9. How much would you be willing to pay, above the price of a human-driven vehicle, for a self-driving vehicle?** *

Mark only one oval.

- ◯ Not to exceed $1,000
- ◯ Not to exceed $3,000
- ◯ Not to exceed $5,000
- ◯ Not to exceed $10,000

12. **10. How important are the below features in your Autonomous Vehicle?** *

Mark only one oval per row.

	Unimportant	Somewhat Important	Important	Highly Important
a. Wifi	◯	◯	◯	◯
b. Bluetooth Connectivity	◯	◯	◯	◯
c. Voice Control	◯	◯	◯	◯

13. **d. Other (please specify)**

_____

14. **e. Other 2 (please specify)**

_____

15. **11. Please rank the following vehicles styles, indicating your preferences regarding the type of autonomous vehicle you are most interested in. (One [1] being your favorite option and five [5] being your least favorite option).** *

Mark only one oval per row.

	1	2	3	4	5
a. Sedan (4 Door)	◯	◯	◯	◯	◯
b. Hatchback	◯	◯	◯	◯	◯
c. SUV	◯	◯	◯	◯	◯
d. Pickup Truck	◯	◯	◯	◯	◯
e. Sports Car	◯	◯	◯	◯	◯

16. **12. What activities are you likely to engage in while riding in an autonomous vehicle? Please rank each of the following, one (1) being most likely, and four (4) being least likely.** *

Mark only one oval per row.

	1	2	3	4
a. Watching movies or listening to music	◯	◯	◯	◯
b. Reading or writing	◯	◯	◯	◯
c. Working on a laptop	◯	◯	◯	◯
d. Resting or sleeping	◯	◯	◯	◯

17. **Other (Please Specify and Rank)**

_____

18. **13. Your Age** *
Mark only one oval.

- ◯ 18 or under
- ◯ 19 to 25
- ◯ 26 to 35
- ◯ 36 to 49
- ◯ 50+

19. **14. Your Annual Income** *
Mark only one oval.

- ◯ Less than $25K
- ◯ $26K - $50K
- ◯ $51K - $75K
- ◯ $76K - $100K
- ◯ Over $100K

20. **15. Your Occupation** *
Mark only one oval.

- ◯ Student
- ◯ Employed
- ◯ Business Owner
- ◯ Self Employed
- ◯ Retired

END NOTES

[i] Marketline, Ford Motor Company, accessed Dec. 2017, http://advantage.marketline.com/Product?ptype=Companies&pid=4E3AD1B7-04B2-4E87-BB09-7DC916B9230F.
[ii] *Id.*
[iii] *Id.*
[iv] SPSS, "IBM SPSS Statistics Family," SPSS.com.hk, accessed Dec. 2017, http://www.spss.com.hk/software/statistics/ , 2015.
[v] *See* FORD Auto Vehicle Survey, question 4.
[vi] Figure 1.
[vii] Figure 2.
[viii] Table 7.
[ix] *Id.*
[x] *See* Table 8.
[xi] *See* Table 4.
[xii] Figure 3
[xiii] Table 2.
[xiv] Qualtrics, "5 Common Errors in the Research Process," Qualtrics.com, accessed Dec. 2017, https://www.qualtrics.com/blog/5-common-errors-in-the-research-process/ , June 21, 2010.