

# Understanding People's Preference Towards Advanced And Enhanced Safety Features in Automobiles

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## Introduction

- Globally, 1.25 million people die every year due to road traffic crashes<sup>1</sup>
- Advanced safety features in automobiles such as collision avoidance, left turn assist, blind spot monitoring, and backup cameras can potentially reduce the car crashes caused due to human errors.
- Recognizing the importance of such features, many government agencies are gradually mandating such safety features in the new vehicles.
- For instance, Washington DOT devised a plan to mandate the backup cameras and expecting to have the backup cameras in all the cars by mid-2018.
- Automobile manufacturers are also encouraging people to buy such features by advertisements and incentives.
- Different group people have different preferences towards such advanced safety features.
- Understanding preferences by different groups help the policy makers and manufacturers to devise appropriate plans and target the right group of people.

## Aim

- Understand the preferences of different groups of people towards advanced safety features and suggest appropriate target groups for such features.

## Data

- Data was collected using an online survey from American Automobile Association (AAA) members.
- A part of collected data is used in this study and it contain respondents' demographics and their preference towards to enhanced safety features.

## Modeling Framework

- Outcome response: Whether a person want a safety feature in the next vehicle purchase or not (binary variable, yes/no).

- Binary Probit model structure is used to model an outcome response and 14 Binary Probit models are estimated.

## Interesting Findings

- People who had a crash in the past are more likely to prefer more number of advanced safety features as compared to people who didn't had a crash.
- Males are less likely to prefer advanced safety features as compared to females except the Adaptive Cruise Control.
- Older people are less likely to prefer Blind spot Monitoring , self-parking and Wireless internet as compared to middle age and younger people.
- People whose income is greater than \$100k or with a post graduate degree or higher or who bought a car 5 years ago are more likely to prefer advanced safety features.

- People who bought a used vehicle or vehicle of price < \$20k are less likely to prefer safety features.
- People whose most recent long distance leisure was > 400 miles are more likely to prefer wireless internet feature.
- People who typically spend more than 3 minutes in searching a parking space during a trip are more likely to prefer self-parking feature.

## References

- Global status report on road safety 2015. World Health Organization, Geneva; 2015.

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## Results

Variable Description	Enhanced safety features													
	Night vision assist	Collision avoidance	Lane keeping	Blind spot monitoring	Driver drowsiness detection	Wireless internet	Backup cameras	Self-parking	Adaptive headlamps	Adaptive cruise control	Do not pass warning	Left turn assist	Intersection movement assist	No preferred feature
Constant	0.664	0.336	-0.103	0.783	-0.294	-0.679	0.354	-0.143	0.557	-0.243	-0.140	0.096	-0.151	-1.152
People with age greater than 65 years		0.153 ↑	0.213 ↑	-0.174 ↓		-0.143 ↓	0.269 ↑	-0.174 ↓		0.154 ↑	0.146 ↑	0.247 ↑	0.191 ↑	
Males	-0.216 ↓					-0.203 ↓		-0.247 ↓	-0.114 ↓	0.156 ↑	-0.151 ↓	-0.224 ↓	-0.141 ↓	0.217 ↑
People with income greater than \$100k	0.203 ↑	0.305 ↑	0.184 ↑	0.294 ↑	0.127 ↑	0.222 ↑	0.222 ↑				0.138 ↑	0.166 ↑	0.138 ↑	-0.358 ↓
People with a post graduate degree or higher				0.196 ↑	0.228 ↑			0.175 ↑			0.125 ↑			
People who purchased a used vehicle	-0.206 ↓	-0.207 ↓		-0.169 ↓				-0.135 ↓	-0.209 ↓		-0.172 ↓	-0.219 ↓	-0.211 ↓	
People who had a crash in the past		0.242 ↑	0.174 ↑	0.178 ↑	0.297 ↑	0.152 ↑	0.158 ↑			0.211 ↑	0.186 ↑	0.237 ↑	0.187 ↑	-0.277 ↓
People whose vehicle price < \$20k			-0.233 ↓		-0.191 ↓					-0.172 ↓				0.242 ↑
People whose most recent long distance leisure trip was > 400 miles						0.210 ↑								
People who typically spend at least 3minutes to find a parking spot in a trip								0.194 ↑						
White people		-0.293 ↓						-0.32 ↓				-0.274 ↓		
Full time or a part time employees		-0.186 ↓		-0.169 ↓										0.249 ↑
People who bought a car 5 years ago or before		0.175 ↑					0.230 ↑	0.166 ↑		0.143 ↑				-0.329 ↓
People whose household size is greater than 2				-0.20 ↓										
Number of observations	1778	1753	1772	1769	1765	1678	1804	1813	1896	1865	1771	1751	1778	1758
Log-Likelihood of constants only model	-1080.64	-1131.50	-1221.56	-933.13	-1223.4	-1086.23	-1023.15	-1146.70	-1215.64	-1282.92	-1227.56	-1213.39	-1231.53	-514.97
Log-likelihood at convergence	-1065.88	-1095.74	-1200.00	-904.75	-1198.16	-1060.19	-1009.33	-1116.29	-1208.55	-1263.18	-1210.65	-1186.85	-1214.31	-488.65
Rho <sub>c</sub> <sup>2</sup>	0.014	0.032	0.018	0.03	0.021	0.024	0.013	0.026	0.006	0.015	0.015	0.022	0.014	0.051

Note: All the variables are statistically significant at 95% confidence level

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