



## Shifting Interests and Attitudes Toward Advanced Driver Assistance Systems on Social Media

### Key Takeaways:

- The U.S. public has become more interested in advanced driver assistance systems (ADAS) on social media in the 16 months since *MyCarDoesWhat* was introduced
- The U.S. public has become more positive toward ADAS on social media in the 16 months since *MyCarDoesWhat* was introduced
- Positive sentiments increasing the most toward the future of ADAS and the capabilities of today's technologies; with negative sentiments toward government mandates of ADAS decreasing the most
- While shifts in sentiment cannot solely be attributed to *MyCarDoesWhat*, the findings provide key insights on barriers to adoption of ADAS for future outreach and research efforts

### Research Purpose

The *MyCarDoesWhat* campaign educates U.S. drivers on advanced driver assistance systems (ADAS) through a website, graphics, videos, animations, quizzes, interactive games, social media and a national traditional media campaign. *MyCarDoesWhat* ultimately seeks to reduce crashes, injuries and deaths on the roads by helping drivers become better informed about their vehicles' safety technologies and ADAS.

How can you find out whether this goal is being met? The *MyCarDoesWhat* campaign understood the power, influence and importance of social media. An evaluation metric identified by the team included indicators of potential behavior change: Increased awareness and changes in attitudes. The *MyCarDoesWhat* research campaign identified social media as a significant data point of the public's awareness and attitude toward ADAS.

### How?

One way to track changes in awareness and sentiment is by analyzing social media trends. Social media is the world's largest focus group with millions of unprompted conversations yearly in the United States.

New social media listening techniques allowed *MyCarDoesWhat* researchers to track natural, unprompted conversations by U.S. citizens about ADAS. Objective methods were also developed by the team to determine whether the discussions were **positive**, **neutral** or **negative**.

## Methods

The researchers used the following methods to complete this analysis.

- The researchers identified almost 50,000 on-topic posts explicitly about ADAS technologies on three top social media networks over a 32-month period.
- Computer-assisted training allowed the researchers to determine the sentiment of these posts after manually categorizing them as having **positive**, **neutral** or **negative** sentiments.
- While evaluating a large sample of individual posts, the researchers identified four main categories of discussion underlying users' positive and negative sentiments.

Please read further for additional details about the methodology of this study.

### Tracking awareness and post volume

The 16-month time period after *MyCarDoesWhat* was introduced in April 2015 was compared with the comparable time period before the campaign's introduction. This could show whether *MyCarDoesWhat* may have influenced awareness and sentiment.

Posts authored by *MyCarDoesWhat* were filtered out of the results when possible, while mentions of *MyCarDoesWhat* by organizations external to the campaign were retained.

### Sorting posts into positive, negative and neutral sentiments

The posts identified as relevant were then additionally sorted by the researchers into one of three initial categories – **positive**, **neutral** or **negative** – based on the sentiment of the post.

- A **positive sentiment** post is one that indicates a positive opinion or comfort level toward car safety features. For example, a post such as “Push to start in my car is so handy” is expressing a positive sentiment toward a car safety feature.
- A **negative sentiment** post is one that indicates a negative or dismissive attitude toward car safety features. For example, someone posting “I hate push to start cars!!!!!!! [sic]” is demonstrating they harbor negative feelings toward a car safety feature. This can be determined through the use of the word “hate” as well as the use of a string of exclamation points.
- A **neutral sentiment** post is one in which a car safety feature is specifically mentioned, but it could not be determined whether the poster has a positive or negative sentiment toward it or car safety features in general. For example, the Tweet “Even with a backup camera and all” cannot be analyzed for sentiment because it is not a complete thought. Another example is the Tweet “That’s that push to start.”

### Categorizing drivers of sentiment

After the posts were sorted by sentiment, the researchers further categorized the posts to identify the reasons, or “drivers,” behind these sentiments. To accomplish this, they reviewed more than 400 of the on-topic posts and developed core categories based on the patterns that emerged.

## Positive sentiment categories

- **Celebrating and anticipating future benefits** – Posts that express excitement for future technologies and the changes they may bring to their lives.
  - *Example:* “One more reason to invest in eiver: Advanced Driver Assistance Systems are booming. [sic] #QuantifiedSelf #Crowdfunding”
- **Impressed with technology** – Posts that express general enthusiasm or excitement about one or more car safety features.
  - *Example:* “Auto-emergency braking might be one of the best things ever.”
- **Excitement over personal and economic status gains** – Posts that consider car safety features an indication of personal, social or economic gain.
  - *Example:* “Well Taylor [and] Tracy are official parents they are getting a mini van tomorrow it’s newer than [Tay’s] car [and] very sharp it has back up camera [and] all!!!”
- **Praising safety or convenience value** – Posts that highlight a way that a car safety feature has improved their lives or helped make them or someone else safer.
  - *Example:* “A young boy on a bike is alive today because of the automatic braking features of my #MercedesBenz S550. [sic]”

## Negative sentiment

- **Questioning necessity and novelty value** – A post that expresses doubt toward the necessity of one or more safety features.
  - *Example:* “We haven’t needed a back up camera for the last 100 years why do we need one now?”
- **Systems are not meeting expectations** – A complaint about a safety feature breaking, not meeting one’s expectations or otherwise bothering the poster.
  - *Example:* “I’m not sure what sucks worse. The back up camera not working in my truck or the wire in my elbow breaking again.”
- **Hacking and theft concerns** – An expression of concern over a safety feature being hacked.
  - *Example:* “I worry that someone might hack into and put my car’s reverse camera on a loop, and that then I’m going to back over them.”
- **Fears on privacy, government mandates and “Big Brother”** – A post that complains about the presence of a safety feature in a car as well as concerns that outside parties could be listening in on the poster through the use of a safety feature.
  - *Example:* “Did you know the idiot government mandated all new cars sold have a back up camera on board? Pure insanity [sic]”

## Results

### Awareness and post volume

The researchers identified 23,268 relevant social media posts about ADAS in the 16 months prior to campaign introduction and 25,335 posts in the 16 months after – an **8 percent increase** in unprompted discussions.

Within the 16 months prior to the campaign launch, social media post volume **decreased by 8 percent** throughout the time period. In contrast, post volume **increased by 21 percent** within the 16 months after the campaign started, indicating a positive forward trend for future months.

## Positive, negative and neutral sentiment results

After categorizing a large sample of posts into positive, negative and neutral categories, the researchers ran the social media listening tool to identify the same types of posts with those sentiments across all other posts in the full sample.

The tool produced the following results:

- A total of 11,401 posts were identified by the team as having positive sentiment in the pre-campaign period and 15,708 posts were identified with positive sentiment in the comparable time period after the introduction of the campaign (**27 percent increase in positivity**).
- Over the same time period, **negative sentiment decreased 34 percent** in the period after *MyCarDoesWhat* was introduced – from 7,679 posts (before) to 5,067 posts (after).
- **Neutral sentiment rose slightly** by 8 percent between the two time periods (4,188 to 4,560).

## Drivers of sentiment

The researchers further categorized the posts into the reasons for positive and negative sentiments. Noted are the percentage shifts in the time period after the *MyCarDoesWhat* campaign's introduction.

### *Positive sentiment*

1. Celebrating and anticipating future benefits **(+43%)**
2. Impressed with technology **(+24%)**
3. Excitement over personal and economic status gains **(+21%)**
4. Praising safety or convenience value **(+18%)**

### *Negative sentiment*

1. Questioning necessity and novelty value **(-5%)**
2. Systems are not meeting expectations **(-15%)**
3. Hacking and theft concerns **(-22%)**
4. Fears on privacy, government mandates and "Big Brother" **(-76%)**

## Conclusions and next steps

While changes in public sentiment cannot be attributed solely to one factor, the results demonstrate that *MyCarDoesWhat* may have influenced the public's interest in and sentiment toward ADAS.

This data will also allow the *MyCarDoesWhat* campaign to focus future efforts to continue to identify the reasons for the public's negative sentiments toward ADAS technologies. Understanding the public's attitudes is vital to understanding the knowledge base and current context of the general consumer. Additionally, sentiment analysis provides insights to the research team and allows further emphasis on the positive qualities already identified by the public.

Future social media listening projects will provide insight into how and why the public's attitude shifts positively or negatively toward ADAS and other automated vehicle technologies.

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## Research Background

This research was conducted by a National Safety Council digital analyst and researcher on the *MyCarDoesWhat* team and a PhD student from the University of Iowa's National Advanced Driving Simulator.

The social media listening tools, ForSight and Brightview, both by Crimson Hexagon, were used through the company's Social Impact Program.

For more information on this research, please contact [info@mycardoeswhat.org](mailto:info@mycardoeswhat.org).