

Personal Value Priorities in Autonomous Vehicle Discourse

by

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A thesis submitted in conformity with the requirements
for the degree of M.Sc. degree in Management

Telfer School of Management
University of Ottawa

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2022

Abstract

Autonomous vehicles (AVs) have become increasingly prevalent in modern society, with multiple companies pursuing avenues to advance technology. Despite the promises of safer driving, mitigating accidents and reducing stress, mixed opinions exist on the reliability and trustworthiness of the technology. While many factors form opinions regarding AVs, the component of personal values in AV discourse has not been well-documented. This research focuses on understanding which personal values are most prominent in AV discourse and how individuals prioritize these personal values.

We studied two AV-focused data sources to gain perspective: 24 TED Talk transcripts and 20,000 Reddit user posts. Next, we scored the prevalence of personal values using the Personal Values Dictionary (PVD). Our results found that self-direction, achievement, power, stimulation, and conformity had an overall positive inclination in AV discourse. However, we also found value conflicts between both data sets, indicating a potential dissonance between professional opinions and those of typical consumers. Our findings provide insight into values literature and issues consumers bring up when discussing or adopting AVs. Our research on value conflicts can also link to consumers' potential adoption of AVs. Thus, we provide potentially useful perspectives for companies to address these concerns directly in their AV production, advertising, and design philosophies.

Acknowledgments

I would like to give my highest regards and thanks to my two supervisors: Prof. Leila Hamzaoui-Essoussi and Prof. Michael Mulvey, for all their help and compassion throughout this thesis.

Without their insight and time, I would not have been able to finish this program. I also want to thank my family for helping me throughout the pandemic and giving me the best opportunity I could ask for in moving to Ottawa. I would also like to thank Prof. Ahmed Khalil Ben Ayed and Prof. Ajax Persaud for their feedback and oversight on improving the thesis to its final version.

Lastly, I want to give thanks to all my friends who have given me support. None of this would have been possible without the help of everyone mentioned, and I deeply appreciate how much everyone has helped me throughout this thesis.

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Chapter 1

1 Introduction

Autonomous vehicles (AVs) are becoming increasingly popular throughout multiple countries, with sales expected to grow exceptionally within the next 20 years (Panagiotopoulos & Dimitrakopoulos, 2018). Brands led by Tesla have been pushing for the technology to become more accessible, where AVs can eliminate the need for human intervention while driving to reduce accident rates (Lin et al., 2018). There are multiple levels of autonomous vehicles classifications, ranging from level 0 (completely manual) to level 5 (completely autonomous) (Shi et al., 2020): Tesla's AVs are generally classified as level 2 (Lin et al., 2018), designating AVs that are typically available to the public. Higher-level AVs are usually automated shuttles or train services (Dai et al., 2021).

However, consumers still have trust issues with autonomous vehicles: they do not trust the technology due to fears of unexpected errors (Zoellick et al., 2019). Skeptical consumers fear sacrificing control to technology that is not yet fully optimized, unsure if the vehicle would make a critical error in situations that a human would be able to react to in time (Bennett et al., 2019). Several articles have mentioned the importance of trust in AV technology adoption, seeing it as crucial for consumers to trust the technology before they even consider testing it out, much less utilize AVs daily (Buckley et al., 2018). Zhang et al. (2019) noted that trust was a crucial element in the development of human-automation relationships, while Liu et al. (2019a) noted that trust and perceived benefit of AVs were positive predictors of willingness to pay (WTP); an individual with a higher trust towards AVs would be more likely to pay for the technology. Liu et al. (2019b) also determined that trust was a crucial predictor of all three acceptance measures for AV adoption (general acceptance, behavioural intention to use, and WTP).

An additional component to consider for product adoption and reception can include personal values. Schwartz (2012) theorized that values were beliefs that transcend specific actions and situations and otherwise serve as standards or criteria for an individual's actions and behaviours. Values may also conflict or synergize but ultimately share a universal organization across human motivations (Schwartz, 2012). Therefore, personal values can influence individuals to purchase

products or services that best reflect their core values, for instance, the adoption of electric vehicles (Barbarossa et al., 2017). Notably, consumers who found conservation values important tended to be less receptive toward electric vehicle adoption, but consumers with higher self-transcendent and openness-to-change values had a higher reception to adopting electric vehicles (Barbarossa et al., 2017). This study also clarified those who wanted to adopt electric vehicles also had a stronger emphasis on having a "green-self-identity," which may have transpired from their values directly influencing their behaviour in adopting the new technology (Barbarossa et al., 2017). However, research has rarely considered such distinctions and measurements for AVs.

Furthermore, the values associated with technological product adoption are often fraught with paradoxes that entail coping strategies. Mick and Fournier (1998) discuss paradoxes in technology adoption; how consumer values towards conflict or ambivalence can lead to anxiety and stress, subsequently leading the individual to pick a potential coping strategy. These coping strategies vary from outright refusing to use the product to overcoming the anxiety associated with the new technology and mastering it entirely (Mick & Fournier, 1998). Strategies do vary depending on the technology. For autonomous vehicles, consumers would likely undergo a new and obsolete paradox, as the concept of autonomy is to remove the possibility of human error from manual driving. However, there is a caveat: AVs have different levels of autonomy. Subsequently, users may have different levels of resistance depending on how much the vehicle automates and reduces the need for human interaction.

Elements such as trust and perceptions towards other factors can affect intention to use AVs (Winter et al., 2020), yet few articles explicitly discuss personal values, as Barbarossa et al. (2017) considered regarding adopting electric cars. Likewise, the drivers of the adoption of AVs can use different measures, but Winter et al. (2020) elected to measure complexity, familiarity, value, fun factor, wariness of new tech, and willingness to fly in a hypothetical autonomous air taxi. While these variables touch upon the concept of personal values, such as openness to change (Schwartz, 2012), they are not yet explicitly listed among most AV adoption literature.

Understanding which personal values are most prominent in AV discourse can be beneficial for seeing how individuals prioritize different values when it comes to AV technology. Although Barbarossa et al.'s (2017) study of electric car adoption examined personal values, the intricacies of different levels of AVs are likely to add complexity leading to divergent consumer valuations.

Electric vehicles and AVs also have specific risks, with unique underlying values and value conflicts. To identify what personal values consumers prioritize when discussing AVs, we must research the variances in those personal values and conflicts. Researchers and firms must distinguish how individuals with differing personal values perceive AV technology, the contexts and features they discuss, and their potential likelihood to influence AV adoption.

Recently, there has been a massive push for autonomous vehicles to become standardized throughout the automotive industry. However, autonomous vehicles are still not easily accessible to the public, with the publicly available AVs typically being level 2. While AVs are designed to be ubiquitous for all drivers, acceptance varies between different demographics. Despite certain studies that have accounted for culture (Jing et al., 2019) and trust (Zoellick et al., 2019) for AV adoption, there is little to no research on the prioritization of personal values in AV adoption or discourse. This gap in literature presents an opportunity for researchers to understand the intersection of personal values and AV literature. This curiosity leads to the research question: How do individuals prioritize personal values in autonomous vehicle discourse?

As personal values have been used to understand consumer perspectives and probabilities of adopting certain products (Roccas et al., 2010), this study can incentivize marketers and AV companies looking to understand their clients' nuanced insights to better their multi-faceted product line. Outside of these two groups, this study also provides additional information on how social media forums and posts can provide a clear understanding of the personal values of their users – primarily in an AV consumer context but with the possibility of being extracted out to other markets. Furthermore, our research opens future avenues for the Personal Values Dictionary (PVD) framework, which can offer other studies a solid foundation for analyzing personal values in consumer behaviour, adoption, or social media contexts. Lastly, our study offers insight on the different personal values that experts and enthusiasts have on AVs with consideration to their subcommunities, which can offer thought-provoking insights into the dynamics within or between those forums for researchers and marketers alike. We hope to contribute to both personal values and autonomous vehicle literature simultaneously with our results.

Addressing this research question raises two methodological challenges. First, how do we acquire reliable data that reveals personal value priorities concerning autonomous vehicles?

Second, how do we measure personal values using that data? Given consumers' inexperience with emerging autonomous vehicle technology, our attention turns to AV users, experts on AV technology, AV adoption influencers, and enthusiasts with varying amounts of knowledge concerning AVs. Namely, TED Talk speakers and knowledgeable individuals on the popular Reddit social media platform qualify for these criteria. Then we analyze the textual data gathered with the Personal Values Dictionary (PVD), a tool used to assess references to value orientations in textual data.

TED Talk videos focus on emerging technologies and trends. Specifically, Kinnaird and Laudun (2019) note how the TED Talk videos can offer insight into specialized subjects and a methodology for using the TED Talk transcripts as data. Accordingly, we think that TED Talks can provide rich information on how industry experts and thought leaders view AV adoption.

Social media also offers a vast and widely available dataset for research. Platforms such as Reddit include discussion forums on every topic imaginable, empowering consumers to express their views and defend their opinions in conversations with other users. Accordingly, we think Reddit and its topic-focused subreddit threads can provide a window into how consumers view AV adoption. Furthermore, the network of subcommunities that contribute to distinct conversations offers an inclusive structure likely to bring diverse views to the mix, providing an opportunity to study the scope of personal values invoked in AV discourse.

Researchers have developed and validated methods to measure personal values from textual data. Based on the dimensions of Schwartz's personal values categories, the Personal Values Dictionary (PVD) uses an iterative process that extracts text data from a list of predetermined words and categorizes them based on the word frequencies and values associated with each word usage (Ponizovskiy et al., 2020). As a result, the PVD provides a reliable method to aggregate and sort data for analyzing value-expressiveness (Amozegar, 2021). Accordingly, we will use the PVD to analyze two datasets containing AV discourse, a set of TED Talks discussing autonomous vehicles, and a large sample of AV-related Reddit posts gathered from many subreddit communities. Together, the two data sets offer complementary perspectives on the research question of how individuals differ in prioritizing personal values during autonomous vehicle discourse.

Chapter 2

2 Literature Review

2.1 Personal Values

This section contains findings compiled from our literature review, including information about personal values intersecting with theoretical frameworks, consumer behaviour, and social media. We also discuss autonomous vehicle literature on adoption, how trust affects AV adoption, and the value conflicts individuals may experience when discussing or adopting AVs.

2.1.1 Personal Values and Theoretical Frameworks

Personal values are important goals used to guide judgment; they are often considered core elements of what constitutes one's personality, perspective, and overall behaviour (Parks-Leduc et al., 2015). Multiple frameworks categorize personal values and examine how they influence decision-making. For example, Rokeach's (1973) "The Nature of Human Values" conceptualized human values into two categories: instrumental and terminal. Instrumental values are "an expression of competence and guide the selection of means to be used to obtain the end states of existence," while terminal values are "an expression of individual values for what is 'moral' and constitute end-states which one strives to achieve" (Heath & Fogel, 1978). There is debate on whether values are a product of environment or genetic (usually more associated with traits) (Parks-Leduc et al., 2015). However, variances between both do exist from environmental factors, culture, and education (Parks-Leduc et al., 2015). Nonetheless, Rokeach paved the way for many future theoretical frameworks on personal values.

Means-End Theory (Gutman, 1982) integrates personal values into an advertising and consumer behaviour context; the base theory conceptualizes how consumers create brand associations and

have different levels of abstraction for the attributes, consequences, and values (also called ACV) of the product given (Reynolds et al., 1995). The framework presents a logical sequence where if a consumer has a higher level of abstraction from knowing the ACV of the product or brand, they will have a stronger relationship and positive association (Reynolds et al., 1995). Reynolds and Gutman (1988) elaborated on this framework with the concept of laddering, taking the combination of attributes, consequences, and values. Subsequently, they created a sequential process for consumers to translate the attributes of products into meaningful associations to their values. The laddering technique provides immense utility in adoption literature, allowing insights into consumers' associations with various product attributes to reach a decision theme goal (Gengler & Mulvey, 2017).

Schwartz's (2012) model is commonly used in personal values literature and is arguably considered essential for most personal value-related literature and theoretical frameworks (Parks-Leduc et al., 2015). The framework contains four categories (self-transcendence, conservation, self-enhancement, and openness to change) and ten personal value constructs divided between those categories (Schwartz, 2012). Individuals will display multiple values to some degree in their daily decision-making, but variability ultimately leads to very different outcomes in how they interpret situations and plan their actions accordingly (Schwartz, 2012). Schwartz (2012) also discusses how values relate to attitudes, beliefs, traits, and norms. For example, values are the basis for attitudes in how one will positively respond to events or actions that align with their values but negatively to those that attack or hinder their goals (Schwartz, 2012). This logic also aligns with choosing to accept or reject social norms based on their values and how personality traits will typically coincide with values that compliment them (albeit this is not always the case) (Schwartz, 2012).

To assess personal values within a given data set, the Personal Values Dictionary (PVD) goes through our transcripts and text data iteratively, determining the personal values within the data set from a series of predetermined words (Ponizovskiy et al., 2020). Each data set is categorized based on word frequencies and offers insight into the different values associated with the word usage of each text file. The PVD provides high internal consistency between each dimension of Schwartz's value categories, thus being a reliable method for analyzing value-expressiveness (Amozegar, 2021). The coding tool also considers using multiple theoretical frameworks from previous authors: such as the Rokeach Value Survey (Rokeach, 1973) and the Portrait Values Questionnaire (Schwartz et al., 2012). This inclusive approach was made to reinforce the validity of the PVD (Ponizovskiy et al., 2020), ultimately capturing keywords for personal values using Schwartz's (1992) model as a basis.

Personal values have notable differences compared to personality traits (Parks-Leduc et al., 2015). While personality traits usually describe an individual in terms of relatively stable patterns of behaviour, thoughts, and emotions (McCrae & Costa., 2003), personal values are goals that guide actions and behaviour (Schwartz, 1992). The personal value literature rarely attends to these differences (Parks-Leduc et al., 2015), usually adhering to the view that they are interchangeable components of personality (Caprara, Alessandri, & Eisenberg, 2012).

Accounting for these differences is essential as losing the nuance between them can lead one to draw incorrect conclusions. Parks-Leduc et al. (2015) present an example where if someone displays creative personality traits, which does not necessarily mean they value creativity as a personal value. Conversely, one may value creativity but not display creative traits in their actions or behaviour.

The further intersection of personal values and traits includes the five-factor model (FFM) (McCrae & John, 1992), which represents human trait structure using five categories: Neuroticism, Openness to Experience, Extraversion, Agreeableness, and Conscientiousness (Roccas et al., 2002). The FFM model categorizes individuals' many feelings and traits (McCrae & John, 1992). Here, the authors look to see if there is any pattern between both conceptual frameworks (Roccas et al., 2002). Multiple personal values significantly overlap the subset of traits between each factor, such as extraversion correlating positively with achievement, stimulation, and hedonism (Roccas et al., 2002). Neuroticism was the only factor that exhibited little association (Roccas et al., 2002). Having this intersection between both frameworks does allow for additional insight and categorization for respondents, even across multiple cultures (Dollinger et al., 1996, Luk & Bond, 1993). This quality is central to understanding the personal value literature; while the values and traits may differ in strength and frequency, the measurement treatment is universal.

Personal values have some intersection with culture-based theoretical frameworks. For instance, Hofstede's (2011) Cultural Dimensions presented six variables to account for differences between cultures: power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term versus short-term orientation, and indulgence versus restraint. Ladhari et al. (2011)'s study offers the perspective that personal values and Hofstede's Cultural Dimensions (2011) are distinct in-service quality (ergo, personal values do not perfectly mirror cultural differences) – but still note how personal values are predictive of attitudes and behaviour. While Ladhari et al. (2011) uses a different personal value scale, other studies, such as Raajpoot (2004), use Schwartz's (1992) value system in conjunction with Hofstede's (1997) framework. Raajpoot (2004) explained that specific personal values did stem from variance in cultural dimensions. For example, collectivistic and individualistic consumers had different

treatment of service workers. Collectivism cared more about the human elements of the service (assurance and sincerity), while individualistic consumers focused more on the professional aspect of the service (Raajpoot, 2004). While collectivistic and individualistic dimensions fell under self-enhancement as a parent value, they ultimately focused on expressing that value via different behaviours. Although the intersection of cultural and personal values in the context of AVs has not been well studied, it is possible to infer that culture may impact an individual's likelihood to adopt AVs. For example, individualistic consumers may focus more on private AVs and how they can benefit their routine, while collectivist consumers may be more receptive to public AVs providing better transportation to their community. Other cultural values or dimensions mentioned by Hofstede (2011) may have intersection personal values with AV adoption but are otherwise not well-explored in current literature.

2.1.2 Personal Values in Consumer Behaviour

The personal value literature has expanded to include more categories (Schwartz, 2012), yet the core concept remains the same: consumers consider the personal relevance and desirability of product attributes to associate with product usage and its consequences (Reynolds et al., 1995). Personal values in product adoption can also apply to business contexts, such as a corporate consumer insisting on purchasing the fastest laptop available to increase productivity and meet their goals of respect and capability, giving them a relative advantage over competitors (Mulvey & Gengler, 2013). For a potential example in the context of autonomous vehicles, a car that can drive itself and promises to reduce accident rates can result in users feeling more secure and relaxed in their driving experiences, thus providing satisfaction to values they have for reliability. Regardless, both scenarios ultimately present a situation where one aligns with a product that simultaneously fulfils their values and the product's functional goal.

Ahmad et al. (2020) used Schwartz's (1992) Personal Values Framework in consumer behaviour contexts and discussed how integrating Schwartz's framework with the theory of planned behaviour (TPB) could find relationships between visiting intentions of tourists in eco-friendly destinations. Specific values, such as self-transcendence and conservation, had positive relationships with the three TPB anchors (attitude, subjective norms, perceived behavioural control), but other personal values had little correlation with TPB (Ahmad et al., 2020). Inferences drawn here include tourists with high self-transcendence and pro-social values who will tend to visit locations with eco-friendly environments, often for the sake of adhering to social pressures and a collectivist value mentality (Ahmad et al., 2020). It also shows the value conflicts that one may have when choosing certain products (or, in this instance, tourist locations). Finally, a collectivist mindset encourages individuals to act beneficially (or at the very least, similarly) to their community, setting an example of a personal value guiding behaviour and intentions.

Researchers have adapted Schwartz's framework to multiple cultures and product markets. For instance, consumer behaviour, including purchasing organic foods based on personal values and environmental beliefs. In one study, using Schwartz (1992)'s framework as the baseline, Grunert and Juhl (1995) assessed which values were most prevalent (or irrelevant) for environmentally concerned and unconcerned consumer groups in a Danish context. They found that respondents concerned about the environment (displaying high universalism and benevolence values) would be more likely to buy organic foods (Grunert & Juhl, 1995). The study also validated the Schwartz Value Inventory (SVI) to understand and evaluate consumer behaviour frameworks (Grunert & Juhl, 1995).

Understanding a consumer's values is crucial for delivering a successful product or service for any given company. Personal values can play a moderating role in consumer engagement; Marbach et al. (2019) present a framework where self-enhancement and conservation were key moderators between multiple personality traits and online consumer engagement. Here, conservation values traits supposedly weakened the values for new experiences and independent action in online consumer engagement; they may believe in traditions or customs that impact their likelihood of online consumer engagement (Roccas & Schwartz, 2010). Conversely, traits under self-enhancement values would have the opposite effect; an "open-minded" individual will engage more online if not restricted by said customs or beliefs (Marbach et al., 2019). For a company to properly engage their consumers successfully, they need to understand its target market values while advertising or offering propositions, especially if the product or service offered targets a demographic with higher conservation values (Marbach et al., 2019).

However, Marbach et al. (2019) and Grunert and Juhl (1995) note cultural limitations in their study. Different cultures will have variability in personal values and perspectives. For example, certain cultures may be less likely to vocalize their opinions on products or services, let alone adopt new practices if they are not practical or in line with their values. In tandem with personal values, cultural norms also affect human behaviour. Roccas and Sagiv (2009) reiterate multiple examples, such as publicly expressing feelings and thoughts being more prominent in Western European and English-speaking countries compared to East Asian and African countries (Kim & Sherman, 2007). Cultural norms also create the binding effects of social restrictions between cultures, even overriding personal values in decision-making processes (Roccas & Sagiv, 2009). These differences are notable for two reasons: they do provide a possible situation where one may not adopt a behaviour (or service) despite their values, otherwise not preventing them from

doing so. Thus, they reiterate the importance of acknowledging cultural differences when accounting for personal values and consumer adoption related studies.

Culture can also influence how personal values are measured. Wilson et al. (2016) analyzed texts that explicitly described personal values and behaviours between multiple cultures. The study provided additional insight into differences in the samples between American and Indian free-text writing samples: American themes were typically under “hard work, faith, and financial,” while Indian themes were usually “peaceful, rule-following, and decision making” (Wilson et al., 2016). While the article states the logical conclusion of needing to account for cultural differences, it reinforces the consistency between the previously mentioned articles (Kim & Sherman, 2007, Roccas & Sagiy, 2009) that emphasize the importance of contextualizing extracted findings between different cultural groups. Even these value systems will affect the consumer behaviour of individuals depending on their variability for Hofstede’s dimensions of culture (Soares et al., 2007), ranging in effectiveness from advertising, innovation, information exchange, and other essential marketing concepts. Failing to account for these differences in values will lead to poor marketing strategies.

2.1.3 Personal Values in Social Media

Social media presents multiple mediums to vocalize perspectives, interests, and other insights on any topic. Social media posts can also provide large amounts of data on a user’s values. Ideally, a user would discuss their daily activities or perspective on current events and issues, which reflects personal values that they would otherwise display off the platform (Boyd et al., 2015). Boyd et al. (2015) provides an interesting two-part study: comparing closed reports with participants self-reporting their behaviours and personal values, then expanding the study to include Facebook status updates. This study provided two interesting results: there is justification

for measuring personal values through both traditional self-reports and analyzing natural language (Boyd et al., 2015), with the latter giving additional insight into behavioural (eating, studying, games, etcetera) and thought processes (privacy, national issues, illnesses) from Facebook status updates. In addition, Boyd et al. (2015) notes that using natural language or simply asking a participant what values are important to them compared to close-ended questions will likely indicate the individual's real-world behaviour more.

Using social media as a data set for analysis was also shown by Chen et al. (2014), who opted to analyze personal values and word usage on various Reddit comments using the Linguistic Inquiry and Word Count (LIWC) dictionary software. Unlike Facebook, which traditionally has users post on accounts with their real name, Reddit users generally post only under a username with otherwise little to no personal information. Similarly, Boyd et al. (2015), users filled out a survey that measured value orientations, then the last 1000 posts from each participant were collected to measure word usage. Chen et al. (2014)'s findings did note how personal values dictated word usage, such as those with high self-transcendence would try harder to understand other people's problems, or those with high openness-to-change would often be "more confident" in their reasoning, thus leading to word usage involving certainty.

However, the study also notes that word usage alone was not enough to accurately predict a user's values, contrary to what Boyd et al. (2015) found using Facebook status updates. While neither study notes the differences, anonymity and attention distribution are likely the largest culprits; users may have different word usage and tones depending on the site they are using. For example, one may not be able to vocalize their interests and hobbies on Facebook as freely as they could on Reddit, while conversely, one may not be able to provide personal insight on private events that they could on Facebook. Communications on these website platforms may

differ but integrating user messages and word use across multiple social media networks would better indicate their values (Chen et al., 2014).

The prevalence of social media also opens the discussion for value and behavioural changes, especially considering how advertisements or campaigns can pander to specific consumer values (Chu & Kim, 2011). Hynes and Wilson (2016) studied the relationship between using personal values and norms as potential stimuli for purchasing environmentally friendly foods, ultimately noting that influencing personal and social norms could change the actions of consumers.

However, if only one factor were influenced (either the personal or the social norms), it would be unlikely for any change to occur. Ergo, someone with strong environmental values may want to engage in green behaviour and may see no point in doing so without a collective effort from others (Lorenzoni et al., 2007). However, Hynes and Wilson (2016) raised an additional caveat, social comparisons tend to be much more effective for some activities (fitness, health, or beauty products) than others. One may infer that some of these activities reflect status or desirability, where social comparisons become heavily influential towards changing behaviour. Regardless, this may still not necessarily be true for individuals who have low materialism or high self-esteem values. It does, however, raise the importance of understanding how these values dictate the effectiveness of social media campaigns that ultimately rely on stimulating personal values.

2.2 Autonomous Vehicles

This section provides information on the following: autonomous vehicles (AVs), their various levels of control, how adoption literature coincides with using autonomous vehicles, consumer behaviour frameworks intersecting with AV technology, the importance of trust in utilizing autonomous vehicles, and the potential value conflicts that occur when discussing or adopting AV technology.

2.2.1 Autonomous Vehicle Definitions and Adoption Literature

There is consistency in an AV's control as the level increases: the human driver continually performs fewer tasks until full automation is achieved, thus eliminating the human element (Deb et al., 2018). In particular, the transition between level 2 and level 3 involves the automated driving system performing mode-specific driving, with the condition that the human driver is ready to take back control at any given period (Deb et al., 2018). The variable most differentiating levels 3 to 5 is the environment, where a level 4 vehicle is fully autonomous but only under certain conditions (such as a fixed rail or track). A level 5 vehicle could operate in any given environment that a human operator would drive (Deb et al., 2018). Ideally, AVs eliminate the risk of human error and account for all possible scenarios in a driving environment.

However, there are certain elements that autonomous technology cannot easily replicate or mitigate. Notably, the lack of a human element can cause anxiety for passengers, pedestrians, and other drivers on the road. There can be concerns that the technology may not understand a situation and thus cause an accident that would be otherwise avoided (Bennett et al., 2019). In addition, trust is crucial to adopting AV technology properly. Otherwise, most individuals will not consider testing it out (Buckley et al., 2018). There are specific methods for the technology to mitigate this anxiety, such as displaying the vehicle's actions to others (Deb et al., 2018). Even then, there are still issues in determining liability for accidents (Thomas et al., 2020), concerns about security from external malicious parties taking over the vehicle's operations (Merfeld et al., 2019), and having emotional attachments and anxieties about giving up driving to a computer system (Wang et al., 2020).

Roemer and Henseler (2022) also presented the dynamics of the acceptance of electric vehicles (EVs) from a German perspective, noting that surveyed employees often avoided using the EV

fleet. After evaluating multiple technology adoption and electric vehicle acceptance papers, sixteen interviews were conducted with electric vehicle experts to find the determinants for acceptance (Roemer & Henseler, 2022). These determinants were: environmental concern, perceived risk, enjoyment, ease of use, and relative advantage. These factors affected the behavioural intention to use an EV in corporate fleets at various times in the adoption timeline. For example, environmental concern was a significant factor driving first-time usage for employees looking to adopt the technology, but it became less important after being used for an extended period (Roemer & Henseler, 2022). Other factors, such as perceived risk and relative advantage, would only gain prominence after the initial trial period was passed (albeit perceived risk was the only one to have a negative effect after the six months). The study attributes this to problems that may have occurred in operations and infrastructure after an extended period (Roemer & Henseler, 2022), thus incurring negatives that outweigh the perceived benefits of electric vehicles.

In comparison, AV adoption literature has displayed similar determinants to EVs. Yuen et al. (2020) discussed how a relative advantage in AVs is vital for adoption. For consumers to believe AVs were “better” than existing vehicles that required human intervention, complexity ties directly into how easy the technology is for the public to understand and utilize. Though the context in the articles differ, there remains an overlap in how consumers choose to adopt both technologies. Acheampong and Cugurullo (2019) documented other elements that impacted AV adoption, such as environmental concerns and the perceived risks of fears and anxiety. Fear diminished AV adoption despite simultaneously acknowledging the benefits it could provide (Acheampong & Cugurullo, 2019). While perceived risks towards AVs and EVs are not identical (issues with the technology failing to detect objects or pedestrians versus issues with power

supply and infrastructure), there are overlaps in anxieties about the technology failing at crucial moments during operation.

2.2.2 Autonomous Vehicles and Theoretical Frameworks

Theory of Planned Behaviour

Researchers have proposed multiple adoption frameworks to determine important aspects of AV technology adoption. The most common frameworks included are the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT). Each of these frameworks has different constructs to measure what consumers find valuable in adopting products, technology or engaging in certain behaviours. While they may cover different aspects of what is important, they ultimately fill the same goal of building an understanding of AV adoption and the nuances within the technology. Some experts contend that the most significant barrier to AV adoption is not technical but psychological (Shariff et al., 2017). Nobody will accept a product, service, or technology without a positive understanding of its utility.

The Theory of Planned Behaviour (Ajzen, 1991) is a theoretical framework that aims to determine behaviour when engaging in any particular action. TPB often ranges broadly from social behaviour scenarios to consumer psychology contexts. There are three primary constructs to TPB: Attitude towards the behaviour, subjective norm, and perceived behaviour control. In a consumer adoption context, TPB has expanded to account for controllability and self-efficacy beliefs (Pavlou & Fygenson, 2006). An individual's attitude towards using a product does play a large part in adoption but taking into consideration the normality of it and how much control they have towards adopting it can potentially play a more prominent factor in using the product (Pavlou & Fygenson, 2006).

In the AV literature, TPB has been used to evaluate consumer adoption and gain specific insight into the factors that utilize the recent technology. Jing et al. (2019) created a modified TPB model that considers private and shared AVs (SAVs). A shared autonomous vehicle is a vehicle that can automatically pick up passengers, comparable a taxi (Jing et al., 2019). Here, the article denotes subjective norm as the most critical factor for an individual to use AVs, but perceived behavioural control was more important for using an SAV (Jing et al., 2019). In addition, for AVs specifically, the study noted the importance of collectivism in Chinese cultures, tying into the social pressures that may influence their adoption choice to fit in with their social groups and peers (Jing et al., 2019).

Conversely, SAVs had perceived behavioural control as the most prevalent indicator for utilizing an SAV: three attributes that were indicators of PBC included cost, convenience, and availability (Jing et al., 2019). In this case, SAV usage takes less consideration of the social influence and focuses on the practicality of using the technology. Interestingly, while attitude and perceived risk were both influential factors in AV and SAV adoption, knowledge did not directly impact the adoption of SAVs (Jing et al., 2019). However, knowledge-related specific behaviours are not necessarily enough to decide, although it is odd that this was not the case for AVs.

Additional perspectives that pertain to SAVs specifically include Yuen et al. (2020), who also utilizes a modified TPB model with an additional caveat: they added the five components of UTAUT2 (performance expectation, effort expectation, habit, price value, hedonic motivation) as key factors influencing the adoption of SAVs. While knowledge is not a factor listed in this study, it offers insight into how other components may affect SAV adoption. Notably, all variables tie significantly into attitude: SAVs are not complicated to use, offer convenience to multiple travelers, reduce economic and environmental burdens, and offer better pricing than

traditional public transport (Yuen et al., 2020). These components indirectly tie into an additional construct for perceived behavioural control: facilitating conditions. As the technology is optimized and integrated successfully into infrastructure (especially regarding time, money, government support and customer service), the reception and intention to utilize SAVs will heavily increase (Yuen et al., 2020). The complexity of these adoption decisions increases when individuals can compare SAVs to currently available public transport and find them worth using.

Technology Acceptance Model (TAM)

The Technology Acceptance Model measures multiple factors determining intention to adopt new or upgraded technology (Davis et al., 1989). The original base TAM framework had two external variables (perceived usefulness and perceived ease of use), which would contribute to attitude towards adoption. Subsequently, these factors determine an individual's behavioural intention to utilize the new technology. Perceived usefulness (PU) is “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). In the context of an autonomous vehicle, the ability of the AV to satisfy various driving needs (safely arriving at a destination, reducing accident risk, mitigating stress) demonstrates perceived usefulness and other tasks that may not be easy to do while driving (eating, using a cell phone) (Zhang et al., 2020).

The second variable is perceived ease of use, “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989). Ergo, technology with simple operations or ease of use will be far more likely to be accepted by users and the public. In AV literature, perceived ease of use often ties into generic technology adoption questions (Yuen et al., 2021). Likewise, perceived ease of use can positively affect a user's trust in AV technology and its subsequent adoption (Zhang et al., 2019). For both perceived usefulness and perceived

ease of use, direct experience with using AVs immensely increased trust and cognitive beliefs about the technology (Xu et al., 2018): this makes sense given the amount of control and power the technology has over a relatively dangerous task.

Mass media reporting on autonomous vehicles plays a role in consumer evaluation of perceived usefulness thru methods of enabling convenient travel, improving travel performance and effectiveness, comfort, and safety (Zhu et al., 2020). Different forms of media have varying effects on perceived usefulness perceptions: mass media significantly strengthened the PU of autonomous vehicles, but social media did not have a notable impact on how consumers viewed these benefits (Zhu et al., 2020). This impact differed from perceived risks, where mass media enhanced perceived risks for AVs, but social media reduced them. This anomaly is an intriguing factor in how media plays a large part in technology adoption, especially considering that modern media's negative information can be highly magnified or publicized (Zhu et al., 2020). However, it is odd that social media does not seem to have this effect, especially when posters would be free to post any viewpoint they have.

2.3 Trust in Autonomous Vehicle Adoption

Other revised models of TAM also use additional components, such as trust and perceived risk (Pavlou, 2003), influencing behavioural intention. There are multiple interpretations of how trust functions in TAM frameworks. It can range from having an indirect effect on behavioural intention (Zhang et al., 2019) to having multiple potential antecedents (reliability, security risk, and privacy risk) for trust to be effective in TAM for AV adoption (Kaur & Rampersad, 2018), and perceived risk indirectly affecting adoption through the trust construct (Benleulmi & Blecker, 2017). We cannot ignore the impact of trust on purchasing behaviours, as trust allows the advertiser to overcome consumer psychological barriers that prevent the adoption of new

technology (Pavlou & Fygenson, 2006). In AV-related studies, trust in TAM frameworks often corresponds to the dependability and reliability of the vehicle's functions (Zhang et al., 2020), and these factors tie directly into the operations (and thus impact the trust) of the technology. Another component that negatively affects AV adoption is the threat of hacking overriding vehicle operations (Nastjuk et al., 2020). The additional risk that would otherwise be a non-factor in manual vehicles can make it even more challenging to trust the technology (Thomas et al., 2020).

The lack of control that a human has over an autonomous vehicle compared to a manual vehicle makes trust even more crucial, as removing agency can cause a large amount of stress (Yuen et al., 2020). A high level of trust in an AV would indicate that the user believes the technology is predictable and understandable, performs tasks accurately and correctly, and provides avenues for users to regain vehicle control whenever desired (Yuen et al., 2020). Xu et al. (2018) define trust in AVs as “the belief that permits the public and potential consumers to willingly become vulnerable to AVs.” Feelings of vulnerability are important to remember, as driving is an activity where one needs to remain alert to avoid collisions and other unsafe behaviours.

Demonstrations or trial runs are valued ways to establish consumer trust, ideally seeing how the technology functions in multiple scenarios (Dai et al., 2021). While this was further compounded by Xu et al. (2018), showing the effect of direct demonstration on trust and adoption, Dai et al. (2021) mentioned that designing robust systems with an emphasis on ethical issues and structured operation oversight was also critical. Considering the implications an autonomous vehicle could have in an accident, establishing ways the system can account for these scenarios would go a long way to gaining the trust of potential consumers.

The implication of consumers' potential trust issues when adopting new technologies stems from the perceived risks associated with using them. This trust breakdown was especially prevalent in Rahman et al. (2019), discussing the hardships and concerns that elderly consumers may have with AV technology and level 5 autonomous vehicles. While participants in this study were more receptive to the technology as a driver (assuming they had some prior experience or trial of the technology), there were concerns that the technology would not be able to discern between pedestrians and other road objects. This fear is a generalized concern for most pedestrians as they distrust most vehicle drivers to obey traffic laws and regulations (Karsch et al., 2012). However, this was not necessarily the case while using the technology, which likely stems from the lower probability of getting hurt in such instances if the participant was a driver (Rahman et al., 2019).

Hegner et al. (2019) cite an additional perspective for why trust is a key factor for AV adoption: trust inherently involves an unavoidable element of risk (Lewis & Weigert, 1985) otherwise, noting that handing over control to an AV will only result in a positive attitude and intention to use if the vehicle has demonstrated the capability of driving properly in complex and unpredictable situations. Due to the lack of a human-like element and the low probability of an average consumer understanding how the technology works, there is already an inherent distrust for people who are hesitant about new technology, especially with elderly consumers (Voinescu et al., 2020). An interesting perspective to counter this distrust comes from Waytz et al. (2014), who suggested that offering humanistic elements to technology (such as voice command or a name to the AI) can bring greater trust to technology that could otherwise come off as cold or unfeeling.

Usability and viability of technology also tie into trusting new technology. While AVs ideally fulfil the immediate purpose of transporting passengers safely to a given location, the technology

must be user-friendly to trust that it can function appropriately (Morgan et al., 2018). For inexperienced individuals with technology, having a complicated or unreceptive interface can create a sense of unease or confusion among consumers who lack the necessary knowledge or intuition. These issues tie heavily into design philosophies – ideally being consistent, informative, simple, and offering feedback after each choice (Shneiderman, 1987). Brinkley et al. (2019) reinforced this perspective, where twenty visually impaired users felt that the ATLAS interface system was effective enough to build trust in AV technology and mitigate the anxieties associated with the technology. The perceived usefulness of the technology compounded this. Participants were also willing to trust the technology if it could increase their productivity or personal mobility (Brinkley et al., 2019). This finding also overlaps with Hegner et al.'s (2019) study, where the likelihood of adoption and the trust of AVs would go up significantly if the utility and viability of the vehicle were both immediately present to the driver.

2.4 Value Conflicts in Autonomous Vehicle Adoption

Potential value conflicts may also occur when adopting or discussing AVs. Technology may be more acceptable to individuals in certain aspects of their life but conflicts with other values (Burroughs & Rindfleisch, 2002). For example, those with high collective-oriented values (such as religion or family) tended to be less materialistic (Burroughs & Rindfleisch, 2002). For AVs, one may be more concerned with the environmental aspect of how efficient AVs are versus the cost of purchasing and maintaining the vehicle. These conflicts may prevent consumers from adopting an AV unless they feel it is beneficial enough or does not cause stress due to the perceived risks. Unfortunately, these concepts are not well explored in AV literature, especially for how individuals manage value conflicts and how it impacts their potential AV adoption for different levels.

Wang et al. (2020) noted previous studies, such as Lilijamo et al. (2018), suggesting concerns about its reliability and the fear that it could crash without any input from the driver hampers AV adoption. Wang et al. (2020) also focused significantly on shared AVs, which are publicly used and may have different value conflicts compared to private AVs. Some of these value conflicts could include enjoying driving (Asgari & Jin, 2018) instead of letting a machine pilot the activity, while others expressed how shared AVs may be useful as a transportation system alternative (Fagnant & Kockelman., 2015). Sharing an AV with strangers may also present a conflict. One may feel the need for privacy but otherwise feel like a shared AV cannot provide this (Krueger et al., 2016). Some studies have also noted the difference between age and gender towards the adoption of AVs, with younger men having a higher propensity to the technology (Krueger et al., 2016) and women conversely not having this attitude toward shared AVs.

Hansson et al. (2021) mention multiple potential ethical problems for AVs in their study, introducing conundrums that could stem from society implementing AVs at large. Beyond the concerns mentioned in the previous paragraph, the authors note how AVs may foster class segregation between those who could afford the technology on transport (in the event of a hypothetical “fast-passage option”); other socio-economic concerns could stem from the technology invalidating any transportation-based job (Hansson et al., 2021). AV literature often presents conflicts of technological progress vs societal good (one may infer achievement vs conformity), and AV adoption boils down to how much they value either component. However, there is little literature that overtly expresses this theory.

An interesting conundrum that is present in AV literature is the “trolley problem”- when applied to an AV raises a scenario where a collision near a pedestrian is inevitable, and the car has two options: avoid the pedestrian and kill the passenger by slamming into a wall or kill the pedestrian

to avoid colliding with any road obstacle (Himmelreich, 2018). For value conflicts, the main discourse stems from morality – who decides how the vehicle should react in those situations and who would be punished in such scenarios? (Himmelreich, 2018). These conundrums are interesting to note because they are consistent with a TED Talk from Rahwan (2016). This presentation noted that while citizens would like the idea of others purchasing cars that would minimize harm, they also wanted cars that would protect them. Rahwan (2016) reiterated this dilemma in his TED Talk, noting a value conflict for consumers wanting to adopt autonomous vehicles. They did not want to purchase the vehicle regardless of their simultaneous belief that it would be worthwhile for society and harm reduction overall. This tradeoff directly contrasts what the consumer believes is viable and what they purchase, creating a value conflict.

Our literature review taught us how personal values are measured, used, and applied in theoretical and practical contexts and the perceived benefits and conflicts AV technology may have for both enthusiasts and skeptics. Subsequently, we can see that while personal values are used to understand public perception of products and other interests, there is little to no research on how they affect AV discourse or adoption. However, we now have the tools to properly measure a large set of text data in conjunction with LIWC, the PVD, and the Social Astronomy tool, and methods to interpret results from our data output. The following section aims to take the core of our literature reviews, focusing on personal values and AVs and putting them into tangible results.

Chapter 3

3 Data Collection, Process, and Analysis

3.1 Methodology and Data Collection Process

The goal of our research is to understand how people differ in prioritizing personal values while discussing autonomous vehicles. Online conversations on social media are ubiquitous, including posts and messages across multiple forums discussing every topic imaginable – including AVs. Social media posts can also provide information and insight into an individual’s perspective and values toward a particular idea or topic, especially if their messages are consistent across multiple networks (Chen et al., 2014). In addition, consistency between word usage and key terms gives perspective on how receptive one may be to certain philosophies, lifestyles, and products based on their personal values. This is useful for researchers looking to understand linguistics for specific populations and companies looking for feedback and a deeper understanding of their consumer base. A tool that can assist in analyzing this data is the Personal Values Dictionary (PVD). The PVD allows us to study the keywords people use that reflect their values by categorizing the textual data to facilitate analysis (Ponizovskiy et al., 2020).

In this study, we gather large datasets of TED Talk transcripts and Reddit messages to observe the personal values used in discussing AVs. This approach allows us to validate the PVD’s application to AV discourse, understand consumer perspectives on the viability and utility of AVs, and understand what values are most important to them for this technology. Studying the intersection of personal values and AVs also gives avenues for future research projects and adds to personal value and technology intersection literature. Practical applications include adjusting marketing and production strategies based on consumer feedback (potentially addressing safety

and control pain points) while also considering the positive elements (positive change in technology, reduction in carbon emissions, etcetera).

This study has two sets of data used for analysis: TED Talk transcripts and Reddit posts. There is precedence in using these sources as data (Kinnaird & Laudun, 2019, Chen et al., 2014). Both data sets have benefits: TED Talks can provide a variety of insights from a refined perspective of experts (Kinnaird & Laudun, 2019), while Reddit data provides an inclusive natural field setting with multiple avenues for users to freely discuss their insights and thoughts on subjects (Chen et al., 2014). For an opt-in forum that can cater to both primary or tangential interests, having information on the subgroup that Reddit users (or Redditors) use matters in the context of their personal values and views. Both data sets are also readily available to scrape for analysis – TED Talk transcripts are easily accessible through the main website, and Reddit data through its application programming interface (API). Given the breadth of information that experts and enthusiasts from both platforms can provide for AV technology, we decided that both data sets would be worth analyzing and comparing.

For our study, we used three main tools to collect, score, and analyze the data: the Social Astronomy tool, Linguistic Inquiry and Word Count (LIWC), and the Personal Values Dictionary (PVD).

Data collection was different between the Reddit data set and the TED Talk transcripts. We used the Social Astronomy tool to compile publicly available Reddit messages that contained key words or phrases within a given timeframe. Using the keywords of “autonomous vehicle” or “autonomous vehicles,” we compiled and saved 20,000 messages from the period of November 2018 to April 2022 into a spreadsheet document (.csv). This data also included the poster's username, the post's subreddit (forum), a timestamp, and the post text. For the TED Talk data,

we used the search function on the official website given the smaller dataset with the singular and plural key phrases “autonomous vehicle” and “self-driving car” to compile a final total of twenty-four transcripts into a .txt file, which were copied from the transcripts on the official website verbatim. Both file formats are compatible with LIWC to analyze the text data.

We used LIWC with the PVD as an imported dictionary file (.dicx). LIWC scores columns based on specific parameters within a given text body while also being able to exclude stop words or posts with less than a specified number of words. In this case, a column with a higher score indicates that the text block exhibits that personal value with its word usage and diction. LIWC and the PVD have been used for textual analysis (Chen et al., 2014, Ponizovskiy et al., 2020), with the PVD providing a reliable method of finding personal value type correlations between multiple words of any textual data. Once we compiled all the data, we used the LIWC analysis function to score all the TED Talk transcripts and Reddit messages for each measurable personal value, then exported the results to another spreadsheet file to sort for analysis afterwards in Excel.

3.2 Analysis of TED Talk Transcripts

Our study consisted of qualitative research, so establishing an inclusion criterion meant specifying an attribute that cases (transcripts) would possess to qualify for the study (Robinson, 2014). For our initial inclusion criteria for TED Talks, we looked for titles or descriptions that mentioned autonomous driving, “self-driving,” autonomous vehicles, or artificial intelligence in vehicles in any capacity. If a TED Talk title or its description met these criteria, it was bookmarked for the second step. Inputting the singular and plural forms of “autonomous vehicle” and “self-driving cars” into the search function gave 311 results. We also attempted to use other keywords to broaden our results: “vehicles,” “cars,” “buses,” “planes,” “self-driving,” “trains,” and “automobile” for an

additional 4171 results, but these keywords generally had duplicate or irrelevant searches. Finally, after excluding identical titles and direct links to presenter biographies, we had thirty-nine results we deemed suitable to investigate further for our analysis.

For the second step, we evaluated the content of each transcript based on the following criteria: the transcript needed to discuss autonomous vehicles in the context of a benefit, downside, experience with ownership, technology evolution, policy implementation, or theorizing the utility regarding AVs. While AVs did not have to be the primary focus of the TED Talk (e.g., Cukier, 2014 and Suarez, 2013), the content still had to pertain to AVs or the implication of AV technology in their given contexts. Using these criteria, we collected twenty-four different transcripts and copied them into a .txt file with UTF-8 encoding for LIWC compatibility.

Table 1 lists the 24 TED Talks, with the token count (words), year, and file name, including the presenter's name and title. The presentation dates span ten years, from 2011 to 2021. As the technology develops, the understanding and concerns based on AVs will change accordingly – although some values and ideas from old TED Talks remain consistent.

Table 1 TED Talk transcript properties

TEDid	Token Count	Year	TextID
TED01	785	2020	benjamin_seibold_what_is_phantom_traffic_and_why_is_it_ruining_your_life.txt
TED02	1620	2013	andreas_raptopoulos_no_roads_there_s_a_drone_for_that.txt
TED03	1883	2021	aicha_evans_your_self_driving_robotaxi_is_almost_here.txt
TED04	1999	2012	chris_gerdes_the_future_race_car_150mph_and_no_driver.txt
TED05	3208	2011	bill_ford_a_future_beyond_traffic_gridlock.txt
TED06	1334	2020	david_lindell_a_camera_that_can_see_around_corners.txt
TED07	3617	2015	chris_urmson_how_a_driverless_car_sees_the_road.txt
TED08	1972	2013	daniel_suarez_the_kill_decision_shouldnt_belong_to_a_robot.txt
TED09	1028	2021	freeman_shen_a_future_with_fewer_cars.txt
TED10	1763	2011	dennis_hong_making_a_car_for_blind_drivers.txt
TED11	2151	2016	iyad_rahwan_what_moral_decisions_should_driverless_cars_make.txt
TED12	1721	2013	jennifer_healey_if_cars_could_talk_accidents_might_be_avoidable.txt
TED13	1868	2019	janelle_shane_the_danger_of_ai_is_weirder_than_you_think.txt
TED14	2662	2014	kenneth_cukier_big_data_is_better_data.txt
TED15	698	2015	patrick_lin_the_ethical_dilemma_of_self_driving_cars.txt
TED16	2516	2016	kevin_kelly_how_ai_can_bring_on_a_second_industrial_revolution.txt
TED17	1225	2016	raffaello_d_andrea_meet_the_dazzling_flying_machines_of_the_future.txt
TED18	7158	2017	elon_musk_the_future_were_building_and_boring.txt
TED19	1654	2018	rodin_lyasoff_how_autonomous_flying_taxis_could_change_the_way_you_travel.txt
TED20	2815	2017	maurice_conti_the_incredible_inventions_of_intuitive_ai.txt
TED21	853	2019	sajan_saini_how_do_self_driving_cars_see.txt
TED22	1805	2016	wanis_kabbaj_what_a_driverless_world_could_look_like.txt
TED23	5091	2017	sebastian_thrun_chris_anderson_what_AI_is_and_isnt.txt
TED24	583	2011	sebastian_thrun_googles_driverless_car.txt

After gathering the data, we used LIWC with the PVD as the scoring metric for value analysis.

Under “LIWC Analysis,” we added all files into the program, imported the PVD as the dictionary for reference (.dicx file), then ran the analysis to export the results in Microsoft Excel. In conjunction with the PVD, LIWC provided a breakdown of the four personal value categories and ten individual personal values from Schwartz (2012). Therefore, we could categorize this data into two different tables, with Table 2 as a legend for the following. Table 3 has the raw scores given by LIWC using the PVD for each category and personal value, while Table 4 has the mean-centered scores, which establish the relative emphasis of personal values for each transcript. We achieved this by subtracting the mean of all categories (meanVO) and personal values (meanPV) from the respective raw score (VO1 to VO4, PV01 to PV10). The charts compare which values were most prominent overall, within, and between TED Talk transcripts.

Table 2 Legend for Table 3 and Table 4

Legend	Meaning	Legend	Meaning	Legend	Meaning
VO1	Value Orientation 1 (Conservation)	VO2	Value Orientation 2 (Self-Transcendence)	VO3	Value Orientation 3 (Openness to Change)
VO4	Value Orientation 4 (Self-Enhancement)	PV01	Personal Value 1 (Security)	PV02	Personal Value 2 (Conformity)
PV03	Personal Value 3 (Tradition)	PV04	Personal Value 4 (Benevolence)	PV05	Personal Value 5 (Universalism)
PV06	Personal Value 6 (Self-Direction)	PV07	Personal Value 7 (Stimulation)	PV08	Personal Value 8 (Hedonism)
PV09	Personal Value 9 (Achievement)	PV10	Personal Value 10 (Power)	MeanVO	Average of all Value Orientations within a TED Talk Transcript
MeanPV	Average of all Personal Values within a TED Talk Transcript	PV Sum	Sum of all Personal Value scores from PV01 to PV10 within a TED Talk Transcript	Mean-Centered	Gives relative emphasis of a VO or PV compared to the meanVO / meanPV for a given TED Talk Transcript

Table 3 Raw PVD scores by TED Talk

TEDid	PVD scores (from LIWC/Butter)															SUM
	VO1	VO2	VO3	VO4	PV01	PV02	PV03	PV04	PV05	PV06	PV07	PV08	PV09	PV10	PV sum	
TED01	1.02	0.89	1.91	1.27	0.38	0.64	0.00	0.51	0.38	0.38	1.53	0.00	0.25	1.02	5.10	
TED02	0.68	0.43	0.99	0.43	0.25	0.43	0.00	0.25	0.19	0.56	0.37	0.06	0.06	0.37	2.53	
TED03	0.32	0.85	1.70	0.53	0.21	0.11	0.00	0.58	0.27	1.22	0.48	0.00	0.21	0.32	3.40	
TED04	0.60	0.35	2.00	1.00	0.05	0.55	0.00	0.10	0.25	1.05	0.75	0.20	0.80	0.20	3.95	
TED05	0.78	1.43	2.31	1.31	0.16	0.56	0.06	0.75	0.69	1.53	0.65	0.12	0.97	0.34	5.83	
TED06	0.67	0.45	1.50	0.15	0.15	0.52	0.00	0.45	0.00	0.67	0.82	0.00	0.07	0.07	2.77	
TED07	0.77	0.83	0.80	0.66	0.28	0.50	0.00	0.55	0.28	0.33	0.39	0.08	0.47	0.19	3.07	
TED08	0.96	1.88	1.62	1.83	0.46	0.51	0.00	0.35	1.52	1.37	0.20	0.05	0.66	1.17	6.29	
TED09	0.97	0.88	1.56	1.26	0.68	0.29	0.00	0.58	0.29	0.97	0.49	0.10	0.78	0.49	4.67	
TED10	0.62	0.74	2.33	0.45	0.34	0.28	0.00	0.11	0.62	1.02	1.02	0.28	0.40	0.06	4.14	
TED11	2.19	1.35	2.51	0.28	1.16	0.65	0.37	0.33	1.02	1.39	0.33	0.79	0.09	0.19	6.32	
TED12	0.64	0.64	1.22	0.93	0.41	0.17	0.06	0.17	0.46	0.99	0.12	0.12	0.52	0.41	3.43	
TED13	0.54	0.32	1.55	0.91	0.21	0.32	0.00	0.00	0.32	0.86	0.32	0.37	0.59	0.32	3.32	
TED14	0.75	0.86	2.14	1.01	0.34	0.30	0.11	0.38	0.49	1.35	0.56	0.23	0.64	0.38	4.77	
TED15	2.44	0.57	2.29	0.14	1.43	0.29	0.72	0.29	0.29	1.43	0.72	0.14	0.14	0.00	5.44	
TED16	0.16	0.32	2.78	1.83	0.00	0.16	0.00	0.12	0.20	1.67	0.72	0.40	1.15	0.68	5.09	
TED17	0.49	0.57	1.71	1.14	0.33	0.16	0.00	0.16	0.41	0.90	0.57	0.24	0.73	0.41	3.92	
TED18	0.39	0.67	2.05	0.87	0.18	0.15	0.06	0.32	0.35	1.17	0.43	0.45	0.45	0.42	3.98	
TED19	0.73	0.73	1.27	0.97	0.36	0.30	0.06	0.48	0.24	0.97	0.06	0.24	0.67	0.30	3.69	
TED20	0.60	0.75	2.10	0.78	0.07	0.46	0.07	0.28	0.46	1.28	0.21	0.60	0.64	0.14	4.23	
TED21	0.82	0.82	1.52	0.59	0.12	0.70	0.00	0.35	0.47	1.29	0.23	0.00	0.12	0.47	3.75	
TED22	0.72	0.50	2.49	0.44	0.06	0.61	0.06	0.39	0.11	1.11	0.83	0.55	0.28	0.17	4.16	
TED23	0.96	0.51	2.24	1.18	0.14	0.79	0.04	0.20	0.31	1.67	0.43	0.14	0.79	0.39	4.89	
TED24	0.34	0.51	1.72	1.03	0.00	0.00	0.34	0.51	0.00	0.69	0.86	0.17	0.86	0.17	3.60	
SUM	19.17	17.85	44.32	21.00	7.76	9.46	1.95	8.23	9.62	25.87	13.10	5.35	12.34	8.67	102.33	
MEAN	0.80	0.74	1.85	0.88	0.32	0.39	0.08	0.34	0.40	1.08	0.55	0.22	0.51	0.36	4.26	
STDEV	0.51	0.37	0.50	0.46	0.34	0.21	0.17	0.19	0.32	0.37	0.33	0.21	0.31	0.27	1.04	

Table 4 Mean-centered PVD scores by TED Talk

			PVD mean-centered scores														
			VO1	VO2	VO3	VO4	PV01	PV02	PV03	PV04	PV05	PV06	PV07	PV08	PV09	PV10	
TEDid	meanVO	meanPV	Conservation	Selftranscendence	OpennessToChange	SelfEnhancement	Security	Conformity	Tradition	Benevolence	Universalism	SelfDirection	Stimulation	Hedonism	Achievement	Power	
TED01	1.27	0.51	-0.25	-0.38	0.64	0.00	-0.13	0.13	-0.51	0.00	-0.13	-0.13	1.02	-0.51	-0.25	0.51	
TED02	0.63	0.25	0.05	-0.20	0.35	-0.20	-0.01	0.18	-0.25	-0.01	-0.07	0.30	0.12	-0.19	-0.19	0.12	
TED03	0.85	0.34	-0.53	0.00	0.85	-0.32	-0.13	-0.23	-0.34	0.24	-0.07	0.88	0.14	-0.34	-0.13	-0.02	
TED04	0.99	0.40	-0.39	-0.64	1.01	0.01	-0.35	0.16	-0.40	-0.30	-0.15	0.66	0.36	-0.20	0.41	-0.20	
TED05	1.46	0.58	-0.68	-0.02	0.85	-0.15	-0.43	-0.02	-0.52	0.17	0.10	0.94	0.07	-0.46	0.38	-0.24	
TED06	0.69	0.28	-0.02	-0.24	0.81	-0.54	-0.13	0.25	-0.28	0.17	-0.28	0.40	0.55	-0.28	-0.20	-0.20	
TED07	0.77	0.31	0.01	0.06	0.03	-0.10	-0.03	0.19	-0.31	0.25	-0.03	0.02	0.08	-0.22	0.16	-0.11	
TED08	1.57	0.63	-0.61	0.30	0.05	0.25	-0.17	-0.12	-0.63	-0.27	0.89	0.74	-0.43	-0.58	0.03	0.54	
TED09	1.17	0.47	-0.19	-0.29	0.39	0.10	0.21	-0.18	-0.47	0.12	-0.18	0.51	0.02	-0.37	0.31	0.02	
TED10	1.04	0.41	-0.41	-0.30	1.29	-0.58	-0.07	-0.13	-0.41	-0.30	0.21	0.61	0.61	-0.13	-0.02	-0.36	
TED11	1.58	0.63	0.60	-0.23	0.93	-1.30	0.53	0.02	-0.26	-0.31	0.39	0.76	-0.31	0.16	-0.54	-0.45	
TED12	0.86	0.34	-0.22	-0.22	0.36	0.07	0.06	-0.17	-0.28	-0.17	0.12	0.64	-0.23	-0.23	0.18	0.06	
TED13	0.83	0.33	-0.29	-0.51	0.72	0.08	-0.12	-0.01	-0.33	-0.33	-0.01	0.52	-0.01	0.04	0.26	-0.01	
TED14	1.19	0.48	-0.44	-0.33	0.95	-0.18	-0.14	-0.18	-0.36	-0.10	0.01	0.88	0.09	-0.25	0.16	-0.10	
TED15	1.36	0.54	1.07	-0.79	0.93	-1.22	0.89	-0.26	0.17	-0.26	-0.26	0.89	0.17	-0.40	-0.40	-0.54	
TED16	1.27	0.51	-1.11	-0.95	1.51	0.56	-0.51	-0.35	-0.51	-0.39	-0.31	1.16	0.21	-0.11	0.64	0.17	
TED17	0.98	0.39	-0.49	-0.41	0.73	0.16	-0.07	-0.23	-0.39	-0.23	0.02	0.51	0.18	-0.15	0.34	0.02	
TED18	1.00	0.40	-0.60	-0.32	1.06	-0.13	-0.22	-0.24	-0.34	-0.08	-0.05	0.78	0.03	0.05	0.05	0.02	
TED19	0.92	0.37	-0.20	-0.20	0.35	0.05	-0.01	-0.07	-0.31	0.11	-0.13	0.60	-0.31	-0.13	0.30	-0.07	
TED20	1.06	0.42	-0.45	-0.31	1.04	-0.28	-0.35	0.04	-0.35	-0.14	0.04	0.86	-0.21	0.18	0.22	-0.28	
TED21	0.94	0.38	-0.12	-0.12	0.59	-0.35	-0.26	0.33	-0.38	-0.02	0.09	0.91	-0.14	-0.38	-0.26	0.09	
TED22	1.04	0.42	-0.32	-0.54	1.45	-0.60	-0.36	0.19	-0.36	-0.03	-0.30	0.69	0.42	0.14	-0.14	-0.25	
TED23	1.22	0.49	-0.26	-0.71	1.02	-0.04	-0.35	0.30	-0.45	-0.29	-0.17	1.18	-0.06	-0.35	0.30	-0.10	
TED24	0.90	0.36	-0.56	-0.39	0.81	0.13	-0.36	-0.36	-0.02	0.15	-0.36	0.33	0.50	-0.19	0.50	-0.19	
			SUM	-6.42	-7.74	18.73	-4.58	-2.48	-0.77	-8.29	-2.01	-0.61	15.64	2.86	-4.88	2.10	-1.57
			MEAN	-0.27	-0.32	0.78	-0.19	-0.10	-0.03	-0.35	-0.08	-0.03	0.65	0.12	-0.20	0.09	-0.07
			STDEV	0.43	0.28	0.39	0.43	0.31	0.21	0.16	0.20	0.26	0.32	0.33	0.21	0.30	0.25

In both Table 3 and Table 4, a positive number indicates that the value orientation or personal value was displayed more within that TED Talk transcript, with higher values indicating it was a more-frequently emphasized value. Conversely, a negative value meant the value was expressed less, with lower numbers indicating less emphasis. For all given value orientations and personal values, we calculated the mean to determine the average score of all measured categories – thus giving us an idea of the values emphasized throughout the sample. For example, Table 3 indicates self-direction has the highest mean of personal values with a relatively low standard deviation, thus suggesting most of our transcripts emphasize self-direction values within their presentations. Table 4 shows the relative emphasis of each value relative to others within that transcript: TED08 (Suarez, 2013) expressed higher than average conservation values compared to other transcripts, but conservation was not emphasized as much relative to other value orientations within his transcript. Regardless, both tables break down the highlighted values within and between TED Talk transcripts.

Next, we discuss how each personal value scored, what that value consisted of, and how multiple TED Talks brought up personal values differently. As one might expect, we find that some personal values are less applicable to AV technology discourse. Nonetheless, we detected the presence of each value present at some level in our data set.

Conservation Values

Conservation was third among the four categories of self-transcendence, openness to change, and self-enhancement, with a mean of -0.27. Conservation values include security, conformity, and tradition; Schwartz (2012) describes these values as emphasizing order, self-restriction, preservation of the past, and resistance to change. While these themes are present in our data set, having a positive attitude towards AV technology means being receptive to changes from the norm. Ergo, it would be problematic to present the benefits of AVs without displaying values that indicate an openness to change. Even the presentations displaying high conservation values do not necessarily turn away the technology entirely; instead, they deliver a balanced discussion of AVs' moral and ethical implications. Both presentations still display a high level of openness to change (0.60 and 1.07, respectively), which is surprising for values that are supposed to be direct contrasts.

Security

Outside of certain outliers, security did not seem to be a major concern for the sampled TED Talk transcripts for autonomous vehicles, having a mean of -0.10. The transcripts that did have high security values, such as Lin (2015), discussed concerns on how AVs choose to mitigate the damage if they cannot predict or evade a situation on the road. For example, should the car attempt to save the driver but otherwise risk hurting the vehicles in its path, or vice versa? Lin

(2015) brings up the downsides of an algorithmic perspective. The driver (or the target vehicles) ultimately does not influence the vehicle's decision-making and thus is subject to the technology's programming (Lin, 2015). Subsequently, this leads to the dilemma of who decides how the vehicle's programming should be regulated, who is at fault in these accidents, etcetera. Lin's transcript provides far higher values for security (0.89) and tradition (0.17) than any other transcript, providing a needed perspective on the potential dangers and concerns of any rapidly developing technology. Given his perspective, these values make sense as he does not focus on achievement, or the potential benefits of what technology can provide for society. Lin (2015)'s ultimate concern boils down to how dangerous AVs can be and how to properly mitigate the hypothetical damage they can do, irrespective of their benefits.

Rahwan (2016) also provides a similar perspective to Lin's concern for the moral decisions an AV must make during a collision. Rahwan's presentation presents some additional information from his perspective; his study found that people believed an AV should be programmed to minimize damage in any given situation. However, they would not purchase the car since they prefer to be protected (2016). This value is consistent with ideas discussed in Lin's presentation: who has the right to decide on algorithm programming in such disastrous cases? Rahwan (2016) did score noticeably higher in universalism (0.38) for his presentation compared to Lin (-0.26). This difference may have stemmed from Rahwan's expansion on social dilemmas and the ethical conundrums that stem from scenarios with no clear "winner" while still believing there is a possibility of developing the technology (and societal thinking) to understand and solve these questions at hand.

Conformity

Conformity scored relatively average to other values, having a mean of -0.03. Conformity values pertain to keeping the status quo, thus presenting an antithesis to Openness to Change values.

Interpreting conformity from Schwartz's definition in an AV context could mean that individuals would be content having little to no automatic driving, ultimately electing not to use the technology due to a lack of trust or belief in its viability. Saini (2019) reiterated similar concerns to Rahwan (2016) and Lin (2015) at the beginning of their presentation - what happens when a vehicle enters unpredictable situations that defy reaction? Urmson (2015) also touches upon complacency with his discussion on how traffic is an inevitable consequence of commuting – and that a self-driving car would be able to adapt to roadside conditions continually.

Urmson even mentions one of their test drivers changing their perspective on AVs to where “[everyone] should have it” (2015). Here, the type of conformity stems from all individuals in the future having an AV to avoid collisions and optimize traffic conditions, eventually reaching a point where the driver is far more unreliable than the vehicle itself. While this interpretation can also be viewed as an openness to change, the idea that technology will eventually optimize itself to normalcy can also be seen as conforming and avoiding obsolescence. This perspective is only reinforced in Ford's (2011) presentation, discussing environmental sustainability change as radical to standardized. Regardless, conformity talk is not prevalent in our data set. Most notable instances seem to discuss how others may be reluctant to change, but none explicitly mention how people should stick to the expected normal for AVs.

Tradition

Tradition was the least expressed value in our data set, having a mean of -0.35 across all transcripts. Many transcripts had a raw PVD score of zero, with the highest value of 0.72 stemming from Lin (2015). While tradition in Schwartz (2012)'s framework generally

corresponds to symbolic practices, beliefs, and customs, these values would not correspond with advancing technology that relies on breaking conventional practices and norms. Even Lin (2015) was more concerned about the security of the technology and ethical conundrums that could have stemmed from the decision-making of AVs. The closest notion of a belief from Lin (2015) was the design principle of automated technology (or “robot car”) minimizing harm in any given scenario, which it may not be able to enact in the event of an unavoidable crash. Otherwise, tradition was a largely ignored value.

Self-Transcendence Values

Self-transcendence was one of the lowest scoring categories, with a mean of -0.32. Self-transcendence captures values meant to display concern for the welfare and interests of others (Schwartz, 2012). While autonomous vehicles do capture these values in certain fashions (such as supply chain logistics, community integration, and environmentally friendly practices), it can be difficult to apply the general concept into an AV context given the focus on cultural and traditional aspects, both of which are essentially non-existent in AV literature and presentations. Despite this, some transcripts in our data display such values, especially Suarez (2013), discussing the potential ramifications of autonomous vehicles and weaponry, mainly about the nature of drones and other attacks on civilians that could be made impersonally without a human executing said command. Suarez (2013) further suggests implementing several means of identification to prevent potential attacks on civilians via drones, cars, or other automated technology. This idea presents a novel value conundrum not usually articulated by other TED Talks. While there is some concern about autonomous vehicles accidentally injuring pedestrians or damaging property, Suarez (2013) is the only one to discuss using AVs as weaponry –

although he still acknowledges the benefits of the technology, similarly to Lin (2015), despite its flaws.

Universalism

Universalism scored in the middle compared to other personal values (mean of -0.03). This value encompasses the belief in the protection and welfare of all humanity and nature (Schwartz, 2012). For AVs, this would likely entail the oft-discussed environmental output and risk of collisions in the AV literature. In our sample, the only presentation that highly expressed universalism was Suarez (2013), with a score of 0.89 – where he focused on discussing autonomous vehicles in the context of weaponry and combat. Suarez raises some interesting points about issues of security, privacy, and geopolitics between countries using anonymous autonomous weaponized vehicles on each other.

Now, lethally autonomous killer robots would take many forms -- flying, driving, or just lying in wait. And actually, they're very quickly becoming a reality. - It's a choice. And it's that choice that I want to focus on, because as we migrate lethal decision-making from humans to software, we risk not only taking the humanity out of war, but also changing our social landscape entirely, far from the battlefield. That's because the way humans resolve conflict shapes our social landscape. And this has always been the case, throughout history. (Suarez, 2013)

One can view this as an interpretation that benevolence is impeding the adoption of autonomous vehicles – Suarez heavily believes that autonomous technology can create a state of warfare and threaten humanity. This concept was not displayed in any other transcript, likely because most transcripts dealt with the technical or moral side of autonomous vehicles for driving. However, this does present an interesting conundrum for AV adoption as it primarily focuses on a larger-scale problem that is outside the scope of the study. Otherwise, Rahwan (2016) was the only

transcript to provide any substantial value (0.39) for universalism, likely stemming from the points previously mentioned in the security section.

Benevolence

Benevolence had a lower score compared to other personal values (mean of -0.08) but had multiple studies with at least one standard deviation from the mean. Examples of transcripts with high benevolence scores included Ford (2011) and Evans (2021), 0.17 and 0.24, respectively. Benevolence promotes cooperation and supportive social relations, otherwise expressing voluntary concern for the welfare of others (Schwartz, 2012). Evans discusses how self-driving technology works and the key benefits of integration for supply chains, services, and public transportation. Evans views technology (called a “self-driving robotaxi”) as a viable method to solve problems rather than for pleasure, noting her distaste for private vehicles (2021). This expression of integrating technology and solutions displays benevolence (and AV technology) as a smooth support system between countries and communities, ultimately solving and preventing problems from occurring.

Despite her conviction, however, benevolence is still infrequently displayed throughout our data set, as Evans described. It does not appear that most transcripts discuss autonomous vehicles in this capacity, again often electing to focus on the moral issues (Lin 2015, Rahwan 2016, Suarez 2013) or the benefits that AVs could bring (Kabbaj 2016, Urmson 2015, Lyasoff 2018) without considering the same ones as Evans.

Openness to Change Values

Openness To Change had the largest value among the four personal value categories by far, with a mean of 0.78, suggesting that most presentations in our research displayed a strong desire for

change. Given the nature of AV technology, this is perhaps unsurprising. Encompassing values (stimulation, self-direction, and hedonism) are commonly associated with progressive or futuristic ideologies; ergo, someone expresses a desire for change (Schwartz, 2012). For example, Kabbaj (2016) likened the belief in driverless transportation and autonomous vehicles to a biological system that flows effortlessly. Kabbaj then begins to discuss the inefficiencies and suboptimizations that society currently has for transportation, ultimately bringing up optimized AVs where traffic is constantly moving with no interruptions (2016).

So yes, biology has all the attributes of a transportation genius today. But this process has taken billions of years, and went through all sorts of iterations and mutations. We can't wait billions of years to evolve our transportation system. We now have the dreams, the concepts and the technology to create 3-D transportation networks, invent new vehicles and change the flow in our cities. (Kabbaj, 2016)

It is clear to see the desire for change within Kabbaj's presentation, especially with how he vocalizes his displeasure with sub-optimal commuting conditions.

Evans (2021) expressed similar values with her belief in robotaxis (autonomous public vehicles), eliminating the need for personal and individually owned cars, the latter being too expensive and a wasteful resource. While Evans does focus more on the logistical side of implementing the technology via computer vision and digital representation, there is still an indication that she views the technology as a solution for the next generation. She imagines future generations looking back – after AVs are fully optimized – and wonders how society ever tolerated ninety-four percent of crashes caused by human error (Evans, 2021).

Another perspective that takes multiple facets of openness to change is Gerdes (2012), discussing how autonomous vehicles could consistently drive at peak speeds that a human could not do

reliably; but also learn instinctively to adapt to road conditions faster than a human could necessarily process. Rather than taking an algorithmic perspective, Gerdes (2012) believed that an AI that reacts more “intuitively” would be an amazing step in increasing the optimizations of AVs, even alluding to AVs being a partner or coach to help humans reach their full potential. Despite the relative infancy of the technology at the time of Gerdes' presentation, he still provides similar values and ideas of presentations nearly ten years later. One may infer that the ideas behind openness to change and reception to technological advances would remain consistent between like-minded individuals, even to the point where they are still asking for similar features.

Self-Direction

Self-direction was the highest-scoring value with a mean of 0.65, one of the main contributors to openness to change, having the largest sum among all four categories. Self-direction captures values that display the need for control, mastery, choosing one's goals and ultimately displaying knowledge of one's interests (Schwartz, 2012). Autonomous vehicles are often touted as progressive and innovative technology (Musk 2017, Kabbaj 2016, Saini 2019, Thrun & Anderson 2017) that can revolutionize societal norms and require immense knowledge in multiple fields. So, it makes sense for those pushing the technology to display these values. One may display self-direction in the form of technological prowess, such as Thrun and Anderson (2017) discussing multiple facets of the brilliance of AI – including autonomous vehicles. Thurn describes AI as revolutionary for compartmentalizing multiple situations with enough relevant data, especially with cars recognizing all the nuances they would need to understand for driving. Ford (2011) also displayed high self-direction in his presentation that discussed driverless cars and their revolution in human society – with a key feature being those multiple systems (parking

garages, buses, trains, and shared car services) all operate within the same framework. Ergo, they will be able to synergize and avoid human errors such as crashing into each other. Ford (2011) believed that having this intersection between ecosystems would be crucial for optimizing traffic, reducing pollution, and eliminating gridlock. Believing in collaboration for individuals to ultimately achieve their goals later, Ford (2011) himself thought AVs could allow easy freedom of travel, high quality of life, and zero emissions. While the benefits of AV technology becoming standard may differ between presenters, there is still a high commonality between pushing for goals that provide better experiences for both the user and society.

Stimulation

Stimulation was the second highest scoring value, with a mean of 0.12. Stimulation values derive from the need for variety and excitement, generally corresponding to underlying self-direction values (Schwartz, 2012). Specific presentations describe AVs as the solution to boring or dull situations such as traffic or parking (Seibold, 2020, Kabbaj 2016), attending to tasks or hobbies while driving (along with the desire to have a car give more than commute) (Gerdes, 2012), or reduce commute heavily to regain time for other desires (Thrun, 2011). Stimulation presents an exciting context for autonomous vehicles since presenters rarely mention the inherent benefits of the technology itself; they generally mention benefits from not spending time or attention driving, thus reducing stress or boredom for the driver.

These goals may be more practical with the refinement of AV technology – it is currently not viable for private consumers to engage in these activities without engaging in reckless behaviour or driving. Publicly available AVs only reach level 2 currently, the most common being Tesla which requires the driver to be always ready to intervene for driving. Consequently, this does mean that specific goals about stimulation may not be achievable for AV users – at least

responsibly and safely. Regardless, the amount of time and stress being saved and having that energy transferred to other interests was a common theme among presentations with high stimulation values.

Hedonism

Hedonism scored very low compared to other values, with a mean of -0.20. Per Schwartz (2012), hedonism values are the pleasures associated with satisfying self-indulgent needs. Unfortunately, this value is rarely expressed in AV literature and our data set – few presentations touch upon hedonism directly. Even Rahwan (2016), with a value of 0.16, is more focused on the security and ethical issues of AVs. A plausible explanation for hedonism's relative absence in our dataset could stem from a lack of explicit discussion on deriving pleasure from the mundane (or dangerous) nature of driving. There is only mention of what could be done but no explicit discussion of why. Consequently, this could mean that hedonism has low scoring compared to other values.

Self Enhancement Values

Self-enhancement values scored second out of the four categories with a mean of -0.19, notably significantly less than openness to change. Self-enhancement consists of achievement and power values and stems from pursuing one's interests and relative success over others (Schwartz, 2012). Self-enhancement in this data set primarily stemmed from seeing the benefits of how revolutions could take place by integrating AV technology into modern life. Kelly (2016) discusses the unison of AI and humans to work together for maximum efficiency among various tasks – including driving without the burden of human error. However, most presentations that emphasize self-enhancement values still seem to discuss AVs on a larger scale rather than the

individual benefits of autonomous vehicles or the technology in different contexts. Notably, Suarez (2013) mentions the power of AVs as weapons rather than private convenience) that would embody self-enhancement values.

Achievement

Achievement scored third out of the ten values, having a mean of 0.09. Achievement values demonstrate competence and a desire for social approval, success, and capability (Schwartz, 2012). Interestingly, there appeared to be little to no emphasis on how AVs symbolized social status. Instead, most presentations focused on discussing the achievements of what AVs could provide to society on a grand scale, again with Kelly (2016) and Musk (2017). Musk was far more explicit in his presentation about the achievements of autonomous vehicles – but again noted them in a broader context of how the probability of an accident would be reduced significantly below that of human error.

It's never going to be perfect. No system is going to be perfect, but if you say it's perhaps -- the car is unlikely to crash in a hundred lifetimes, or a thousand lifetimes, then people are like, OK, wow, if I were to live a thousand lives, I would still most likely never experience a crash, then that's probably OK.

A possible explanation for the variance in achievement values and Schwartz's (2012) definition may stem from a potential bias in TED Talk speakers. The nature of these presentations is on a grander scale than the individual level – which inherently encourages achievement to be recognized by multiple groups or society. While this may exhibit traits of social acceptance and ambition, it is usually beyond the individual level and thus displays achievement in a different context. Regardless, achievement is still an important value in our data set; otherwise, the

presentations on the benefits of autonomous vehicles would have little merit without milestones for usage and viability.

Power

Power scored relatively average in ten values, with a mean of -0.07. In the context of Schwartz (2012), power pertains to status differentiation and the need for dominance and control. Akin to the points discussed in achievement, power in our dataset tended to focus on the utility of AVs in specific contexts (Suarez 2013, Seibold 2020) instead of using them as a measure of socio-economic, class, or other types of group discrepancies. While it is interesting to consider AVs in these mediums, our transcripts are focused mainly on the scale outside of the average consumer or only discuss the benefits of AVs to avoid traffic or improve current societal issues. Thus, despite the presence of power value words, it is generally not articulated in the transcripts as Schwartz (2012) would have defined it.

To summarize our findings for the TED Talk data, we identified which personal value categories were prominent in AV discourse. Three values were common among most sampled TED Talk transcripts: self-direction (0.65), stimulation (0.12), and achievement (0.09), with self-direction being overwhelmingly prominent among the sample. This level of prevalence contrasts with less-prioritized values such as tradition (-0.35), hedonism (-0.20), and security (-0.10). One can infer that the most discussed values focus on how AVs can provide transportation solutions, reduce accidents, and overall mitigate stress for all involved parties, especially with self-direction placing high emphasis on the benefits AVs bring. Conversely, values that emphasize remaining stagnant or resisting change would not be conducive to positive AV discourse, thus resulting in the displayed overall lower scores.

3.3 Analysis of Aggregated Reddit Posts

The other component of our research involved taking posts from several Reddit forums (called “subreddits”) and their users (often referred to as “Redditors”). For multiple reasons, we chose Reddit as a dataset: Reddit is an opt-in, anonymous website that allows users to curate their posts and feed about their interests. Redditors are encouraged to share their experiences and insights towards the topic, thus displaying various enthusiasm and knowledge. While TED Talk presenters can be considered experts or thought leaders for AVs, Redditors can also be described as enthusiasts with varying knowledge and interest in AVs. More importantly, the subreddits they participate in will likely dictate their interest in AV technology, whether from an investment perspective, user-end experience, philosophy towards technology evolving, or other concepts. The amount of knowledge and insight that redditors could provide towards AVs gives us a large amount of publicly available data to understand which personal values dominate the discourse between users and different groups.

Using the Social Astronomy scraping tool, we collected 20,000 messages for our dataset using the keywords of “autonomous vehicle” or “autonomous vehicles” posted from November 2018 to April 2022. We opted to only use these two words due to the massive amount of data that could be aggregated compared to the TED Talk database, which would otherwise be extremely difficult to sort out and remove. After removing duplicate messages by exporting the output into a .csv file in Excel, we sorted messages based on the subreddit they originated from and coded them into six categories depending on their content focus and description.

For more specific categories (cars and driving, investing and business, electric / autonomous vehicles), the subreddits often had more of a “topical” focus, especially when Tesla, Elon Musk, or investing were the focus of the subreddits' content. We determined these categories after

reviewing where most of the subreddit posts came from, noticing the multiple patterns between the aggregated subreddits. First, various subreddits were categorized based on their title, description, and content posted within the community. Next, we decided on six categories: cars/driving (subreddits that discussed cars without a dedicated focus on AVs but still had discourse), general (subreddits without any particular focus, usually very large), investing/business (content primarily focused on stocks and business strategies), place/location (content discussed events and other happenings within a community), STEM (if the primary focus of the subreddit was any of the acronym fields), and electric/autonomous vehicle (similar to cars/driving, but with a specific focus on electric and autonomous vehicle brands such as Nio or Tesla). Table 5 lists the category codes with subreddit examples. Given the large number of subreddits represented in the sample ($n=2,053$), we focused our attention on the most active ones and limited our sample to the 265 subreddits that included a minimum of nine AV messages.

Next, two coders independently coded each subreddit and then cross-checked for any differences. First, we sorted all the subreddits we had aggregated into Excel and individually gave them a corresponding code based on their name, description, and posted content: C, G, I, P, T, or V. Next, after both reviewers finished coding 265 subreddits, we calculated our initial level of agreement, which was 219 / 265 subreddits (83%). Then, another round of revision was done exclusively for the forty-six discrepancies in coding. We resolved most of these disagreements by considering the dominant topic within a subreddit with potentially two topic codes by examining the subreddit description and readings some posts. For example, TeslaInvestorsClub was more likely to be focused on investing than EV technology and thus was coded as investing. This procedure brought us to an agreement rate of 259 / 265 (98%). Next, we coded the remaining six subreddits in a discussion by looking at the content of the subreddit to see the dominant topic again, looking through multiple posts and content within that subreddit.

Afterwards, we finally reached full compatibility in our coding for the subreddits. **Figure 1** includes a table of topic category membership with the associated subreddits and message counts (n).

For our exclusion criteria, we only included posts from subreddits with at least nine or more messages that included our keyword searches. We needed to establish a bare minimum number of messages for a discussion to take place – as some messages can originate from subreddits that otherwise have little to no discussion on AVs outside of those messages. This exclusion rule deleted 3,793 messages from our analysis.

Table 5 Topic categories with Subreddit examples

Code	Topic Category	Category Members (Subreddit examples)
C	Cars/driving	Cartalk, IdiotsInCars, Uberdrivers
G	General	AskReddit, News, Interestingasfuck
I	Investing/business	Wallstreetbets, MVIS, stocks
P	Place/location	Canada, Detroit, Bayarea
T	Science Technology Engineering Match (STEM)	Futurology, AskEngineers, Gadgets
V	Electric/autonomous vehicle	Electricvehicles, RealTesla, Nio

Figure 1 Topic category membership: Subreddits and message counts

Subreddit	n	Subreddit	n	Subreddit	n	Subreddit	n	Subreddit	n	Subreddit	n
Cars	n	General interest	n	Investing/Finance	n	Place	n	STEM	n	Electric vehicles	n
IdiotInCars	319	AskReddit	488	wallstreetbets	731	canada	78	Futurology	747	teslamotors	1646
cars	254	news	267	MVS	488	Detroit	76	technology	590	SelfDrivingCars	826
fuckcars	186	worldnews	204	stocks	349	toronto	69	AskEngineers	119	RealTesla	695
uberdrivers	77	Showthoughts	168	Investing	303	bayarea	56	gadgets	113	electricvehicles	230
doordash_drivers	39	Interestingasfuck	127	teslainvestorsclub	275	sanfrancisco	52	careerquestions	104	SelfDrivingCarLife	70
Cartalk	19	videos	103	Bu5MG	130	unitedkingdom	45	BoringCompany	96	TSIALounge	66
lyftdrivers	18	politics	102	SPACs	116	vancouver	45	technews	82	TeslaLounge	51
motorcycles	18	urbanplanning	102	BB_Stock	70	Portland	43	apple	69	Nio	29
roadcam	18	neoliberal	100	StockMarket	63	Calgary	37	tech	69	TeslaModelS	27
lyft	15	unpopularopinion	90	CryptoCurrency	61	Columbus	37	robotics	54	AutonomousVehicles	16
formula1	12	changemyview	77	Economics	40	LosAngeles	35	MachineLearning	52	CCIV	16
News_Automotive	12	conspiracy	74	CanadianInvestor	38	pittsburgh	35	energy	41	canoo	15
Truckers	12	todayilearned	72	options	34	Jacksonville	33	programming	35	ibvan	9
CarTalkUK	9	artwork	68	business	31	singapore	33	science	31		
Dashcam	9	dataisbeautiful	68	wallstreetbetsOGs	31	Austin	32	singularity	30		
		transit	68	pennystocks	28	Seattle	30	space	30		
		Damnthatinteresting	67	economy	27	europa	29	chilengineering	29		
		NotStupidQuestions	56	thewallstreet	27	Atlanta	27	TechNewsToday	29		
		AskAlliberal	55	Valueinvesting	25	ontario	27	EngineeringStudents	28		
		collapse	51	PLTR	23	phoenix	26	engineering	27		
		nottheonion	50	ETFs	20	sandiego	26	GeekyOfficial	25		
		ukpolitics	48	Vtards	19	australia	23	SpaceXlounge	24		
		funny	43	Entrepreneur	17	ottawa	21	hardware	21		
		mildlyinteresting	42	finance	15	Michigan	18	ControlTheory	20		
		WTF	42	PersonalFinanceCanada	15	houston	17	spacex	18		
		EnoughMuskSpam	35	AMD_Stock	14	newzealand	16	cpp	17		
		nextfuckinglevel	34	Superstonk	14	CasualUK	15	computervision	16		
		facepalm	33	personalfinance	13	nyc	15	OMSCS	16		
		PublicReakout	31	Bitcoin	12	aukland	14	TechnologyAddicted	16		
		doordash	30	LateStageCapitalism	12	baltimore	14	ECE	15		
		philosophy	29	ArtInvestorsClub	10	boston	14	ExperiencedDevs	15		
		pics	29	AtlantaDevelopment	10	chicago	14	csMajors	14		
		uwaterloo	29	hashgraph	10	perth	14	lota	14		
		ABoringDystopia	28	dogecoin	9	Denver	13	learnprogramming	14		
		PoliticalCompassMemes	28	financialindependence	9	nova	13	reinforcementlearning	13		
		1kxA	27	SecurityAnalysis	9	SeattleWA	13	artificial	12		
		WhitePeopleTwitter	27			alberta	12	datascience	12		
		explainlikeimfive	24			Edmonton	12	MechanicalEngineering	12		
		gifs	24			madisonwi	12	AskScienceDiscussion	11		
		ProgrammerHumor	24			malaysia	12	ElectricalEngineering	11		
		stupidpol	24			Sacramento	12	askscience	9		
		JoelRogan	23			texas	12	ROS	9		
		UFOs	23			AnnArbor	11				
		UpliftingNews	22			halifax	11				
		AskMen	21			Ireland	11				
		AskUK	21			Winnipeg	11				
		memes	21			Dallas	10				
		Unexpected	21			India	10				
		TrueReddit	20			washingtondc	10				
		Justrolledintotheshop	19			bribsane	9				
		Wellthatsucks	19			kansascty	9				
		Libertarian	18								
		Pete_Buttigieg	18								
		SubSimulatorGPT2	18								
		elonmusk	17								
		tumblr	17								
		Yang/or/PresidentHQ	17								
		bestof	16								
		Conservative	16								
		LeopardsAteMyface	16								
		UberEATS	16								
		AskAnAmerican	15								
		cyberpunkgame	15								
		mildlyinfuriating	15								
		whatisthisshit	15								
		workbuilding	15								
		Newsfeed/or/Work	14								
		oddiyemfing	14								
		AmtheAsshole	13								
		cycling	13								
		gaming	13								
		MBA	13								
		AfterTheRevolution	12								
		CanadaPolitics	12								
		Capitalism/Socialism	12								
		distantsocializing	12								
		flyng	12								
		LifeProTIPS	12								
		StallmanWasRight	12								
		Title	12								
		Coronavirus	11								
		environment	11								
		SelfAwarewolves	11								
		AskTrumpSupporters	10								
		CatastrophidFailure	10								
		CombatFootage	10								
		embedded	10								
		InternetIsBeautiful	10								
		notjustbikes	10								
		TankPorn	10								
		TheMotte	10								
		Whatcouldgowrong	10								
		AdviceAnimals	9								
		badunitedkingdom	9								
		ChapelTrapHouse	9								
		Cyberpunk	9								
		Documentaries	9								
		factorio	9								
		moderatepolitics	9								

Type	N	%
Cars	1017	5.2%
General interest	3904	20.0%
Investing/Finance	3098	15.9%
Place	1289	6.5%
STEM	2709	13.9%
Electric vehicles	3898	19.0%
Missing System	3793	19.5%

Subreddit messages used in this study.

← Subreddits with few messages on the topic. Not used.

Once the subreddits were coded, the data was scored and calculated in a similar fashion to the TED Talk transcripts, using LIWC with the PVD to calculate the number of keyword instances in messages. We measured the raw value and the mean-centered PVD scores to establish which values were prioritized by message, represented in **Figure 2**, **Figure 3**, and **Table 6**.

Figure 2 Mean PVD scores across all Reddit messages

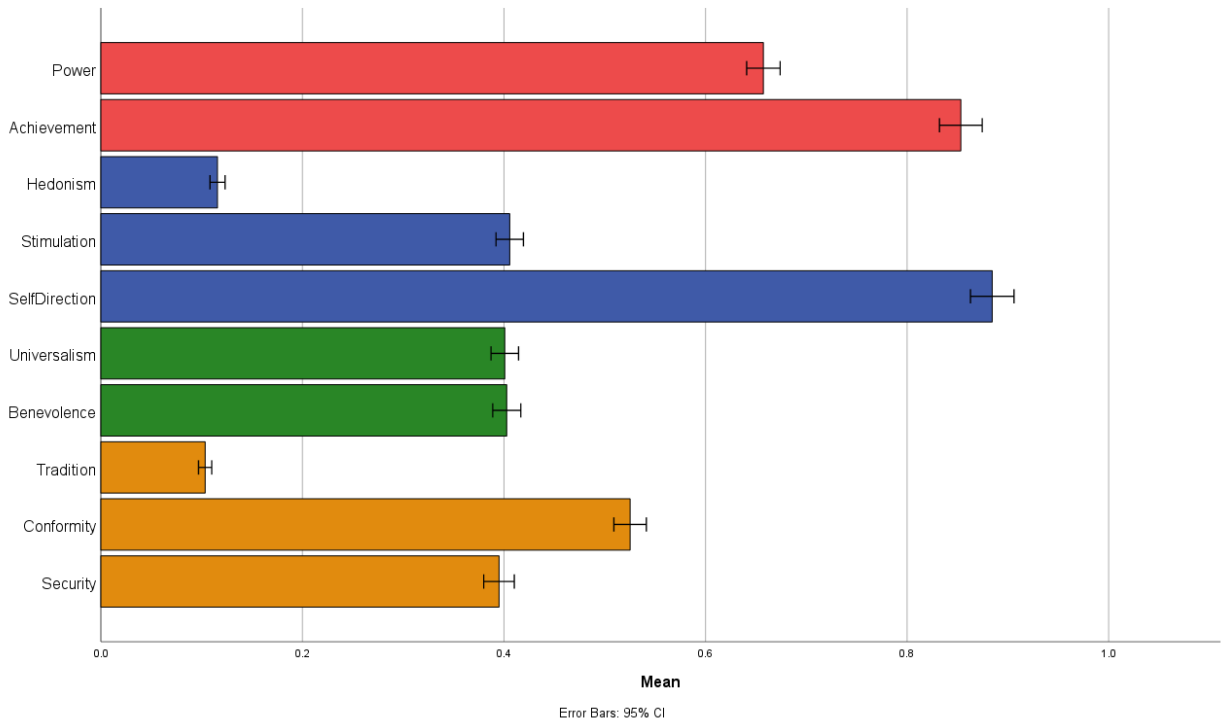


Figure 3 Mean-centered PVD scores across all Reddit messages

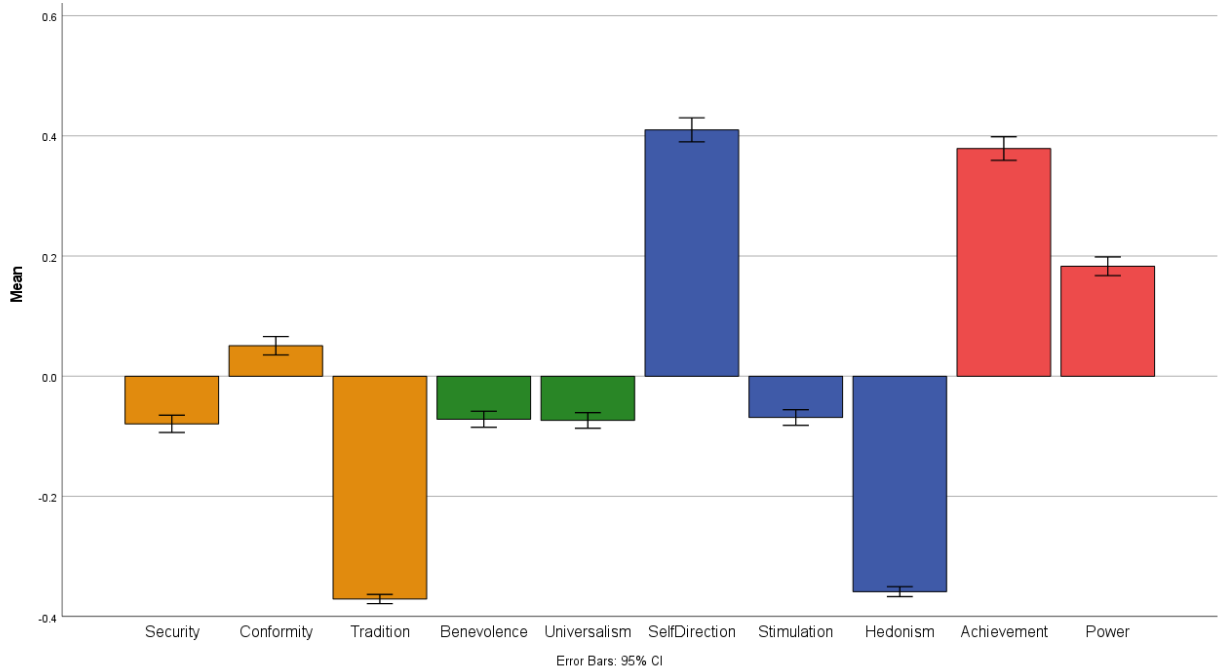


Table 6 Mean-centered PVD scores by Subreddit type

	Type					
	Cars Mean	General interest Mean	Investing/Finance Mean	Place Mean	STEM Mean	Electric vehicles Mean
Conservation	.00	-.07	-.42	-.15	-.19	.05
Self Transcendence	-.31	-.40	-.35	-.29	-.41	-.42
Openness To Change	.16	.26	.22	.16	.24	.06
Self Enhancement	.14	.22	.56	.27	.37	.31
Security	.06	-.01	-.15	-.10	-.10	-.06
Conformity	.07	.06	-.12	.04	.07	.22
Tradition	-.35	-.36	-.40	-.32	-.42	-.33
Benevolence	.05	-.06	-.18	.02	-.07	-.08
Universalism	-.14	-.11	.08	-.08	-.09	-.13
SelfDirection	.31	.42	.43	.36	.48	.24
Stimulation	-.02	-.04	-.12	-.10	-.10	-.04
Hedonism	-.36	-.36	-.34	-.32	-.40	-.36
Achievement	.21	.34	.45	.39	.50	.31
Power	.16	.11	.36	.11	.12	.21

Referring to **Figure 2**, one can see that the values of self-direction, achievement, and power are much higher than the other values. Conformity demonstrates a small but overall positive value across multiple subreddits. All other mean-centered values were overall negative, with hedonism and tradition having extremely low scores compared to other non-positive personal values. Due to the different nature of subreddit categories, some value discrepancies exist between the messages found. However, most subreddits exhibit similar personal value profiles. Multiple graphs of the marginal means for each personal value within subreddit categories are displayed in **Figures 4 to Figure 13**.

Figure 4 Security by Subreddit type

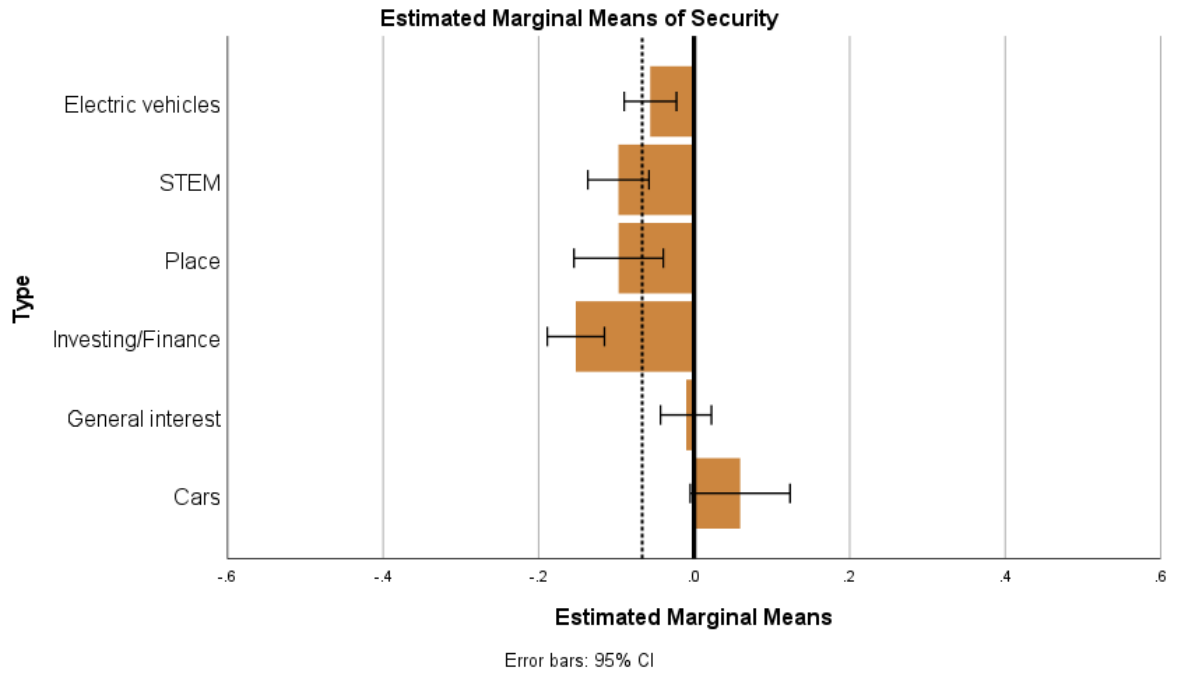


Figure 5 Conformity by Subreddit type

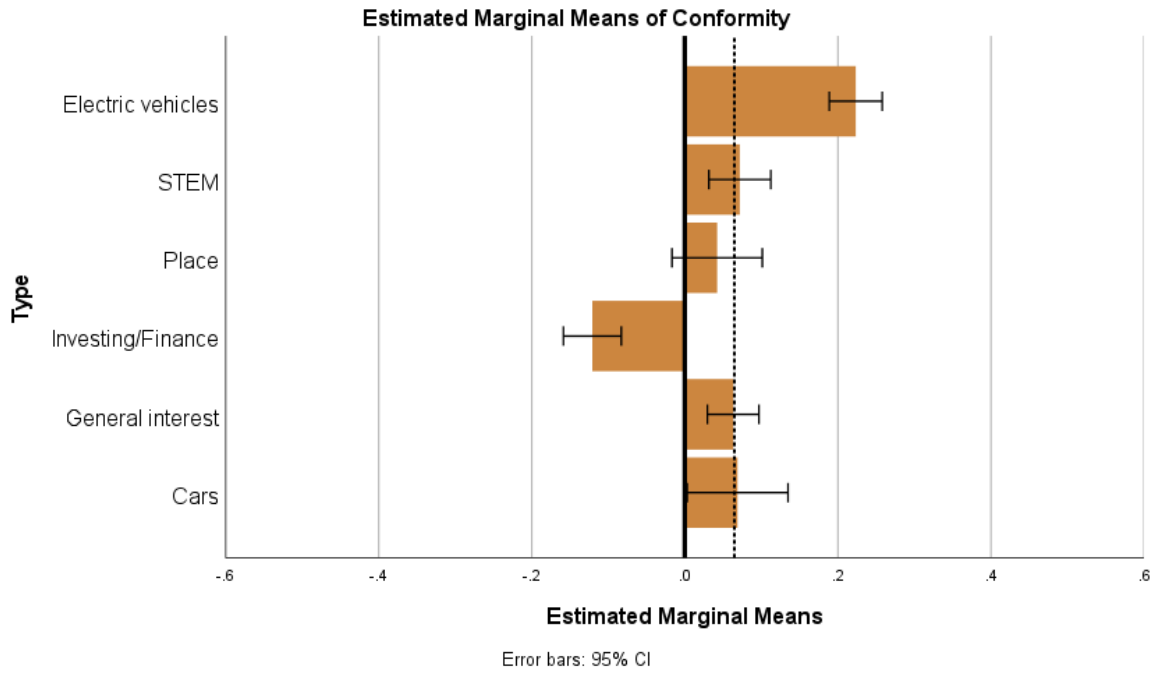


Figure 6 Tradition by Subreddit type

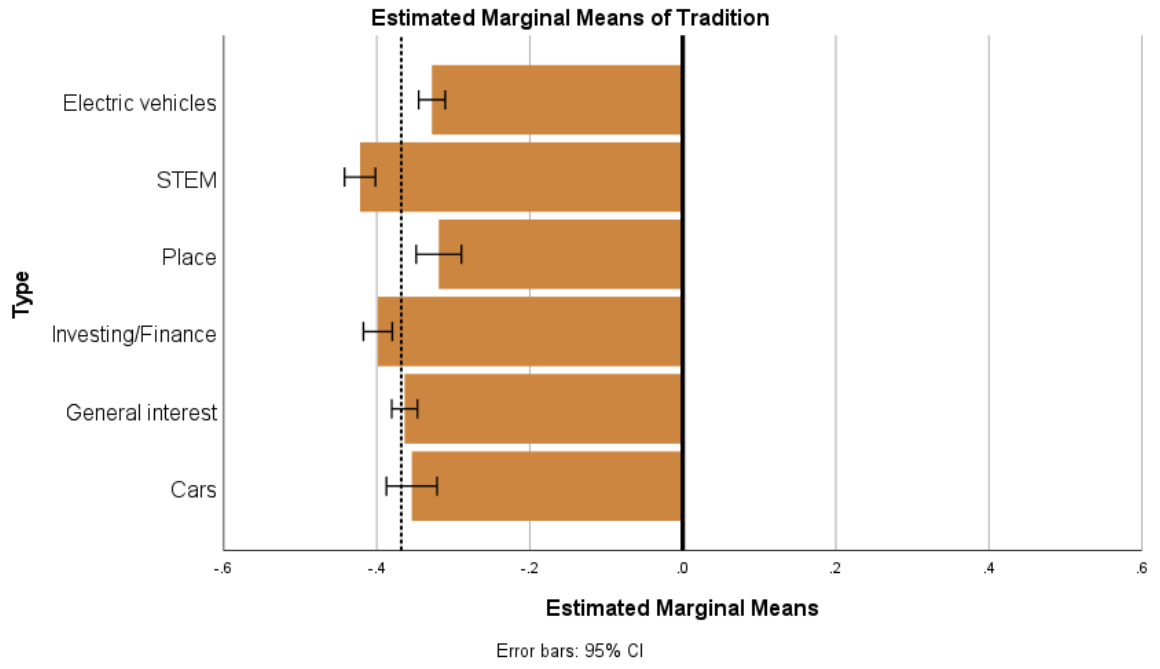


Figure 7 Benevolence by Subreddit type

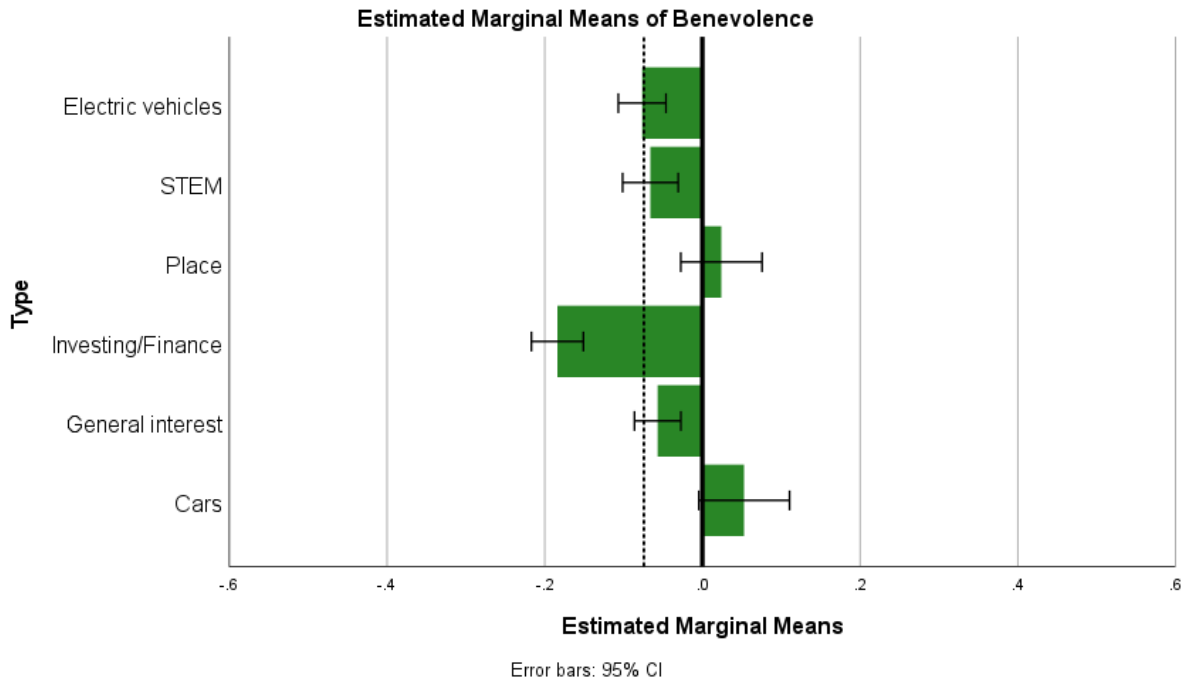


Figure 8 Universalism by Subreddit type

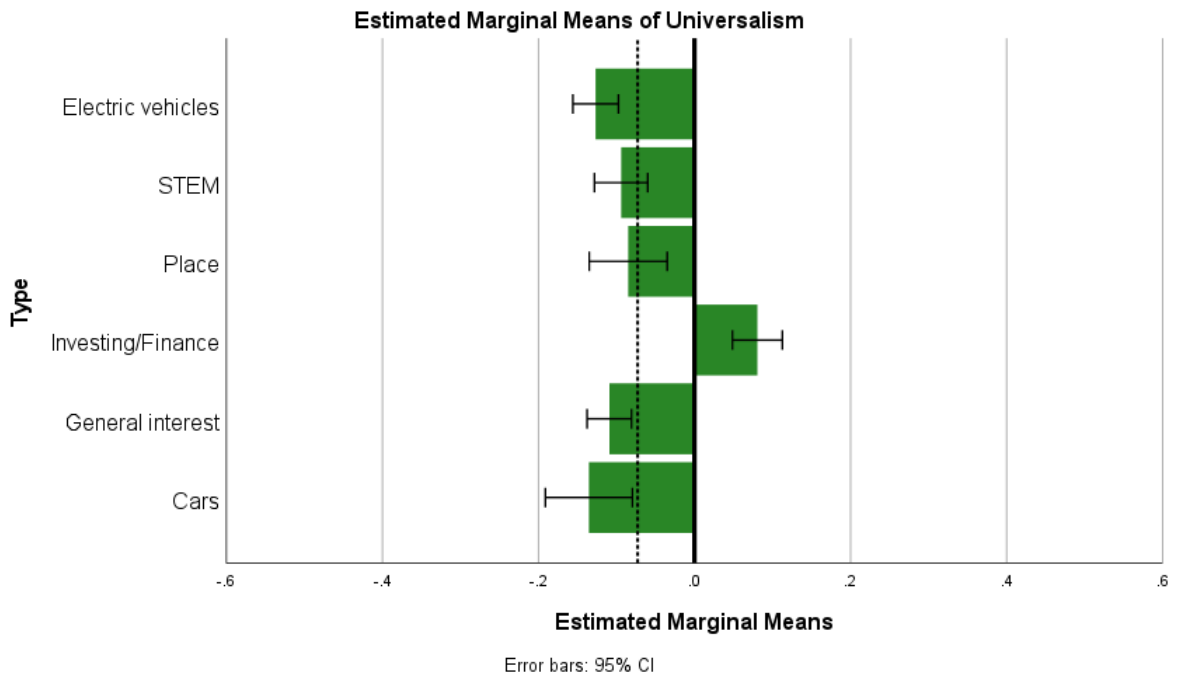


Figure 9 Self-Direction by Subreddit type

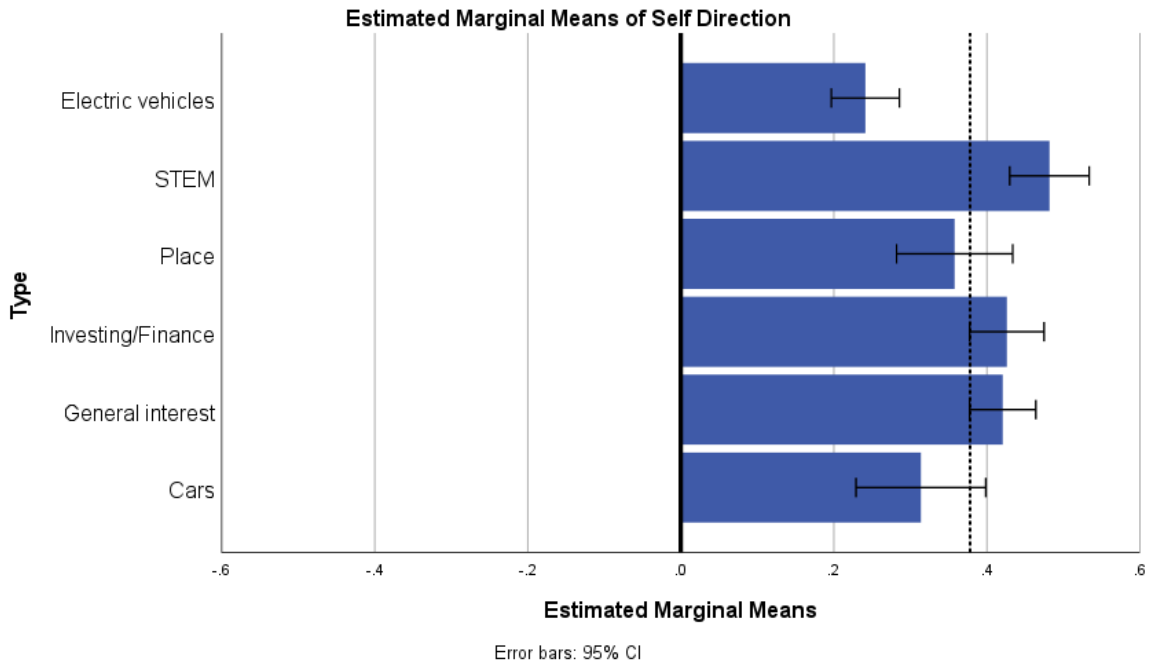


Figure 10 Stimulation by Subreddit type

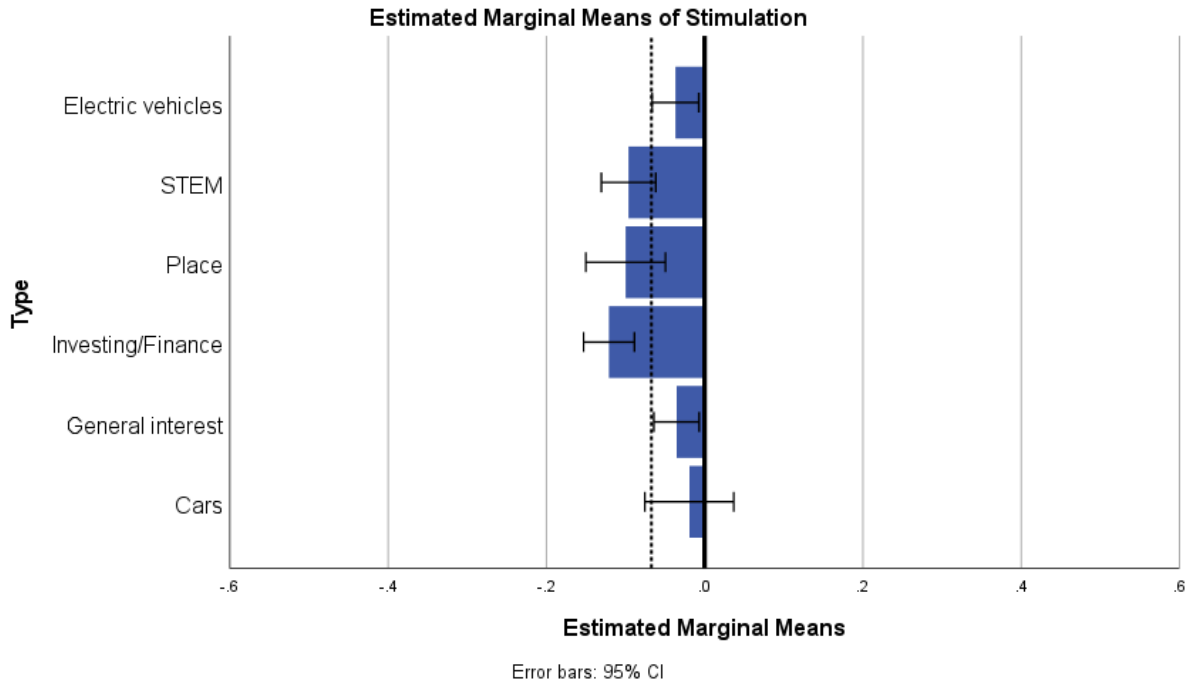


Figure 11 Hedonism by Subreddit type

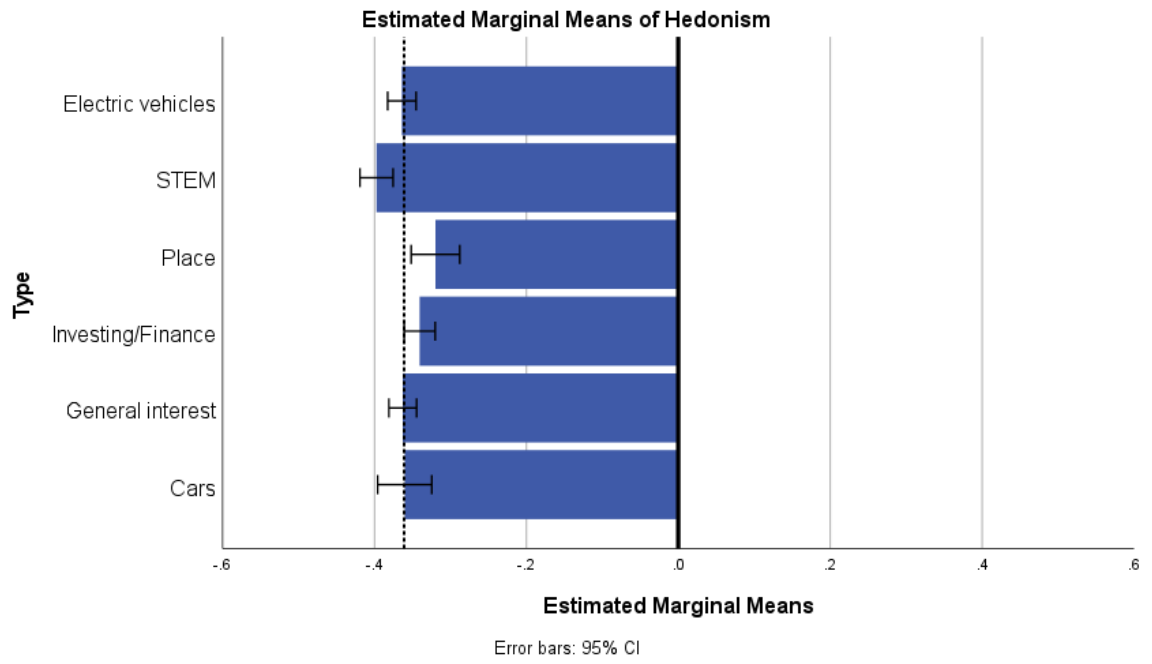


Figure 12 Achievement by Subreddit type

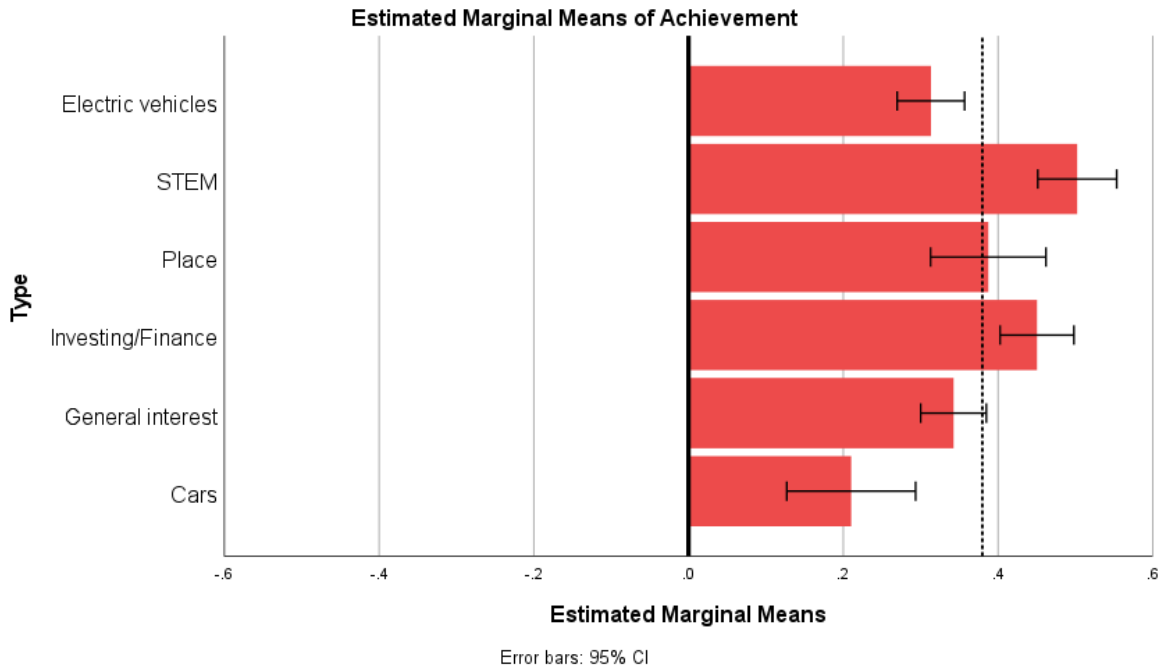
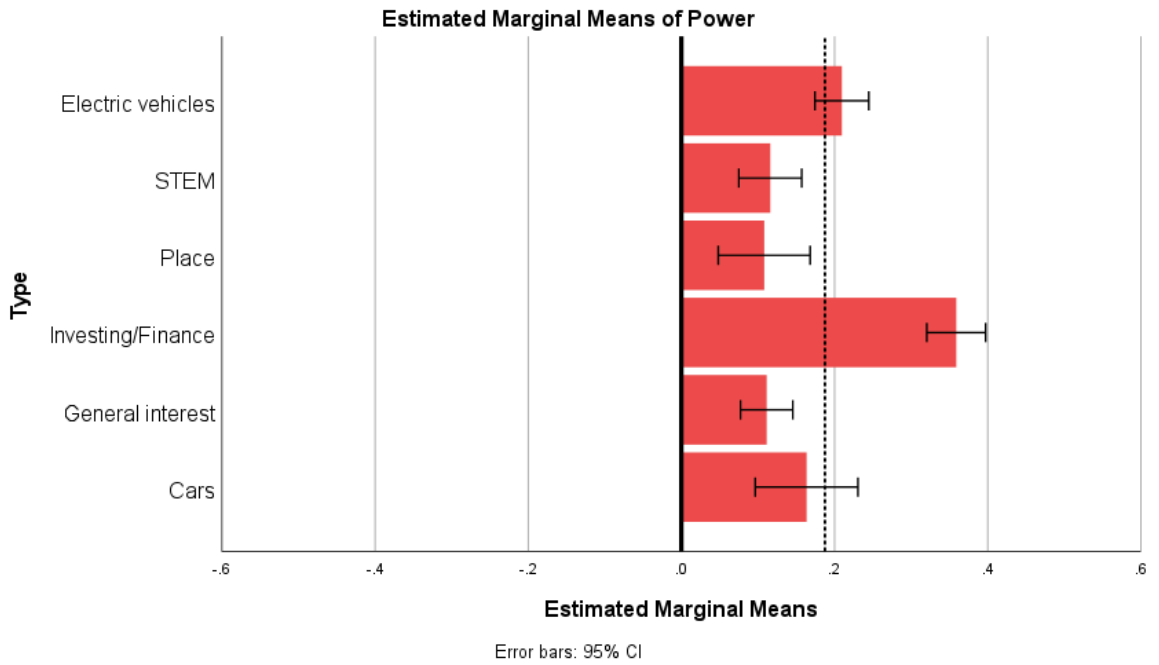


Figure 13 Power by Subreddit type



Security

Security had relatively low values throughout most of the subreddit categories. Only cars seemed to have security as a substantial value in their posts. As mentioned, security in AV contexts generally pertains to the safety features the vehicles use to avoid crashing or making unsafe driving decisions. For example, users may note the ability of humans to recognize threats earlier than AVs at this current time or how the software is currently at a dangerous level due to providing a false sense of security for drivers. Interestingly, security was not as pronounced in the electric and autonomous vehicles category compared to the car category. This absence may stem from posters in AV enthusiast subreddits having a stronger belief in the technology, or security issues may be more prevalent in general car subreddits. For other categories, such as investing and finance or place, security may not necessarily be a relevant factor due to their topical interests likely dealing with other aspects of AV technology (profitability, the viability of city infrastructure, etcetera).

Conformity

Conformity appeared across all categories except investing and finance subreddits, which appeared to be of little relevance. Given these subreddits pushing for investments and market discussions, posters are likely not focusing on the procedural components of AVs. Instead, many conformity messages dealt with how current societal laws and licensing have not adapted to new AV technology, including the logistics of implementing the technology into legal practice for liabilities and infrastructure. Given the development and unique nature of AVs, it makes sense to voice opinions on current perspectives: posts in the cars, electric and autonomous vehicles, and STEM categories will likely focus more on the technological component of conformity, whereas place and general interest are broader in the discussion.

Tradition

Like the TED Talk transcripts, tradition had the lowest score for values across all subreddit categories. For similar reasons, Schwartz's (2012) definition of tradition is mainly irrelevant or difficult to place with modern technology, especially with perceptions of AVs as revolutionary or progressive. One interesting perspective that may stem from tradition is the view of vehicle ownership, where specific posts believe that, eventually, all cars will be ordered on-demand instead of privately owned. However, this is still a loose interpretation of tradition and ultimately shows the lack of prominence for the value across our data set.

Benevolence

Benevolence showed relatively lower values across most categories, only being positive for place and cars. Although some posts articulated benevolence better than the TED Talk transcripts, others opted for their concern for others in the event an AV was hijacked and used to harm others. Other contexts included posts expressing interest in working on AV technology to improve humanity or optimizations for current tasks but did not appear to deviate from these concepts very much. These perspectives do align with Schwartz (2012)'s definition of benevolence in more appropriate contexts than tradition. Regardless, benevolence does not appear to be a commonly expressed value in our data set.

Universalism

Universalism scored relatively low among all categories except for investing and finance. While universalism is like benevolence, its scope is usually broader, such as in society or globally (Schwartz, 2012). While somewhat odd that financing would foreground universalism, some posts acknowledge the importance of saving lives and reducing environmental damage as

reasons for supporting AV research and development. The reasons for universalism in financing and investing may differ from others (perhaps concerned about the better image of the company they support), but the prominence of value words is consistent between those subreddits. Regardless, universalism is still ultimately a weaker value with less common discourse.

Self-Direction

Between all six subreddit categories, self-direction scored the highest among all values. STEM, investing, finance, and general interest had the highest values for self-direction, although all categories were well into the positive ranges. Posters in multiple subreddits could articulate what they desired in an AV with its features, how they wanted the industry to proceed, and how the technology provided interest to them. Again, given the nature of AVs being progressive technology with constant developments – values that push progression and change are usually heavily displayed in the participant's favour of the technology. A goal-driven nature may also be appropriate for self-direction. Some posts have expressed their goal of seeing AV technology develop over time. This desire can stem from dissatisfaction with norms such as manual driving or traffic, which users believe AVs can fix. In any case, self-direction commonly manifests itself in AV discourse, regardless of the context.

Stimulation

Stimulation scored negatively between all six categories, indicating it was not very prevalent in our data set. Interestingly, multiple posts that did have a significant LIWC value for stimulation mentioned the post enjoying manual driving but not necessarily thinking that an autonomous vehicle would be beneficial to them for enjoyment. Since AV design mitigates human error (and thus control), those who enjoy the act of driving may find the technology boring and vocalize

their opinions accordingly. Other users, however, may experience stimulation from the novelty of AV technology and enjoy seeing it used effectively, expressly if it can mitigate the stress of driving. Despite this, stimulation still had a relatively low score compared to other higher values. Perhaps users are not explicitly listing how AVs stimulate them in any fashion.

Hedonism

Like tradition, hedonism had minimal expression across all forums for AVs. While hedonism was expressed in specific posts via users discussing what activities they might do instead of driving (reading a book, watching movies, mitigating stress), it ultimately did not appear to be explicitly vocalized throughout most subreddits. This silence was true even among car and AV-based subreddits, with place and finance subreddits expressing relatively higher hedonism values – people may vocalize their desire for pleasure more in these subreddits than others. In any case, the overall impact of hedonism in posts about AVs is exceptionally negligible.

Achievement

Achievement was a value positively expressed by all subreddit categories, with greater prevalence in STEM and investing and finance subreddits. Schwartz viewed achievement as an individual's desire for personal success, demonstrating competence and upholding social standards (2012). Given the nature of these subreddits (focusing on breakthroughs or developments in technology or making profitable investments), having high achievement values aligns well with their general discourse. The expression of achievement in AV talk includes a desire to work in an AV-related field, seeing the technology levels develop, and viewing AVs as the “future” of standard transportation methods. For those who pride themselves on being part of a broader technology movement, this can be highly liberating and provide a sense of

achievement for something they believe in. Others may also desire to invest in AV-focused firms because they believe they will succeed in profitability. In any case, achievement was a highly expressed value that steered discourse in AV-related posts.

Power

Power was expressed positively throughout all subreddit categories, albeit not to the same degree as achievement or self-direction. Power in the context of AVs appeared to deal with the status and luxury of the vehicle itself: with some posters expressing how other companies needed to be comparable to Tesla's brand before they even considered driving it. Power was prevalent in investing and financing subreddits, implying that discourse about AVs in these forums likely pertains to the status given by having an AV. Having a new AV (and according to some posts, specifically a Tesla) could be both expensive and seen as desirable for having newer technology not necessarily available to most of the public. Given the nature of these subreddits focusing on profitability and optimal investments, there is also the likelihood of a strong subculture emphasizing material wealth and expressing their status for social clout for receptiveness. This power focus is especially prevalent in subreddit groups focusing on Tesla and Elon Musk, having a devout fanbase that focuses heavily on Musk's status and impact on the AV industry. While power does not necessarily dominate AV discourse in the same manner as self-direction and achievement, the value is still central to many posts.

Chapter 4

4 Results and Discussion

4.1 Personal Value Prioritization Within Data Sets

After comparing multiple data sets using the same metric, we can see the prioritization of personal values with AV discourse. Table 7 contains the mean-centered PVD mean scores comparing the TED Talk and Reddit data, while Table 8 has the ordered scoring of overall importance between the averaged values.

Table 7 A comparison of mean-centered PVD scores: TED Talk versus Reddit

Personal Value	TED Talk	Reddit	Average
Security	-0.1	-0.06	-0.08
Conformity	-0.03	0.06	0.01
Tradition	-0.35	-0.36	-0.35
Benevolence	-0.08	-0.05	-0.07
Universalism	-0.03	-0.08	-0.05
Self-Direction	0.65	0.37	0.51
Stimulation	0.12	-0.07	0.02
Hedonism	-0.2	-0.36	-0.28
Achievement	0.09	0.37	0.23
Power	-0.07	0.18	0.06

Table 8 Overall PVD scores (sorted)

Personal Value	Average
Self-Direction	0.51
Achievement	0.23
Power	0.06
Stimulation	0.02
Conformity	0.01
Universalism	-0.05
Benevolence	-0.07
Security	-0.08
Hedonism	-0.28
Tradition	-0.35

When comparing both data sets, there is clear synergy between multiple personal values: security, tradition, benevolence, and universalism all share extremely close values between both data sets. Although this implies common discourse with a lack of importance for the listed values, they are not conducive or receptive to the changes that AV technology will bring to modern society. Furthermore, while the Reddit hedonism score was also far lower, both transcripts had hedonism as very low regardless. In either case, it is safe to conclude that these five values do not dominate AV discourse, especially with tradition and hedonism being essentially irrelevant.

More notable differences and extremities exist between data sets for positive scoring values. Conformity was slightly different, with the Reddit data set leaning slightly positive for conformity. This difference may stem from the different interpretations of conformity for both mediums: with TED Talk transcripts appearing to focus on the lack of use for AVs and Reddit mentioning issues of licensing and legality for the vehicle itself – both touching upon how society will conform (and adapt if at all) to the changes the technology may bring if successful. While some transcripts touched upon these concepts, they may not have been articulated in the explicit fashion that some posts may have done. Self-direction and achievement scored highly

overall, but Reddit posts emphasized achievement much more than the transcripts. Conversely, the transcripts had significantly more importance on self-direction than Reddit posts.

Platform medium may explain these differences: TED Talks aim to educate the public on a particular issue or concept that may not be well-known or explained, while Reddit places greater weight on users posting about their interests, hobbies, and experiences. Thus, Reddit users are more inclined to talk about their achievements and personal beliefs for their interests, including how they view AVs and what they can accomplish by working and interacting with the technology personally. The sampled transcripts, however, placed greater emphasis on how AVs can change society overall, albeit still touch upon goals an individual can achieve. Speaking in broader terms for the goals AVs can accomplish, this can lower the overall value for achievement (a goal that desires social approval) but not necessarily for self-direction (a goal that does not necessarily desire social approval, with the potential to focus on helping others).

There is also the component of value conflicts between both data sets, such as Rahwan (2016) presented how participants could simultaneously understand the benefits of accident mitigation that AVs could entail but still displayed overall hesitance toward AV technology. Posts in our Reddit data set also displayed this apprehension, discussing defensive driving, redundancies, and checks that the technology would need to cover to match the situational awareness of a human driver before choosing to adopt the technology. Both data sets exhibit similar value conflicts. Consumers are far more likely to be cautious about potential failures of any new technology, especially when dealing with high-risk activities like driving. This disconnect between fear and excitement creates a subsequent values conflict.

There is also an interesting conflict in the power category within the Reddit posts, many posts with high LIWC values for power dealt with the AV's status and luxury (usually associated with

brands such as Tesla). While this is consistent with individuals who vocalize their desire to stand out and emphasize wealth or status, it is a direct contrast to those who want or believe that AV technology will become standard and commonplace – thus losing out on potential influence or social gains from otherwise piloting new and futuristic technology. However, the TED Talk transcripts do not discuss this divergence in perspectives, where power scored much lower. Regardless, these types of value conflicts are interesting to consider when discussing AVs as it gives an insight into potential issues managers may have to consider when marketing or designing the technology.

Furthermore, both data sets show notable differences between stimulation and power. This time, in the opposite direction: stimulation was more central to the TED Talk transcripts, but power had considerably more weight in Reddit AV discourse. This contrast is interesting because both data sets had the same discussion points for stimulation: taking the monotony out of driving to avoid traffic and stress and ultimately using the time spent commuting to do anything else.

Although the scoring difference may be related to the platform, discourse about AVs on Reddit may not focus much on these features compared to other aspects, even though both data sets talk about similar points with higher stimulation values. For power, Reddit users were far more likely to post about their desire for status by buying an AV. Tesla may have some influence in making the technology synonymous with high status and wealth. Our sample for TED Talk transcripts, however, did not display this rhetoric. Considering TED Talks tended to focus on broader scopes outside the individual, power is not likely to dominate their speech patterns or discussion.

Ultimately, we can conclude the most prominent values for AV discourse appear to be self-direction and achievement across both mediums, with power, stimulation, and conformity also being positively present to some degree. The results of our study present some useful findings:

we identified which value conflicts may appear in AV discourse and compared multiple datasets. We have also contributed to the personal value literature and further reinforced the application of the PVD to social media texts. These findings are essential for both research and practical applications.

Chapter 5

5 Discussion and Conclusions

For this study, we took multiple data sets using Schwartz's Value Framework, LIWC, and the PVD to interpret which values were most important to AV-related discourse. Using twenty-four TED Talk transcripts and 20,000 Reddit posts, we found that self-direction and achievement dominated the discourse between both mediums, while power, stimulation, and conformity contributed to varying degrees between the two sets. Conversely, we found that universalism, benevolence, and security had lower importance, with hedonism and tradition being irrelevant among both data sets. The findings complete our research goal of understanding how individuals prioritize values when discussing or adopting AVs.

5.1 Implications

This study has multiple theoretical implications: We were able to apply the PVD to classify Reddit user posts and other text data into distinguishable value categories in an AV discourse context. We took the PVD outside of its traditional psychology context and used it in an AV context, thus emphasizing the personal values behind both TED Talk speaker and Redditor discourse. Future researchers interested in analyzing personal values in public or expert discourse can use the PVD to understand the language commonly used to portray those values among different communities. There is value in this approach by giving researchers a viable method to analyze personal values from discourse and feedback regarding various products or services for marketing or consumer behaviour research studies. This method can be applied to multiple contexts outside of AVs – assuming the availability of sufficient textual data. Utilizing the PVD in our study also gives further potential to understand how consumers may choose to adopt products in AV contexts based on their values. The concept of personal values is not

present in other adoption models such as TPB and TAM, yet the PVD offers an alternate perspective that could be useful for future research studies integrating personal values into their adoption frameworks. This perspective could also challenge the notion of evaluating a product's attribute(s) for potential adoption literature, instead placing a greater emphasis on how a product or service is beneficial to the goals and personal values of the potential user.

Furthermore, this study provides additional insight into various subcommunities within Reddit in an AV context and how they segment themselves into different value groups during AV-related discourse. This phenomenon was prominent when comparing different subreddit forums that share a common interest. For example, finance subreddits care more about Tesla's products to ensure high stock shares, but technology subreddits may focus more on the product's user-end functionality. These communities may also correspond to how identity is signalled by values: those who emphasize stock prices or status may display language that strongly indicates the value of power or achievement, thus congregating in communities that share those values.

Other researchers could theoretically expand this by identifying which communities, brands, or hobbies an individual would participate in, given a certain amount of textual data and background information. This approach could be applied in both AV and other contexts. Here, we can draw further attention to how different personal values dictate user discourse regarding AVs. Using the PVD to segment these groups further could expand to other brand communities with different avenues and topics for discussion.

This study also has practical implications: AV companies can address the most common values for their marketing and development strategies. These priorities could include addressing consumers' pain points towards AVs (safety features, pricing, legality) or emphasizing the benefits consumers desire (mitigation of stress, social status, and low environmental emissions).

Considering these values can be crucial for helping implement technology fully in modern society. Additionally, addressing the value conflicts that consumers express may allow for better product design and placement, as these are the main drawbacks preventing potential consumers from getting into AV technology discourse or adoption. For example, if users consistently vocalize a common fear or anxiety in the braking system of a level 2 AV, more resources can be dedicated to ensuring reliability. This approach can also be helpful for marketing, providing demonstrations as a superior feature to those currently experiencing hesitation towards AV technology overall. While future research would be required to break down the concerns that individuals may have on a per AV level basis, this study still provides a background for what values tend to be prominent among general AV discourse, concerns included.

Furthermore, this can also give AV companies information on trends and which userbases share values. This study used Reddit, but this could also be extrapolated to Facebook, Twitter, and other social media networks, thus providing a helpful perspective on where and what kind of AV discourse is taking place. This insight also provides companies with future incentives to analyze the differences in how AVs are discussed in social media networks and potentially target them for future use. For instance, Marbach et al. (2019) notably suggested using “community representatives” or dedicated individuals to communicate with online communities to incentivize engagement and obtain consumer feedback, especially noting a key focus on facilitating discussion instead of being “content creators.” If AV companies focus on understanding the commonly displayed values and concerns within those communities, it can give them a significant competitive advantage by using that knowledge in their marketing strategies and design philosophy for future AVs. This paper provides multiple contributions to AV literature, personal value literature, and data that may be useful for AV-based companies to integrate into their operations.

5.2 Limitations and Future Research

This study has certain limitations, given our data set and the nature of our tools. For the TED Talk transcripts, there are relatively limited amounts of applicable transcripts we could pick from, given the recent nature of AVs. Thus, we had a smaller set of data to select. Specific transcripts also had AVs as a secondary focus compared to a primary one, which may have affected their perspective on the most critical issues for AV discourse and adoption. Regardless, all transcripts did discuss autonomous vehicles in some capacity in multiple contexts. For the Reddit posts, a few posts may have been exceptionally short or repetitive in our data set, causing them to inflate specific LIWC scores. However, we did have an exclusion criterion to mitigate the number of duplicate or irrelevant posts in our data set. Thus, we could still pick out several posts that displayed and articulated each value.

Both platforms have potential biases in their discourse. TED Talk presenters may have to cater to specific companies, opinions, or demographics while making their speeches. A speaker may be inclined to speak about their opinion in greater extremes if they have branding deals or public image concerns, thus affecting the diction used within their discourse. For example, TED18 is presented by Elon Musk, the CEO of Tesla. For Reddit specifically, users may have a response bias in how they vocalize their opinions. Reddit is a primarily anonymous platform that does not require users to input their name, phone number or e-mail address to register. Consequently, some posters may exaggerate how they feel about the technology while their actual feelings differ if asked through a more personal medium. However, the platform's anonymity could be beneficial as users may feel self-conscious about their feelings if they had responded in person or displayed their actual names.

Our study also brings another future research avenue: potentially linking behaviours and discussion tendencies to displayed personal values in AV contexts. While our study focused on understanding which personal values were most prominent in AV discourse, we did not find out which explicit behaviours were most associated with each personal value (for a hypothetical example: those with low tradition values are more receptive to positive AV news or technology developments). Other research papers may focus more precisely on discovering these links beyond what we have established in our paper. Finally, we also contribute to value conflict literature by discussing the multiple conflicts people have with AV technology, thus adding perspective on the struggles or doublethink mentality consumers may have when discussing or adopting new technology. Future research may categorize which value conflicts individuals may have depending on the AV level, brand, or other variables – potentially even adding specific personal values to other theoretical frameworks as variables for adoption.

Future research studies may consider adding controls, such as accounting for the participants' country, which could impact their values and, thus, their perspective on AV technology.

Additionally, outside of specific subreddit forums discussing AVs in certain states or cities, there was no way to track from which countries our posts originated. Future studies may wish to consider the location of their posters, if possible, which could provide future research opportunities about differences in prioritizing personal values in AV contexts based on countries. Finally, the value discrepancies between data sets may raise the issue to readers wondering about the lack of agreement between both data sets for specific personal values. Due to the difference in instances and format of Reddit and TED Talks, specific values may have been emphasized more (or less), especially considering the “userbase” of both platforms. Regardless, we hope this study will give incentive for future research and insight into how personal values affect AV discourse in some capacity and contribute to AV and personal value literature overall.

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Appendix

LIWC Value Scores with Reddit Post Examples

LIWC Value	Quotes
Conservation (7.56)	<p>I have severe doubts about the development of supporting infrastructure required to enable automotive LiDAR and the subsequent evolution of a fully autonomous vehicle. The #1 issue I cannot wrap my little brain around...is the policies and national legislation that will be required to enable this developing ecosystem (automotive LiDAR). We are talking about educating and training entire generations to trust and/or be forced to accept these incredible innovations. I believe this "consumer trust" can only be attained over long-periods of evaluation, at every innovative turn. I see the entire automotive LiDAR game as something to secure for my daughter. Enable them to build upon a secure infrastructure and enable all dreamers to execute their vision.</p>
Conservation (6.84)	<p>Well Uber doesn't shoulder any cost of maintenance which they would now take on. Maintaining a fleet of vehicles is expensive, and the computer system may have additional costs. They don't pay for fuel or insurance either which would be part of the fleet expenses. So the added expenses is reason alone to rise prices (certainly not lower) But ya eventually it would be more profitable for Uber. That doesn't mean the service is cheaper. Why would they lower the cost on a ground breaking technological service (autonomous vehicle) . A service that wealthy people will gladly pay for , because no driver. Also, if their driverless vehicle Kills a person that's going to be a huge legal fee.</p>
Conservation (5.66)	<p>When the issue in every case mentioned has a root cause of drivers intentionally disabling safety controls and/or not remaining in full control of their vehicles at all times?</p> <p>In safety-critical systems engineering culture, any considerations of consumer responsibility must always come after the ethical obligation of introspection.</p> <p>In other words, safety-critical systems manufactures must first and always look at themselves to technically challenge observed, predictable abuse patterns and technical oversights. They must do so continuously even after the product has been delivered. And given that all of the issues in my top-level comment can very much be addressed technologically, then it is the automaker's ethical duty to do so without delay.</p> <p>That is the job. It is the way it always has been. And when it is not done, people die needlessly - as is the historical situation with Autopilot.</p>
Self-Transcendence (3.67)	<p>Except they don't say it's autonomous driving. Autopilot behaves lot like autopilot on an airplane. It controls the speed and steering, but the driver is still responsible for overseeing the system (much like a pilot on an airplane). There are tons of disclaimers both on the website and in the car that say exactly that. The controversial part is whether these systems will <i>eventually</i> be capable of fully autonomous driving. A lot of progress has been made and the system is more reliable and natural feeling today than it was just a few years ago, but the threshold for safety is understandably very high for a fully autonomous vehicle.</p>
Self-Transcendence (3.45)	<p>It all begins by investing into the children of tomorrow by Expanding and creating more social programs will only grow with the growth of current technology and its impact on the workforce, Income Inequality platform and those that stand behind it will also grow with it. Automation plus capitalism will only lead to a darker employment future. Industry Experts have spoken at this to length saying that 25–40% of the workforce will be replaced by automation and AI within the next 5–15 yrs world wide</p>

LIWC Value	Quotes
Self-Transcendence (1.09)	There're no sure answers. I know people pull out the arguments about Tesla is the future, and Facebook did shit on privacy, but then when the future is about AI, which will destroy more privacy, Tesla could be the more evil. Hence, the cult/craze of Tesla begins and may not end so soon. You can buy some share, or fractions of it, it doesn't hurt if it really goes down, but some surprises that it can go up while it hasn't achieve the level of dominating the economy. Apparently you don't believe in both stocks you mentioned. And if you do have some stocks that are not mentioned by most posts, no one knows what to talk about them either. That's the shame of not picking the micro and small cap that are really the parts of the big picture, what drives AI, what drives ad metrics, what drives AR, etc.][(/r/StockMarket/comments/qo5ryr/how_is_tesla_worth_more_than_facebook/hjnbee6/)
Openness to Change (1.98)	[I don't hold shares in either Apple or Tesla, but honestly Tesla is way-way-way ahead of perfecting self-driving just by virtue of all of their vehicles acting as data capture points. The best training data for collision avoidance AI is captured during a live collision. Every time a Tesla gets smashed on the roads they get a new data point (that can then be upsampled). If Apple wants to seriously compete in self-driving, their first step is getting a fleet of drivable consumer vehicles with their data capture software out on the road (and no, phones in the vehicle don't count).][(/r/stocks/comments/rchmjr/apples_selfdriving_car_project_loses_three_more/hnvk63a/) NYSE:AI DATE : Thu Dec 9 17:37:24 2021 SUBREDDIT : stocks
Openness to Change (1.73)	May thinks such pretensions are bunk. "Let's use what works in robotics today and go solve transportation problems, because that will allow us to learn more, quickly, and to scale more quickly," says Malek
Openness to Change (1.54)	I think you enormously underestimate the work involved to usefully process that data and to convert it into teaching material to train the neural net. Much of what Tesla collects is selected by the onboard computer to meet certain criteria to train for given "corner cases", and recording of incidents where the self-driving system chose one course of action and the driver overrode (or differences between driver actions and what the system would have done when in shadow mode). Tesla is also implementing steps to greatly increase the speed of creating training material. The Tesla team has worked for years on their approach, and continues to work hard – they are likely to maintain their lead.
Self-Enhancement (2.15)	Cos when people get fed up of Facebook's tracking their every move, when another better social platform comes along or people get bored of posting about everything, FB will go to 0 in no time. It's only hope is the cash it has and new ventures (e.g Oculus, etc.) Tesla, on the other hand, is becoming a battery company, a green company, an energy company, an AI company, and has tech that all major carmakers want. It also makes and sells cars that are popular, work well, and has the best infrastructure support. So it has longevity, strength in depth, and a lot of quality IPR. FB has its users, and without them it's nothing.][(/r/StockMarket/comments/qo5ryr/how_is_tesla_worth_more_than_facebook/hjlru34/)

LIWC Value	Quotes
Self-Enhancement (2.12)	<p>[You have to factor in Tesla isn't just making and selling cars, they are also building an autonomous vehicle software platform and ecosystem that could possibly be the foundation of an entire new economy within this decade. Individuals may only buy a car once ever 5-10 years, so there's only so much revenue that can be expected from selling cars bounded and limited by some factor of the market share and population. But people will interact with the software services almost everyday and the revenue stream and profitability from software is unlimited and unbounded. While self-driving AI software is the near term goal, the end game is in what everyone is going to be doing with cars while it can drive itself. Consider the potential of what new businesses and startups that will build their products and services on top of Tesla's autonomous vehicle platform. Think of the disruption this could have on the public transit, ride sharing, trucking, logistics, mail and delivery industry. I'm not saying this all will happen or that it will be Tesla that capitalizes on new economy first, its just Tesla's current valuation is speculative based on that they are the company in the best position to make this all happen within the current decade as other car manufacturers are still a decade or more behind when it comes to building a software platform for autonomous vehicles. Maybe Apple given their super secretive nature will make the first consumer-ready fully autonomous AppleCar completely out of nowhere and beat Tesla to the punch, but who can say. But as long as that doesn't happen, Tesla is currently the fastest horse in that race and what people are betting on.](/r/wallstreetbets/comments/qlb35d/yo_seriously_what_the_shit_would_tesla_even_need/hj4iv2w/)</p>
Self-Enhancement (1.61)	<p>NYSE:AI DATE : Wed Nov 3 08:42:41 2021 SUBREDDIT : wallstreetbets</p> <p>[Tesla is that valuable because of its manufacturing, brand value, 40-60% increase in vehicle deliveries each year, energy infrastructure, FSD + autonomous taxi potential (most analysts haven't included this in their price targets), solar division, supercharging network, and much much more. The other auto legacy companies are struggling to make EVs and make them without issues. They all have at some point been recalled. They just don't understand what it takes to make a EV and do it at scale. That's the simple answer.](/r/StockMarket/comments/qxo6qu/can_anyone_justify_teslas_stock_price/hlatxk/)</p>
Security (5.94)	<p>NYSE:FSD DATE : Fri Nov 19 20:29:59 2021 SUBREDDIT : StockMarke</p> <p>Responding immediately is usually still too late, though. Defensive driving is about recognizing every potential threat before it happens and having a plan for how to avoid it. That plan may then involve doing something technically wrong, but doing it safely ie speeding to get around the vehicle, passing on the right, etc. If a computer cannot recognize a potential threat, then it will treat it like any other car.</p>
Security (5.06)	<p>Again, the autonomous vehicle will still have the overall safety advantage, but humans will still be able to recognize threats before they happen better for at least another 20 plus years.</p> <p>For real, though, the effectiveness of Tesla's autopilot software is quite possibly at the most dangerous level for an autonomous vehicle. It's not quite at the point that it's safe to use without a human behind the wheel, but it's good enough that some people behind the wheel feel like they can get away with not paying attention to it. Any better and it wouldn't need a driver, any worse and the driver would be forced to pay attention.</p>

LIWC Value	Quotes
Security (4.40)	<p>I'm not even discussing whether the autonomous vehicle is more safe or not. Every collision isn't equation, and the other driver is at least 50% of that equation. Looking at the California data for autonomous vehicle crashes, you see that the overwhelming majority of them are other cars crashing into the autonomous vehicle. Since you're operating a business, you have the deeper pockets. And like it or not the US legal system in the insurance industry is based on suing the deeper pockets. That's why commercial insurance is almost always significantly more expensive than insurance for an individual.</p>
Conformity (4.65)	<p>add to that the fact that someone sitting in the car could injure themselves and attempt to blame you, and you need protection against that, again the insurance rate is usually higher. You can't control what strangers do inside your autonomous vehicle, which also needs insurance. so it's fine that the vehicle operates itself safer than human, although we're not seeing that yet. Because Tesla's are not fully autonomous. But that doesn't cover the entire rest of what you purchase insurance for.</p> <p>Every state has laws stating that you must maintain control of your vehicle. Its going to be very hard to claim you're maintaining control when you're not steering.</p> <p>And no, you don't get to claim you're testing an autonomous vehicle. Tesla doesn't have any autonomous vehicles, and you'd likely need a different class of license.</p> <p>Can you share with me why you're having a hard to reading the Tesla manual where it states that you must keep your hands on the wheel?</p>
Conformity (4.55)	<p>That depends on what we're writing tickets for. You can't ticket a moving car for illegal parking or running out of meter time. What was the car doing to deserve a ticket? Can they prove it? What's the burden of proof? How can they tell it's driving around to avoid parking vs being summoned from a parking spot across town?</p> <p>I'm assuming the car is smart enough to obey traffic regulations. What's the probable cause for pulling a law-abiding autonomous vehicle (assuming they're legal for other means in that area).</p> <p>It's wayyyy different than just parking a car in a pay lot and letting the meter expire.</p>
Conformity (4.32)	<p>Well to begin with to be legal in such way, there would have to be a law acknowledging such thing as driver less car. Which as far as I know nobody has authorized. Closest is limited pilot tests self driving with remote backup operator/ driver. Which might seem close to legalising autonomous self driving, but is legally miles away.</p> <p>A) Nobody is even close to level 5 B) Even if someone had level 5 autonomous vehicle, it would not be legal to have it autonomously drive on public roads. Road laws expect licensed legal to operate vehicle 9n public road to have licensed driving operating it and being legally liable for the driving.</p> <p>First fully autonomous vehicle with assigned "driver" is a liability and legalities quagmire. The is ocean between autonomy with human backup and autonomy without human backup.</p>
Tradition (4.94)	<p>Part of my work is developing stuff towards that Autonomous vehicle future. car parking happens in vending machine like parking structures for recharging, in early generations it will be majority charging 8h/night, in later generations it will be rapid charging stops with less downtime.</p> <p>But Parking as a whole would be greatly reduced. You'd need a lot more staged parking, and a lot more delivery service parking but it doesn't look like what a traditional parking lot looks like today.</p>

LIWC Value	Quotes
Tradition (3.12)	<p>You will not own a fully autonomous vehicle. It will be a service provided for everyone. It will either be paid thru government or private subsidies. In the US people will still be able to own non-autonomous vehicles but only the rich will be able to afford it. Drunk driving will no longer be a thing, people of different ages and social classes will have 24 hour access to the service. Vehicles today sit parked for 80-90% of the time. In the future, the cars will be in service or being serviced, but never just parked waiting.</p> <p>When you need a car you just pull up your phone and use the app. Depending on the service levels provided by the provider you should get one promptly. There may be service levels provided at a higher rate that provides services outside of the standard services. Those will need to be paid for. Its like Uber but without a human driving.</p>
Tradition (2.63)	<p>The key here is like all transit modes, there are appropriate use conditions that are needed to make the service most effective. DRT is best employed in suburban and/or rural districts where service frequency and ridership is extremely low (e.g. 1-2 buses per hour). The trips should not be long, to keep the vehicles in the same service area to provide higher availability at lower operating cost.</p> <p>Unfortunately, many of Ottawa's suburban bus routes are designed to be long to bring commuters into the core. DRT cannot effectively handle this. Instead, DRT should be used exclusively in suburban and neighborhood areas as a feeder service, linking passengers directly to LRT stations and transit hubs in these suburbs to take them further to their destinations. On main streets, regularly scheduled fixed-route buses should continue to operate to provide fast, direct service.</p>
Benevolence (9.52)	<p>I really love engineering. I love the challenge of it, I love working in a futuristic field (autonomous vehicle design), I love being a subject matter expert, I love making a ton of money, but more than anything I love having a career I can feel proud of. The things I'm doing will literally change the course of humanity, how cool is that?</p>
Benevolence (6.15)	<p>Sure it does. If someone maliciously hacks or otherwise confuses an autonomous vehicle in a way to harm someone else, is the owner responsible or the hacker?</p> <p>If someone steals your car and kills someone with it are you responsible?</p> <p>If a manufacturing defect leads to a car fire that spreads to an apartment building is the owner responsible for all those deaths?</p> <p>Ownership != responsibility</p>
Benevolence (4.84)	<p>not really, a human worker drives a similar vehicle when they clean. The autonomous vehicle can work non-stop, works through the night without night pay, don't need shifts, don't take leave, works on weekends, don't increase foreign worker count, doesn't need healthcare, doesn't need training, doesn't get injured, can collect data, improves over time, can be coordinated for the whole country</p>
Universalism (4.59)	<p>My mistake. I hadn't realized when I responded that you were engaging directly with the article. I do agree with you that establishing social acceptance of sharing the road with a heavy autonomous vehicle will be very difficult. Not impossible, but likely harder than getting people to acclimate to sharing the road with an autonomous car. I also think you're right about being able to retire in 20 years doing what you're currently doing. Hard to say with respect to 30 years, though. While it's possible to predict technological advancements, it is nearly impossible to know when the incremental spurts of social and political change will occur.</p>
Universalism (4.26)	<p>Statistically it needs to be slightly better than human drivers to be an improvement, but realistically it will need to be perfect or nearly perfect (99.99999999%). It will only take a handful of serious accidents where an autonomous vehicle is at fault before public perception turns sour and regulators start cracking down heavily. This practice happens very regularly here in the US.</p>

LIWC Value	Quotes
Universalism (3.70)	Number one for me is supporting autonomous vehicle research. Too many lives lost due to traffic incidents. Plus it'd likely improve fuel efficiency which helps the environment.
Self-Direction (9.09)	I hate driving so I wouldn't really mind to be completely honest, I kinda like the idea of carpooling an autonomous vehicle
Self-Direction (5.95)	The industries you mentioned are perfect for anyone wanting to still contribute to the transportation space. I originally made a jump from a DOT to a small consulting company that leveraged machine learning to create traffic data; think speeds, volumes, etc. It was a good experience and there is definitely a lot of room for growth from what I see. I've since left the industry and am in the consumer space now but smart city and autonomous vehicle are two areas that interest me.
Self-Direction (5.71)	<p>You're asking the wrong question.</p> <p>The question you need to ask, if you want to find good solutions to developing technology, is:</p> <p>**What is our primary goal?*</p> <p>If the primary goal is for machines to serve human needs for safely navigating around, then we start with that as the goal. Right now many autonomous vehicle designers are aiming for very different goals. Often related to increasing money and speed</p>
Stimulation (5.17)	The technology just isn't there yet. The first company to develop a 100% autonomous vehicle will probably make a ton of money. It's just not good enough yet. Autopilot on planes is much simpler, there are relatively few risks once you're in the sky. On the road there are many risks and therefore many opportunities for failure
Stimulation (3.85)	I was going to suggest this too. As a self confessed petrol head, I find older cars are far more fun to drive. Newer cars are filled to the roof with modern tech which removes the joy and feeling of driving. You may as well be in an autonomous vehicle as they are so detached from how it feels to drive by the seat of your pants. It's going to become a lost skill knowing how to parallel park ?? . I honestly get more smiles per mile in my little 30 y/o hot hatch than I do when I drive my OH's modern saloon.
Stimulation (3.7)	I love driving but an autonomous vehicle WOULD be a lot safer plus it means those of us who can drive aren't just taxi services without pay
Hedonism (4.17)	i'm saying that i would fill the 'down time' of my autonomous vehicle with leisure activities like watching a movie, or reading a book. Things I already do in leisure time. I've already traded away time with family and friends for commuting because of many other life factors.
Hedonism (2.7)	I'm half and half. Overall driving is an enjoyable experience, but during commuting hours other drivers & general congestion make it a pain in the arse. I'd quite happily sit in an autonomous vehicle in those situations.
Hedonism (2.33)	Interesting. Had always thought that it would be cool to sleep in an autonomous vehicle and wake up in a different city, but hadn't thought about them being hotel rooms. Seems like a good idea. A lot more comfortable than sleeping in a car.

LIWC Value	Quotes
Power (7.69)	I will absolutely purchase a fully autonomous vehicle. Why? Easy: freedom and laziness
Power (7.69)	My only concern is LUCID's potential as a autonomous vehicle. I can't call it a luxury vehicle if they don't have autonomy on par to Tesla.
Achievement (9.18)	<p>Transform your objective into a proper personal profile where you summarise your relevant skills and attributes. For example, instead of "my focus is to obtain practical experience in a dynamic work environment", try more like "excellent practical skills and comfortable working in a dynamic environment".</p> <p>Your job experience bullet point reads like a job description. Write about what YOU got out of the role.</p> <p>Re-prioritise your experience. You're graduating as a mechanical engineer, but you focus more on a hospitality job than building an autonomous vehicle! Don't let the latter get buried halfway down the page.</p>
Achievement (7.38)	<p>At the moment, I'm really enjoying my new job.</p> <p>I'm an autonomous vehicle trainer. Test operator. Research and development tech. Whatever you want to call it, I drive/ride around in a "self-driving car" all day.</p> <p>This is one of those "wait...that's a thing?" jobs. I work with great people (except that one guy), it's not all that terribly hard or stressful, and the money is decent - better than the jobs I've worked for the past couple years by a long shot.</p> <p>Why?</p> <p>Because after decades in a job I fucking loved, I got laid off. Downsized. Wished well in my future endeavors. My old job basically doesn't exist anymore, and after a bit of casting about, I found this.</p> <p>The thing is that my old job was in an industry that is slowly dying. This job is in an industry that is part of the future.</p>
Achievement (6.86)	<p>The job market is pretty damn good. Also depends on what industry you're looking to get in to. You mentioned tech, and the tech industry is indeed exploding here. I worked for a autonomous vehicle company for 4 years with zero experience in tech. What I learned with the tech industry is that networking plays a MAJOR role in getting a job at the next hot tech company. if you work at more than one, then you'll more than likely be working with people you have worked with before in previous tech roles. I am now a construction project manager. I am always looking for people to hire. It is very difficult to hire people for general construction/labor. It pays well in AZ, but one must be willing to work odd hours and be comfortable with physical work. Restaurant/services are always hiring like crazy here.</p> <p>In my opinion, the hardest work to find in AZ will be work from home jobs that pay well. COVID helped make that possibility extremely limited nationwide.</p>