A smart device which minimises rear-end collisions.

Authenticity Statement

This is to certify that to the best of my knowledge; the content of this report is my own work. This report has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and all the assistance received in preparing this report and sources have been acknowledged.

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Abstract

This report develops an organized and relevant understanding of literature through investigation and understanding of causes and impacts resulting from rear-end collisions. There is a significant need for a product intervention to minimise rear-end crashes, due to a result of increasing fatality rates and significant vehicle Comprehensive Third-Party insurance (CTP) premiums. This is often caused due to the lack of awareness and concentration of drivers and their behaviors behind the steering wheel.

Evidently, "About two-fifths of CTP insurance claims are for rear-end crashes, amounting to a quarter of all CTP costs." (Austroads, 2022). The significance of statistics proves a vital need for change, with the utilisation of creditable resources through peer review, along with expert interviews and survey to gain insight into literature. Furthermore, analysing and understanding trends and patterns to explore gaps within literature.

This report offers an insight into the understanding and process to design and develop conceptual smart bumper device interventions.

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SECTION ONE

The Topic

Introduction

With an increase in road use, road safety is a continuous global investigation with hopes to reduce fatalities and provide safer transportation. Recent data shows that "During 1 January to 27 August 2023, there were 180 fatalities as a result of crashes within Queensland." (*Weekly report - Department of Transport and Main Roads* 2023). With the most common accident being rear-end collisions, one which can be simply avoided, the need for an innovative solution is crucial.

The purpose of this report is to investigate and understand these underlying causes and impacts of rear-end collisions to develop a cohesive understanding of literature. Furthermore, strategic analysis and examination into the literature with external primary research to identify areas for improvement and development. The report structure then formulates an analysis and findings to formulate a discussion. By doing so, the quality of knowledge will enhance insight into design implications and initial concept sketches.

This project brief is in collaboration with CARRS-Q, a center for accident research and road safety at Queensland University of Technology. Focusing on rear-end crashes specifically, "CARRS-Q embraces these societal changes and delivers innovative evidence-based solutions." (Centre for Accident Research & Road Safety - Queensland (CARRS-Q), *Vision & Mission* 2023).

With advancements in technological innovation, the utilisation of emerging technologies is paramount to providing a viable solution to rear-end prevention. Thus, this project aims to design and develop a feasible smart bumper device with the intention to be integrated within real life applications. The device will embody technological components to produce a highly resolved product which meets the following criteria: easy to install, flexible in use and aesthetically appropriate.

As a result, vigorous analysis and exploration influences a positive change for road safety and outlines a significant need for change. Through complex understanding and design development this report will form complex conceptual design devices which minimise rear-end collisions.

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Project structure (Figure One)
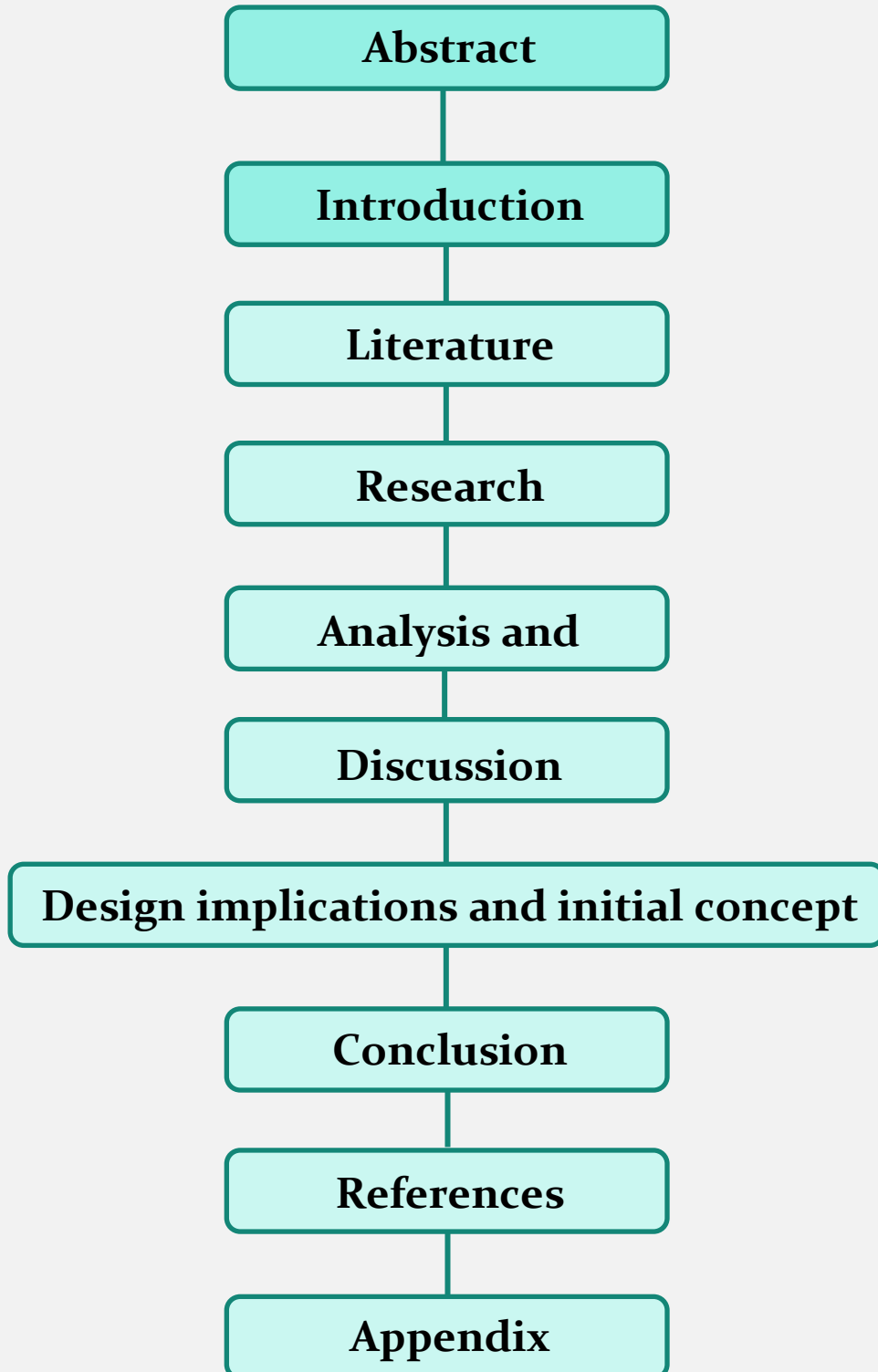
Literature review

The literature review explores and examines recent studies into rear-end crashes and existing products to form a sophisticated and relevant appraisal. It is vital to thoroughly study existing credible research sources to form a sophisticated understanding. This scholarly research ensures accurate and up-to-date, peer reviewed reports and information.

The problem

An online article states that, "The frequent occurrence of rear-end collisions has been mostly due to the delay of drivers in taking evasive actions when the leading vehicle braked suddenly." (Author links open overlay panelXiaomeng Li a b et al., *Collision risk management of cognitively distracted drivers in a car-following situation* 2018). This is commonly an issue with 'coasting' driving, specifically in manual vehicles, as no warning is provided to represent the slowing down of the vehicle, creating a flow on effect of abrupt braking, furthermore, leading to accidents.

Vehicle type by driver responsibility in rear end crashes				
Error type	Rear end	Other	Rear end (%)	Other (%)
Inattention	45,011	41,125	73.8	28.9
Follow too closely	14,343	293	23.5	0.2
Change lanes to endanger	756	7,131	1.2	5.0
Overtake without due care	210	3,333	0.3	2.3
Excessive speed	118	1,248	0.2	0.9
DUI	117	1,720	0.2	1.2
Died sick or asleep at wheel	79	1,006	0.1	0.7
Brake failure	69	120	0.1	0.1
Misjudgement	51	3,479	0.1	2.4
Vehicle fault	33	2,112	0.1	1.5
Dangerous driving	16	166	0.0	0.1
Fail to give way	6	25,418	0.0	17.9
Insecure load	4	437	0.0	0.3
Broken windscreen	2	1	0.0	0.0
Disobey - traffic lights	1	3,344	0.0	2.4
Fail to keep left	1	3,710	0.0	2.6
Incorrect turn	1	1,210	0.0	0.9
Disobey - Give Way sign	0	3,389	0.0	2.4
Disobey - police signal	0	3	0.0	0.0
Disobey - railway signal	0	8	0.0	0.0
Disobey - Stop sign	0	2,559	0.0	1.8
Drunken pedestrian	0	194	0.0	0.1
Fail to give way right	0	944	0.0	0.7
Fail to stand	0	9,847	0.0	6.9
Incorrect or no signal	0	145	0.0	0.1
Opening or closing door	0	1,004	0.0	0.7
Reverse without due care*	0	22,027	0.0	15.5
NA	153	5,400	0.3	3.8
Other	48	722	0.1	0.5
None	5	21	0.0	0.0
Total	61,024	142,116	100.0	100.0

* Reverse without due care crashes all classified for analysis as 'Other' type of crash

Figure Two (MRJ Baldock, 2023).

In addition, "Driving distraction is one of the human factors related to road traffic accidents, which is considered as a road safety issue worldwide, and it is an important part of motor vehicle accidents in a way that in some studies, 23%–71% of accidents are distraction related." (*Archives of Trauma Research* 2021).

The Insufficient concentration due to surrounding events and obstacles whilst driving a vehicle are leading causes to these serious tragedies. As shown in the figure two, Inattention and following too closely are not only the leading errors but also the majority of percentages. With 97.3% collectively being due to these errors specifically.
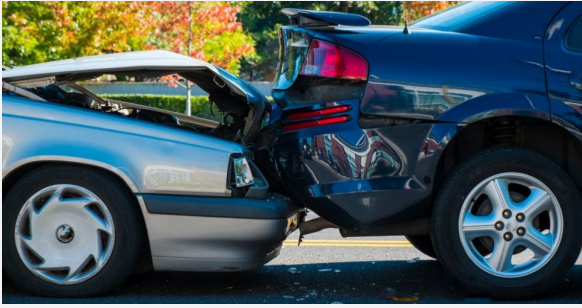
Figure Three (Joey, 2021).

Evidently, "it has been reported that a large proportion of drivers are inclined to perform distraction activities (e.g. mobile phone use) during slow car-following in a congested road environment, and the mobile phone users while driving had a significant higher rear-end collision rate than the non-users." (Author links open overlay panelXiaomeng Li a b et al., *Collision risk management of cognitively distracted drivers in a car-following situation* 2018).

Although existing products and interventions provide possible aid within this focus, it doesn't directly help the user economically. "For instance, the 2018 Subaru Outback starts at $25,895. But in order to get rear automatic emergency braking, buyers either have to buy the top-of-the-line Touring trim for $36,940, or they can add a $2,085 package on the Outback Limited – which already costs $6,800 more than the base vehicle." (Barry, *Rear crash-prevention technology works, Safety Group says* 2018). Whilst these top-of-the-line models offer extra safety measures, they are often hidden, and only operate without the user knowing, rather signally and creating an interaction with the user.

What's already out there?

The Motor Accident Insurance Commission, MAIC, is a Queensland government scheme which regulates Compulsory Third Party (CTP) insurance. With constant raising of vehicle insurance premiums due to increase of road accidents, MAIC have identified a need for advertisement to make drivers aware of consequences. Within a recent campaign published in 2021, MAIC has focused upon rear-end collisions and what it is to "be a mate" stating that, "Being a courteous driver is the best way to avoid rear-end crashes and other types of road crashes." (*MAIC* 2023).

Figure Four (*MAIC* 2023).

These campaigns are often liked by the community as they reduce stress and anxiety caused by tailgating, offering a message to drivers to reflect their behavior behind the wheel.

Currently, research into technological advancements focuses on the systems within vehicles, for instance, collision avoidance systems. This can be seen in Tesla's with a Forward collision warning, providing "visual, audible, and haptic feedback warnings in situations when Model 3 detects that there is a high risk of a frontal collision." (*Model 3 owner's Manual* 2023). Furthermore, an autonomous emergency braking feature, which "automatically applies braking to reduce the impact of a collision." (*Model 3 owner's Manual* 2023). Tesla's user manual outlines the warnings and limitations which directly affect the accuracy of embedded technology.

Figure Five (*Model 3 owner's Manual* 2023).

For example, these fitted devices are commonly known as Human-machine interfaces, which communicate and interact with the user. Often this isn't directly, nonetheless "the design must consider a wide variety of users, including children, elders, people with disabilities and in general, people with very diverse technological skills." (Carmona et al., *EHMI: Review and guidelines for deployment on Autonomous Vehicles* 2021). Due to these features not being visual to the user, they offer an autonomous safety which when detecting car slowing down in front rapidly, brakes are automatically applied with a signal on dash displaying for emergencies. "They are already equipped with most of the components that will integrate future autonomous vehicles: elements such as sensors or processing units are already available to assist the driver." (Carmona et al., *EHMI: Review and guidelines for deployment on Autonomous Vehicles* 2021). With this comes limitations surrounding the reliability and accuracy of autonomous actions within vehicles. Although, these sensors often aren't specifically targeting other road users in prevention of road accidents, rather they only offer emergency safety to reduce impact of these accidents.

As a device utilising these sensors offer great opportunity for road safety improvement. With "The success of a technical product depends on more factors than just price, reliability, and life cycle; it also depends on factors such as handling capacity and ease of use. Therefore, HMIs are a crucial aspect in the design of devices that involve interaction with a person." (Carmona et al., *EHMI: Review and guidelines for deployment on Autonomous Vehicles* 2021). This concept can increase user interaction, however, hasn't been implemented, specifically as a bumper device. An online articles states that, "it seems that flashing lights have better results than more subtle or horizontal sweeping animations." (*The EHMI: How Autonomous Cars will communicate with the outside world* 2021). Interestingly, this is evident through the use of hazard lights to signify a warning, autonomously through instinct slowing drivers down and increasing awareness.

Furthermore, "A study of real-world driving shows both tailgating and speeding increase the odds of being in a crash more than if driving while holding or dialing a mobile phone." (Amanda Stephens Senior Research Fellow Monash University Accident Research Centre, *Why do people tailgate? A psychology expert explains what's behind this common (and annoying) driving habit* 2023).

With vehicles in mind, trailers and motorbikes must also be explored as large contributors to our roads whilst researching. In doing so, the vision of trailing drivers is immensely restricted and obscured. On the alternate side, the hitch of a trailer causes an "Increased risks of impact force**.** The occupants of the front vehicle were thrown an average of 2.5 times farther forward than those in the rear-impact vehicle. In other words, when the rear vehicle travels a mere 5 mph during a collision, the passengers in the front vehicle will feel the force and be thrown forward at a rate of 12-13 mph. This is important to note, as rear-end collisions that produce changes in acceleration below 12 mph cause the majority of crashes resulting in neck injuries." (Johnson & Gilbert, *Can a trailer hitch severely impact the degree of damage or injury caused by a rear-end collision?* 2023). It was founded that, "the tow hitch prevents the vehicle from being badly damaged." (Patterson, 2019). Though, data shows that tow hitches increase the risk of serious injury to passengers.

Summary of literature

The simplistic design of existing methods utilised in literature are aimed to not be visual on a vehicle, creating a sense that the relationship between technology and product outcomes are seamless. Similarly, this pattern creates a great strength of the reliability and use of technology as a method to create change. Identifiably the most significant pattern would be how "Autonomous driving aims to further progress in road safety, given that, according to the European commission, 90% of all serious car accidents are due to factors related to human error, such as reckless driving, distraction, speeding, or illegal maneuvering." (Carmona et al., *EHMI: Review and guidelines for deployment on Autonomous Vehicles* 2021).

A prominent gap within the literature identified surrounds the exploration into external human-machine interface, or commonly known as eHMI, as a potential product to communicate directly with following vehicles. The literature also suggests that "The use of specially designed lights on the rear of vehicles to warn following drivers that they are too close or closing too quickly may prove useful, by both increasing conspicuity and combating the inattention of following drivers, although work on these projects is in the early stages only." (Baldock.MRJ, 2023). Furthermore, the significant impact an eHMI safety device has on not only the user but the compulsory third party (CTP) insurance on vehicles and user premiums. In summary, the literature outline provides insight into collective corresponding research with minimal conflicting evidence. Through thorough scholarly research, the literature significantly explores the problem and existing solutions.

SECTION TWO

The Research

Research

A qualitative approach was conducted for primary research to ensure sufficient and reliable data is sourced. It is vital to gain this information and data through statistics for further analysis and investigate the comparison with literature. As, "Research aims at interpreting and explaining a phenomenon logically and systematically by adopting a scientific method." (Basu, *Importance of research in Education* 2020). By doing so, data can be thoroughly analysed and examined to gain insights into rear-end collisions and the potential for a product intervention.

An online survey was conducted, targeting people within the wider community, specifically aged between 16-60. With the utilisation of Survey Planet, an online resource, a range of questions could be displayed effectively, allowing results to be categorized. This method was most effective to standardize the information provided to each participant, meaning less bias when data is collected. Whilst formulating the structure of the survey it was vital to consider no bias or misleading information was provided. Furthermore, the large-scale data collection process is very efficient whilst ensuring a qualitative approach. Surveys also offer easy accessibility with minimal spending, making a great source of primary research to be conducted. Participation involved completing an online survey with a range of short response and multiple-choice questions with a duration of approximately fifteen minutes. This questionnaire was formulated to encourage engagement with the topic, whilst being relatively concise and direct to gain the most accurate and influential research. The online portal was open to participants for two weeks, between the sixteenth of August to the thirtieth. Throughout this period, ten people participated, six being male and four being female, all with variation in age between twenty and fifty-seven. To seek these contributors, the survey was deployed through social media advertisement and communication with peers. This increased a large demographic user focus, with various years of experience whilst driving.

To further gain insight into direct users, an interview with a RACQ Response Unit team member was conducted. Due to terms and conditions of the interviewee's workplace, his personal details can't be displayed. However, throughout this interview, initiated via consultation, a variety of key considerations into the influences and impacts prompted great learning. This interview consisted of a conversation with documentation of a range of questions and general communication to form a qualitative primary research approach. Overall, the information sourced throughout these strategic research methods provides a comprehensive and qualitative methodology. Through these methods analysis and findings can be sought to further draw comparison and discussion into existing literature.

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Analysis and findings

The primary research conducted influenced a rich amount of information and data on the fundamental conception of rear-end crashes and implications. The survey and interview conducted provide supporting evidence with significant display of relevant data and statistics.

Through meaningful data analysis and observation resulting from the survey results, formed statistics and trends relative to the literature. By collating and formulating graphs and tables, this data is visually recognized, outlining trends and outliers. This worked within the study to visualise the opinions of everyday road users which evidently, 70% of participants have or know someone who has experienced a rear-end collision.

Although, due to being published online, there are some limitations to the survey outcomes. This includes the scale of inputs and sample size due to spread and interaction, as larger sample sizes increase validity and accuracy of data being displayed. Moreover, this data may not reflect the opinions or assumptions of other people within the wider community.

Though, there was a distinctive theme throughout the results, displaying that 70% of participants believe a safety device could prevent rear-end collisions with 60% agreeing that safety features determine choice of new a vehicle.

Interestingly, the year models of the vehicles which participants own are relatively spread out across various years. Evidently, 70% of contributors own a vehicle manufactured before 2010. This directly supports the literature in focus of new technology being embedded within new vehicles, which in this case many users wouldn't have.
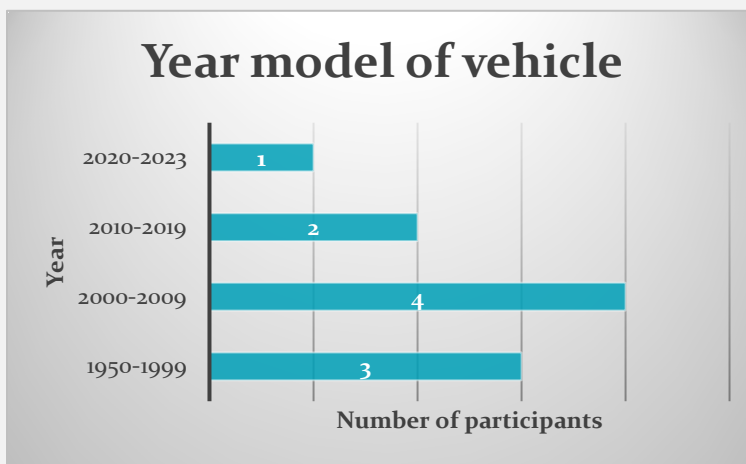

Figure Six (*Table from online survey*).

Additionally, the survey results show that only 65.2% of participants are willing to purchase a car from a factory. This shows that a mere 34.8% wouldn't purchase a new vehicle and if so would be second hand, resulting in minimal spread of new technological safety vehicles. Meaning there is a need for a device which can be implemented on a range of vehicles, various year models and makes to ensure safer roads.

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The survey found that 14% of participants are unsatisfied with their current safety features on their vehicle, and 27.9% very satisfied, resulting in a need for change. As visualised in figure seven, more than 90% of participants are likely to purchase a safety device for their vehicle. This was explored further within the survey with a short response as to why, commonly being for the safety of themselves and children with one participant stating, "Ease of mind; being safer.". Reflecting upon this, the literature outlined how stress and anxiety are major factors of tailgating often leading to abrupt braking causing crashes.
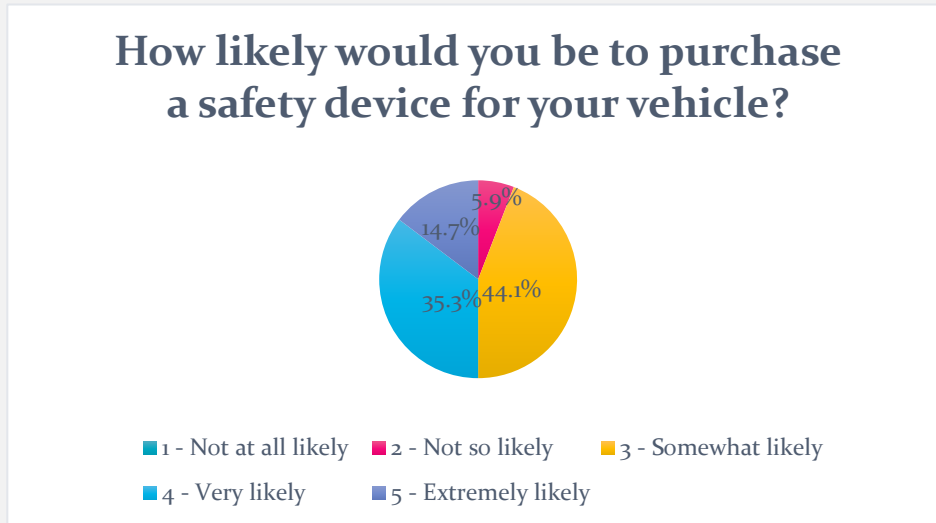

How likely would you be to purchase a safety device for your vehicle?

- 1 - Not at all likely
- 2 - Not so likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

Figure Seven (*Graph from online survey*).

Whilst formulating this survey, the ideal of users need to purchase a device and design must consider the demographic, with this in mind, a simple multiple choice question asking participants a price point at which they would purchase a smart bumper device to reduce rear end impacts. Graphically, figure eight reflects the trend line, where the mean is approximately $100. Intriguingly, throughout the literature, this data is very biased and opinionated depending on location, branding and most commonly the vehicles manufacturing of devices. Although this survey result is vital to consider for design and manufacture of a device, focusing on the targeted users who participated.
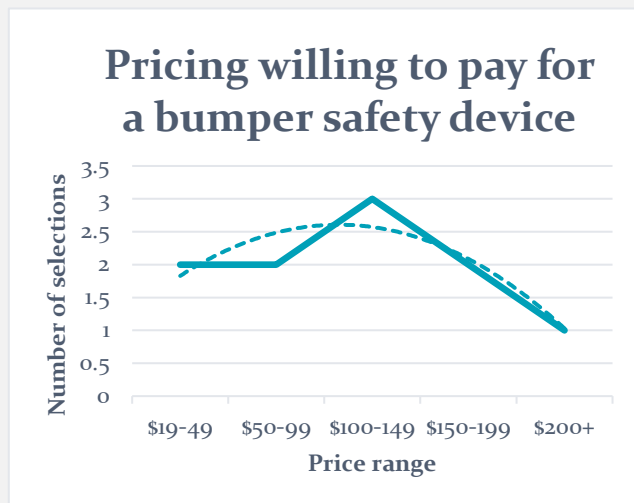

Pricing willing to pay for a bumper safety device

Number of selections (0 – 3.5)

Price range: $19-49, $50-99, $100-149, $150-199, $200+

Figure Eight (*Graph from online survey*).

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All participants agreed that tailgating is becoming a large safety concern on our roads. Further through graphic representation, figure nine displays opinions of participants based on awareness influence on these accidents. Visually, 75% selected that they very agree with the statement. Evidently, the need for a device intervention to increase awareness and reduce the risk of rear-end is vital to ensure road safety.
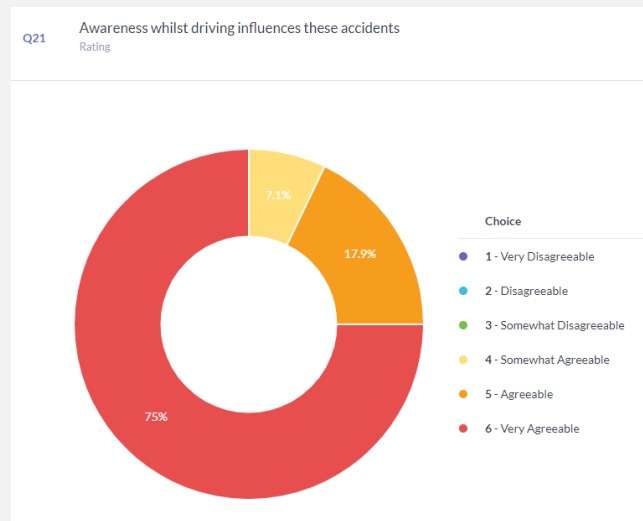

Figure Nine (*Graph from online survey*).

The Interview conducted was a significant examination into a direct stakeholder working with motor vehicle accidents on our roads daily. Being Brisbane based with over twenty years of experience, the RACQ team member stated that, "one of the most common incidents is with trucks. As cars are too close and can't get out of the way. However, recently in the last three years, response units are constantly attending rear end crashes.". This statement directly supports the literature outlined, specifically the impact of tailgating, whilst giving insight into everyday work.

Throughout conversation, he also mentioned that; "I believe as large amounts of people are on the road, causing congestion and lower speeds. Often this is when people are distracted, mostly by using a mobile phone. During the later afternoons, the sun can cause brake lights to be misunderstood.". In comparison to the literature, this opinion is relatively supported through Monash Universities report stating, "both tailgating and speeding increase the odds of being in a crash more than if driving while holding or dialing a mobile phone." (Amanda Stephens Senior Research Fellow Monash University Accident Research Centre, *Why do people tailgate? A psychology expert explains what's behind this common (and annoying) driving habit* 2023).

In summary, through sophisticated and comprehensive research, complex analysis of findings increased understanding and formed effective design considerations and criteria for mindful product intervention.

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SECTION THREE

The Discussion and Design Implications

Discussion

Comparatively through thorough research, the findings evidently support the literature through various means. The primary research conducted relates to the literature through investigation into the users' current experiences and needs when it comes to road safety surrounding rear-end crashes.

A significant finding was that people want safety measures in place and believe they can influence positive change; however, they aren't willing to pay the price for it. With this being said the research somewhat supports through new vehicles however contradicts as an average participant is willing to spend approximately $100 on a car safety device. This helps identify the price users are willing to pay for a device, which could minimise the risk of rear-end collisions by ensuring tail gating is significantly reduced.

By investigating into existing technologies and systems, a significant gap in literature is spoken of and needed, yet not designed or implemented. This is shown throughout the literature with various peer reviewed resources resorting back to new vehicles and their safety, rather the safety of others whilst considering a variety of vehicles.

These findings add quality knowledge to understand how an eHMI would work as a smart bumper device intervention. Through understanding of the user and their needs, creates an outline of specific criteria to adhere to whilst designing. This includes the demographic and price point, whilst suggesting a universal easy to use approach of product.

Throughout the interview, new information was discovered, as one of the most commonly seen incidents as a response unit team member is in relation to trucks. Although this doesn't draw from the factual statistics shown, rather offers great insight into driver awareness as "cars are too close and can't get out of the way". This means that safe driving behaviors aren't being enforced, resulting in accidents.
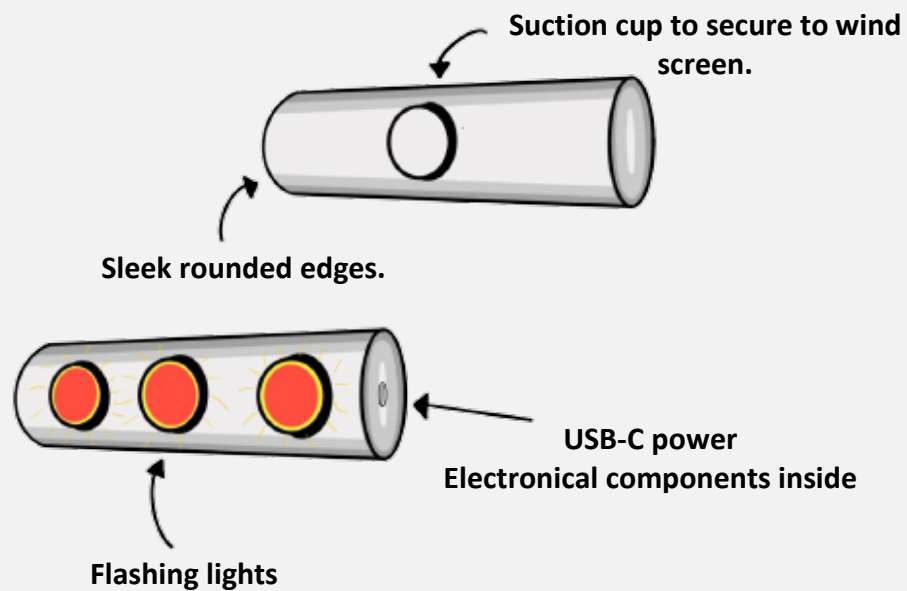
The impact of sunlight on the user driving and how this affects the vision of brake lights was also discovered as a major concern to driving safety and its effect on rear end accidents. Overall, relevant and thorough research support literature and provides great opportunity to be strongly integrated into a design concept.

Design Implications and Initial concept sketches

With the opportunity for the need of a smart bumper device to directly communicate with external drivers and increase awareness, design concepts relating to literature and users needs have been developed. This will promote safer travelling distances and reduce tailgating, resulting in minimization of rear-end crashes. With focus on CARRS-Q brief and mission, the implementation and design of this technological concept through an eHMI provides great opportunity to develop and produce a feasible product.

Concept One – Flashing bumper sensor device

This concept consists of a device which can be secured through suction cups to the wind screen, whilst providing flashing lights to signal drivers of close tailgating.

Suction cup to secure to wind screen.

Sleek rounded edges.

USB-C power
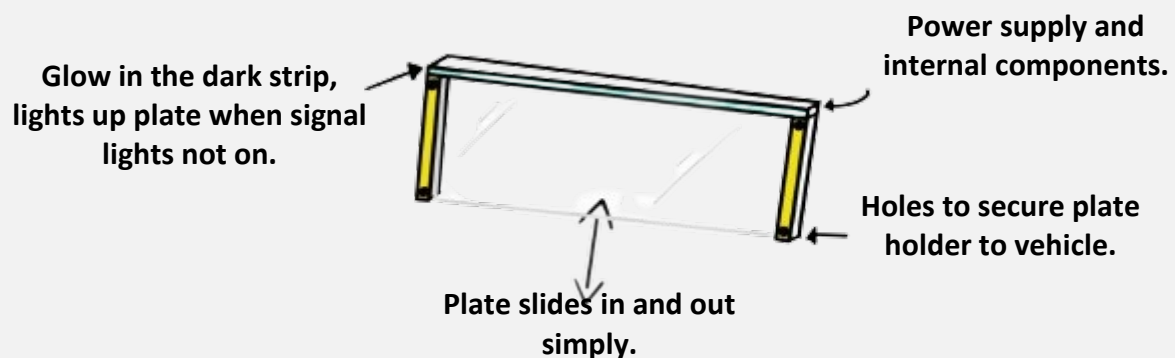**Electronical components inside**

Flashing lights

With an embedded proximity sensor to detect travelling distance, the device begins to flash yellow, whilst getting within eight meters the lights become red, signifying dangerous travelling. The device will provide haptic feedback to the trailing vehicle, improving travelling distance and overall safety measures, whilst leaving the driver of the front vehicle at peace of mind. Evidently throughout the survey, users were seeking "ease of mind" when wanting a safety device.

The purpose of this device is to achieve significant reduction of tailgating and increase awareness on our roads. Systematically increasing safer travelling distances and drivers' perception on road safety.

Concept Two – Number plate holder

With the ease of use, any number plate can simply slide into the holder, which then provides the users with an early warning device. This smart bumper device would utilise GPS technology to identify when the vehicle is at slow speeds or slowing down, turning the early warning lights on, with sudden reduction in speed causing them to flash.

Throughout research it was evident that an early warning method is required to ensure safe distancing between vehicles. This also reduces the chance of sudden braking, with specifically designed lights to provide extra awareness. The purpose of the device is to provide a simple product which is adaptable, simplistic and provides effect safety measures to reduce tailgating.
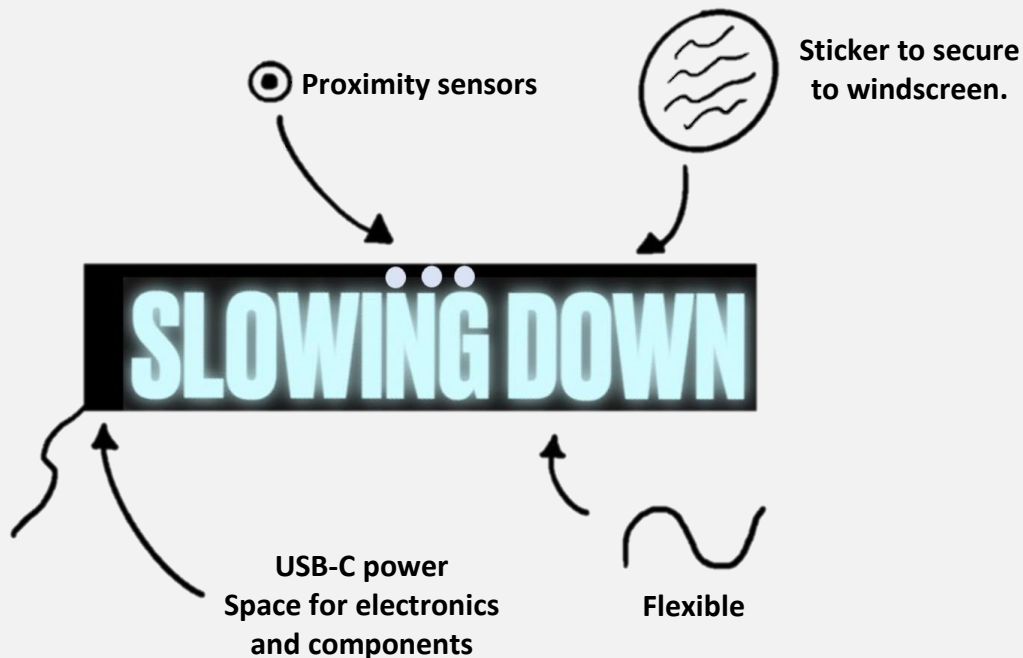

Glow in the dark strip, lights up plate when signal lights not on.

Power supply and internal components.

Holes to secure plate holder to vehicle.

Plate slides in and out simply.

Concept Three – Electronical sticker

This concept links to the research findings of the impact campaigns has on the wider community, as seen through MAIC's advertisements. With significance in its flexibility and ease of use, the electronic sticker provides a solution to warn drivers through verbal context when close proximity is detected.

The internal components and USB-C charging port allow for the sticker to light up. This can be easily placed onto a windscreen or bumper and plugged in, alternatively plugged in when charge is required.

The purpose of this product is to create a visual display to vehicles following, communicating various programed lettering. This has potential to be government/area controlled to also signal drivers of upcoming road incidents. Throughout the research these needs have been identified, to easily be visible and create awareness whilst providing a campaign like approach to early warning tailgating drivers. Through effective development and resolved concept, this device offers potential to provide road safety and minimise rear-end crashes.

Proximity sensors

Sticker to secure to windscreen.

SLOWING DOWN

USB-C power
Space for electronics and components

Flexible

Conclusion

As road safety increasingly becomes a significant contributor to our daily lives, the implementation of a smart bumper device will provide a positive impact on our roads. Evidently, through vigorous research and expert focused interviews, statistics show the need for change not only to new vehicles but all types, to reduce tailgating.

By designing and resolving concepts, the use of an early warning device will reduce sudden braking, resulting in fewer rear-end collisions. Furthermore, through significant attention to detail, the implementation of signals to trailing drivers increases awareness and overall safe driving behaviors.

This report has efficiently and effectively outlined significant research and literature, providing conceptual design solutions. In conclusion, through rigorous investigation and understanding of underlying causes and impacts of rear-end collisions have developed a cohesive and direct understanding into literature.

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Appendices

Interview Transcript

Date: 15/08/2023
Time: 1:30pm
Location: Murarrie RACQ interchange station, Lytton Road.
Interviewer: Declan Lau (DL)
Interviewee: RACQ Traffic Response Unit team member, name anonymous due to terms and conditions. (RACQ TM)

DL: Good afternoon, my name is Declan Lau, and I am currently studying Industrial Design at Queensland University of Technology. I'd like to thank you for your time today and input into road safety.

RACQ TM: Hey Declan, unfortunately as you know I am unable to provide my personal details due to terms and conditions, although I'm happy to answer and questions you have for me.

DL: That's okay, as mentioned this study is on road safety, specifically accidents which occur, what do you most commonly witness on our Brisbane roads as a first responder in most cases.

RACQ TM: Honestly, one of the most common incidents is with trucks. As cars are too close and can't get out of the way. However, recently in the last three years, response units are constantly attending rear end crashes.

DL: Wow, that's significant! When do you believe these incidents, most occurring, or when's the busiest period for you?

RACQ TM: Well, I think that the busiest time would be during typical rush periods, for example people going to and from work in the morning and late afternoon.

DL: Interesting! And how do these times influence accidents?

RACQ TM: I believe as large amounts of people are on the road, causing congestion and lower speeds. Often this is when people are distracted, mostly by using a mobile phone. During the later afternoons, the sun can cause brake lights to be misunderstood.

Declan Lau (N10805494)

DL: Yeah, throughout my research this was an important consideration, I think distraction is key part to these collisions.

RACQ TM: Distraction is what causes these accidents, along with the careless actions and behaviors of people. Always driving in traffic with one hand on the phone, and as they look up it's too late.

DL: I agree, and what vehicles are you dealing with daily?

RACQ TM: A variety of vehicles, it doesn't matter about the type, even with new technologies people still can't drive to conditions.

DL: Fascinating, I would have thought older vehicles would be most common. What are your personal thoughts on these new technologies such as Tesla's?

RACQ TM: Although they have all these fancy features, people don't know how they work or what exists, nor does it help people driving by.

DL: Great! Thank you so much for your time today, I really appreciate it and the amazing information provided. Bye.

RACQ TM: Thank you Declan, it was a pleasure and good luck.