CRITICAL ANALYSIS OF TRANSPORT OPTIONS FOR CHRISTCHURCH SCHOOL OF MUSIC

"Developing good transport options for accessing
a new central city music school site"

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Executive Summary

- Christchurch School of Music (CSM) has first rights to land at Te Whare Tapere (the Performing Arts Precinct) in the CBD – a 15-minute drive from their current home at Avonhead Primary School in West Christchurch.
- CSM want to understand why students travel to/from music lessons using their current transport modes, and how this may change if they relocate to the CBD.
- With this, our research question is: ‘What are the viable transport options for the proposed new music school in the CBD, and how does this compare to the current location in Avonhead?'
- We conducted a survey to better understand the mindset of students when choosing their transport mode(s); findings show that the amount of equipment and the size results in the choice to travel by private vehicle.
- We created maps using GIS software, showing the accessibility of both locations when travelling by private vehicle, public transport, and biking. Findings show accessibility by private vehicle is greater, particularly to the CBD location for those living in Sumner, New Brighton and Lyttleton.
- We recommend CSM look to accommodate private vehicle use by advocating for cheaper and closer parking near their CBD location.
- We also recommend CSM lead discussions about public transport options and carpooling opportunities - building relationships with and between students that extend beyond music lessons.
- The data collected is a sample and does not comprehensively represent CSM students– further research with more extensive surveying would provide clearer conclusions and pathways to move forward with.

1. Introduction

With an aim to give students real-world experience in their studies, the GEOG309 course engages students with their community through self-directed learning. In 2023, our group worked alongside members of Te Kura Pūoro (CSM) to "develop good transport options for accessing a new central city music school site". The following report delves into the key findings from previous research, our methods of research and the results, alongside the recommendations we have suggested to CSM. Through this process, we hope to see CSM move forward with a clearer understanding of what their students want and expect to see if they are to relocate into the CBD.

2. Context

CSM was founded in 1955 and looks to "foster a lifelong love of music" for all to partake in itinerant music lessons (Christchurch School of Music, 2023). They currently reside at Avonhead Primary School, where hundreds of students attend lessons and participate in various orchestras. However, their home may change, with a move into the Christchurch CBD on the table. Due to this proposed change, CSM asked us to find out the current mindsets of staff, students, and caregivers towards various modes of transport and to compare these to their mindsets towards a potential CSM home in the CBD.

With this project, CSM sought a range of information from us, such as age, travel time, and whether a student's instrument influences their mode of transport. Keeping this in mind, we developed five overarching objectives to gain insights into the mind of a CSM student and their methods of travel. They are as follows:

1. Current modes and future projections – How do students currently travel to the Avonhead location? How do they think they will travel to a central city location?
2. Instrument or personal mobility factors – Do students require assistance travelling? Do they bring equipment that requires another person to help them carry it?
3. Current transport mode influences – why do students travel using their current mode of transport? Is it because of the equipment? Or is it because public transport is not easily accessible where they live? Do they feel safer travelling in their car?

4. Parking options and incentives at the new site – is the CBD site close to any current or future parking complexes? Will there be discounted rates for CSM students?
5. Other new transport – are the city council going to accommodate public transport to the increased traffic to the performing arts precinct zone?

From this, our research question became: “What are the viable transport options for the proposed new music school in the CBD, and how does this compare to the current location in Avonhead?”.

3. Literature Review

The question *'What are the viable transport options for the proposed new music school in the CBD, and how does this compare to the current location in Avonhead?'* was divided into five relevant subthemes, allowing for a deeper understanding, while strengthening our project. These themes include sustainable transportation in the context of New Zealand urban planning, causes and impact of travel time on lessons, extracurricular activities for enhancing an individual's well-being, accessibility and behaviour change of active and public transport to the CBD, and quantitative survey design and ethics.

3.1 Sustainable Transportation in the Context of New Zealand Urban Planning

Sustainability is a crucial element of future transport decisions. Muhammad, I. & Pearce, J. (2015) examine the stability of road development policies in Auckland, Wellington, and Christchurch, with a focus on economic, mobility, safety, consumer, environmental, and funding storylines. They found that the promotion of alternative discourses and sustainable transport plans is essential for changing transport policies in Aotearoa cities. Christchurch, being an ever-changing city, has the potential to make positive changes towards a sustainable future. A secondary research article by Barysienė et al. (2015) analyzes transport in the context of environmental change; alongside the impacts on social welfare, legal frameworks, and innovative technologies – to implement social/economic cohesion. In Christchurch, there is a

need for careful consideration in urban planning, to ensure it incorporates sustainability through proper infrastructure for bike lanes, low emission buildings, alongside safe and reliable public transport.

3.2 Causes and Impacts of Travel Time on Lessons

Relevant literature from Kok et al. (2012) found that due to urbanization, commuter traffic directions and measurement restrictions differed for cities and suburbs. This can be applied to the Christchurch CBD and Avonhead locations, as these suburbs operate very differently. Van Wee, B., Rietveld, P., & Meurs, H. (2006) clarified that travel time was increased due to unreliable transport systems, and poor transport infrastructures. These ideas can be applied to CSM, as an increased travel time is observed when taking active transport. Bel, G.'s research (1997) understood that if trips were shorter and less costly, there would be a greater uptake of travel. If travel takes longer, it negatively impacts people from participating in relevant groups, such as music lessons.

3.3 Extracurricular Activities for Enhancing an Individual's Well-being

Having extracurricular activities like music enhances individual well-being. Burnard, P. & Dragovic, T. (2015) suggest that having a designated infrastructure for music practices fosters well-being by promoting community, creativity, and cultural engagement. Hadi Nassr, E., & Ghazi Al-Neaimi, K. (2021) understand that a permanent location also fosters social connections and an increased capability for individuals, as seen through sports centres. These are relevant to CSM as a permanent location will allow the music community to thrive and further enhance their well-being. Clarke, G.'s research (2020) highlights the importance of considering indigenous engagement in activities. By incorporating building designs, such as Te Whare Tapa models, performing arts areas can provide a stronger connection with identity. Regarding CSM, careful considerations of Māori values should increase an individual connection to their identity, while enhancing their well-being.

3.4 Accessibility and Behaviour Change of Active and Public Transport to the CBD

The Christchurch City Council's (2022) transport survey found that 25% of Christchurch individuals used public transport annually in 2022. Dedele & Miškingte (2021) connect this behaviour to a transport network that is very car-dominated and private vehicle-focused. The shared barriers of demographic, social, economic status and safety lead to people engaging less in active transportation modes to the CBD. Regarding accessibility barriers, Buttazzoni et al. (2023) found that the safety of individuals, and their general road safety is a major concern when engaging with public transport. This is relevant to us as many CSM attendees are part of younger generations. To demolish any barriers surrounding behaviour change, youth and those with disabilities must be considered. The European Commission (2019) suggests that currently, public transport is not engaged with primarily due to a lack of reliability. The stated articles all suggest and urge the need for infrastructure which supports the way individuals choose to travel and use public transport; where lowering barriers promotes safety and accessibility for all.

3.5 Quantitative Survey Design and Ethics

When carrying out surveys and questionnaires, there is a need to focus on ethics and design. Adley, M. et al. (2023) suggest that maintaining privacy is a must, as this allows for the overall success of research projects. This is accomplished by protecting participant data regarding gender, income, age, and ethnicity – where all participants go through an anonymous questionnaire. A confidential process ensures stronger relationships with participants and staff, resulting in more in-depth answers. Stats NZ (2019) supported building relationships as pinned it as a crucial step when designing surveys, saying security of participants must not be put at risk. Designing an ethical quantitative survey is relevant to our research, in specific to data based on age, travel time and ethnicity – as these allow for a deeper understanding of the transport attitudes students, caregivers and teachers have. Berard et al. (2016) look into remuneration and their ethical impacts. They suggest that reward can influence and skew results but is ideal when conducting a long survey, more so in the health sector. With our CSM survey, having a short survey without remuneration will allow for more participation and less skewed results.

4. Surveying

This section outlines the methodologies employed in a comprehensive survey-based study aimed at understanding and quantifying the influence of various factors on transport mode selection to CSM. This study encompassed both qualitative and quantitative methods, involving the development of a targeted survey, ethical considerations, data collection, and preliminary analysis.

4.1 Surveying Methods

To initiate the research, a survey was crafted to gather relevant information that both the community partner and our group sought to address. The questions within the survey were designed to capture essential data concerning the transportation choices of individuals visiting the CSM site. Our survey was created using Qualtrics, an online survey platform accessed through the University of Canterbury. The questions covered a range of topics, including current transportation modes, safety concerns, and barriers to alternative modes of transportation.

Ethical approval is an imperative step in research involving primary school subjects. For this study, ethical clearance was sought from both the university's ethics committee and the CSM administration. Due to ethical constraints, we were not permitted to conduct interviews or surveys with individuals under the age of 18 on school grounds. This limitation narrowed the scope of our survey to parents, teachers, and older students who visited the CSM site. In total, 79 responses were collected, providing a comprehensive dataset for analysis. These responses were collected by a combination of in-person surveying and a digitally distributed survey, via email from CSM administration to keep all responses anonymous. The survey incorporated both quantitative and qualitative questions, allowing for a well-rounded understanding of the participants' transportation preferences, attitudes, and concerns.

4.2 Survey Results

- The majority of those we surveyed indicated they are of NZ/European descent, with only 1 of the participants being of Māori/Pasifika background (**Figure 1**).
- 40% of participants indicated that they have more than one child enrolled at the school.
- The most significant age demographic was the 6-12 year old age range, where 60% of those that participated in the survey being within this age group (**Figure 3**).
- 50% of participants indicated that the size of their instruments plays a role in determining how they travel to lessons.
- 96.2% of participants currently use a private vehicle as their primary mode of transport.
- 44.3% of caregivers said they would not let their child travel alone, however, if accompanied by another child (say carpool or bus) 55% of caregivers said they would let their child travel by a transport mode that is not a car.
- 55% of participants said the primary barrier to transport is time/distance. Most already travel 10-30 minutes to the current location so there is clear hesitance toward a site change for those that live further away.
- 63.3% would not travel longer than 10-30 minutes on public transport.
- 46.8% would not walk more than 5 minutes to and from bus stops or car parks en route to CSM.
- There was a relatively even spread of household incomes from the few that provided answers for the question asked.

Written responses to our survey, in particular two key questions, provided some clear evidence towards the need for accessible infrastructure for a new central city site.

1. What barriers do you have that might limit your ability to travel via public transport?

- "The age of my children, I have safety concerns."
- The size and weight of instruments (e.g. tuba, double bass, harp, cello, tenor saxophone).
- Unreliable timing of buses, not accessible, and changeovers.
- Time – most have extracurriculars directly after lessons so need quick reliable transport.
- Distance & Weather
- "A car is convenient and efficient. My car is electric, and I rideshare with my wife".

2. What would you suggest in terms of travel options to and from CSM?

- Dedicated large instrument parking.
- Subsidized car parking/special rates for CSM frequent users. “Even if you arrive early all the parks are taken, and you have to park illegally while you help your young child carry heavy equipment inside”.
- “If I can’t drive there, I can’t work there. Parking is near impossible in the CBD so close & cheap parking is essential”.
- A drop off/pick up area that’s covered for kids waiting with instruments.
- Bike stands and secure bike storage (having lockable facilities).

4.3 Survey Discussion

Evidently, there remains to be a heavy preference towards private passenger vehicles in Aotearoa (Figure 2). According to Mandic et al. (2020), Aotearoa has one of the highest rates of private vehicle ownership, with 82% of trips being made by privately owned vehicles; even for trips as short as 2km’s away. Furthermore, it is clear that the perception of distance, time, and efficiency have created a negative attitude within locals towards more sustainable transport modes such as buses, biking, and walking. Our results also suggest that there are more specific barriers with regards to modal choice for the students at CSM. The key barriers towards modal choice that arose from our research include the distance and time it takes to travel to the site, the age of students, which in turn implies safety concerns, alongside the size/weight of instruments. Smith et al. (2019) discuss common barriers to active transportation in New Zealand, which are most often attributed to factors such as distance, social norms, weather, safety concerns, and evidently the convenience of car travel.

It is apparent that in terms of the public eye, public transport is not up to par; with less than 3% of all travel being by public transport (Dravitzki & Lester., 2006). Although there was little representation within our survey for modal choice within Māori & Pasifika students, Raerino et al., (2013) suggests that modal preference closely aligns with affordability, safety, and accessibility. It is important particularly with reference to the youth of Aotearoa, that measures be carefully considered in terms of more active modes of travel. More specifically, it is important that infrastructure is put into place to not only encourage active transport for those

that it is viable for, but to also inform individuals of other various sustainable modes. If not done, we will not observe change within the New Zealand transport system. As a result, further disparities may arise within youth in regards to gender & ethnicity, which play an important role in modal choice (Armstrong et al., 2018).

5. Mapping

The following will focus on the mapping aspect of our methods. By leveraging anonymized data on CSM students' residential addresses, our engineering peers created transport accessibility maps using GIS software. These maps focus on three transport modes: public transport, car access and bike access. Furthermore, we will compare the accessibility of the potential CBD location to the current Avonhead location using these three different transportation modes on various days (Tuesday and Saturday) – comparing weekdays to weekends.

5.1 Public Transport Access

See Figure 4, Figure 5 and Figure 6 in Appendix B

In terms of public transportation, it often takes a long time to travel between two sites in urban areas, resulting in many places not being realistic to travel to/from. This also means that only a few outer suburbs are accessible, such as Rolleston, Lincoln and Rangiora. Even so, it takes at least an hour to reach CSM from these places. By comparing the Saturday maps of Avonhead and the CBD, public transportation in the CBD is much more developed than in Avonhead. The direction of urban traffic and road policies will have a certain impact on traffic time (Kok et al., 2012). Due to the central city location of the potential new music school in the CBD, the bus interchange is nearby. This allows for more suburbs in Christchurch to access the CBD campus; more students can access the music school within one hour by public transportation. Therefore, it is relatively convenient to reach the CBD from many places in the urban areas of Christchurch and students can have more control of when and how they choose to travel. This is a traffic positive point if the campus is relocated to the CBD. On the other hand, comparing Tuesday and Saturday traffic maps for the CBD, subtle differences can be observed. Compared

with Tuesday, students from some further locations like Kaiapoi and Rangiora will require less time to reach the CBD on Saturday. According to a previous survey, many of CSM's courses are held on Saturdays, which is the is a positive for those in these areas.

5.2 Car Access

See Figure 7, Figure 8 and Figure 9 in Appendix B

The maps show that cars can reach CSM within two hours with the widest coverage and the highest degree of freedom, compared to public transportation and bicycles. It takes less than one hour to reach CSM anywhere in the Christchurch urban area. Meanwhile, the survey results show that half of the respondents believe that carrying a musical instrument would affect their transportation choices. Cars are the most convenient option for students and parents who carry heavier instruments. Therefore, cars have the highest accessibility and convenience, which are further reasons as to why most people currently choose cars. Moreover, if CSM moves to the CBD, people living in the west of Christchurch generally have their car travel time increased by about ten minutes. Correspondingly, it will be more convenient for many students who live in the CBD, east and south of Christchurch city -especially in Sumner, Lyttleton and New Brighton, where driving time would reduce by 10 to 20 minutes. Overall, compared to public transportation, the impact of the potential CSM relocation is not significant.

5.3 Bike Access

See Figure 10, Figure 11 and Figure 12 in Appendix B

Access for active transport modes such as bicycles is like that of cars. Travelling this way is relatively free and less susceptible to external influences like bus companies. However, bikes have a smaller range of travel, compared to a car and can also take nearly twice as long as a car. It is a good option for those that do not live far from the CBD (within 15-20 minutes) and do not need to carry heavy instruments. Since bicycles are relatively unaffected by traffic jams in the morning and evening, there is no need to consider parking (except secure bike storage facilities). However, weather conditions and student safety concerns are common factors that

directly influence whether people choose bicycles. Therefore, bicycles require the consideration of many more factors, have a smaller scope of application, and have their own pros and cons; where individuals consider their own needs first. Furthermore, by comparing Saturday and Tuesday access to the CBD, cars and bicycles are more flexible, meaning there is no significant change in the maps for these. Therefore, the influence of these differences between weekdays and weekends can be ignored.

5.4 Mapping Discussion

In all, the relocation of CSM has the greatest impact on public transportation, where moving to the city center is more convenient for students who use public transportation – having a positive impact in encouraging conversions regarding public transportation modes. The relocation of CSM will have little impact on cars and bicycles in terms of access, but more so for the general location of where students are coming from. There is a certain dependence on driving, where some students have limited transport mode options, preventing a change in their choice to drive. Moreover, public transportation on weekends reduces commuting time to a certain extent when compared with weekdays, but the relative impacts on cars and bicycles can be ignored.

6 Recommendations

After compiling our results and the given data, we have make recommendations to develop viable transport options for the Christchurch Music School, resulting in three main recommendations:

6.1 Carpooling

Carpooling is a viable recommendation for alterative transport methods. Carpooling allows further connections and relationships to be formed within different parties, allowing people from many different backgrounds to come together for one objective.

Carpooling does not just have benefits of forming new connections, but also has positive consequences of benefiting the environment through:

- Lower emissions and air pollutants.
- Less cars on the road and less congestion in the CBD.
- Easier to transport multiple instruments and more equipment at once.
- And could be implemented through an establishment of CSM vans/minibuses.

Carpooling can lower greenhouse gas (GHG) emissions and air pollutants by 4-5% per person per commute, according to Shaheen et al. (2018). If CSM peers and teachers were to implement this recommendation as a collective, they would be able to reduce air pollutants and travel emissions significantly; having further positive implications on health and wellbeing, alongside the overarching lower emissions emitted. Without carpooling, emissions from private vehicles will continue to rise. The Ministry for the Environment & Stats NZ (2020) both state that personal vehicles made up to 27% of Aotearoa's total GHG emissions in 2018, and if individuals do not adapt to alternative options, lowering emissions will become even more challenging to achieve. Carpooling provides less congestion on the roads, which in turn links back to lower GHG emissions, benefiting the environment and those participating in the behaviour shift.

Through the recommendation of carpooling, there can be the sub-recommendation of introducing vans or minibuses to transport the music students, as well as the dominating factor of their instruments of various sizes and their music stands. This would help lower the barrier of carrying large instruments at multiple distances.

To shift to the recommendation of carpooling, there will have to be the understanding of forming relationships and trust between peers, and this can be completed through group conversations and a system of gauging the interest of those willing to carpool.

6.2 Public Transport

Public transport is the following recommendation of focus; where our survey shows approximately 38% of participants said they would be willing to use public transport travelling to the new site. This highlights an interest in the behaviour change from private vehicle use to

alternative transportation. Public transport has become a viable option due to its benefit to the environment, accessibility to those who cannot drive, and easing of road congestion in Aotearoa, according to Stevenson et al. (2013). However, it is essential to consider the barriers to this option, such as the size of the instruments being transported, safety, time and distance, as indicated by Mindell et al. (2021). This could become a successful travel option if CSM students know the option that are available to them, which could be communicated through information sessions on how to use public transport and where to find public transport. This can be assisted through the travel planner on the Christchurch metro website (Metro Christchurch, n.d.).

6.3 Adapting to Car Reliant Behaviour

Adapting to car-reliant behaviour is our final recommendation. 85% of those surveyed at the music school said they would continue using private vehicles. This is due to personal preferences, convenience for when having to travel to multiple other activities on the same day, and barriers they face daily. To accommodate this behaviour choice, an infrastructure option can be implemented. These would include pick-up and drop-off zones that are similar to a loading zone, allowing students to be dropped off close to the location of focus – due to the current lack of parking options. This will enable students and their instruments to be dropped off safely, reducing the barrier of travel time and improving overall safety. There has been a similar initiative implemented that has proven successful in ensuring safety and reducing congestion. In Madeira, Portugal, they have created ‘Kiss and Ride’, where parents and caregivers can safely drop off students near where they need to go (Kiss & Ride, 2023).

Another potential option would be to work in collaboration with the Christchurch City Council to include more affordable parking in their transport plan for the CBD. However, this would be through an external partnership and not decided chosen by CSM.

7. Further Research

There are some concepts of interest that could have been researched, if this project had an extended timeframe. Two main concepts we would look to evaluate would be:

1. Looking into the size of various instruments and how this can affect travel accessibility, time and safety; understanding if this would hinder students' behaviour shift from private vehicle transportation to public transport.
2. Understanding socio-economic differences and the demographics of CSM students. Due to privacy constraints, we could not get a large enough sample on this, meaning it was not possible to draw any statistically significant conclusions. In the future, we would need a more extensive survey scope, targeting a wider range of demographics and socio-economic status' – ensuring that a correct ethical approach and questionnaire is formulated for students, caregivers, and staff to engage with.

8. Conclusion

To ensure students continue attending CSM, we recommend that private vehicle use is accommodated to, while public and active transport should be openly discussed and made more accessible for the outer suburbs of Christchurch. Our work is only the beginning of the journey. We hope to see a continuation of this insightful process; understanding who the students of CSM are, what they value, and what they expect to see moving forward with the new location plans. We are excited to see what the future holds for CSM and hope their potential relocation continues to promote accessibility, diversity, and a passion for music.

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Appendix A

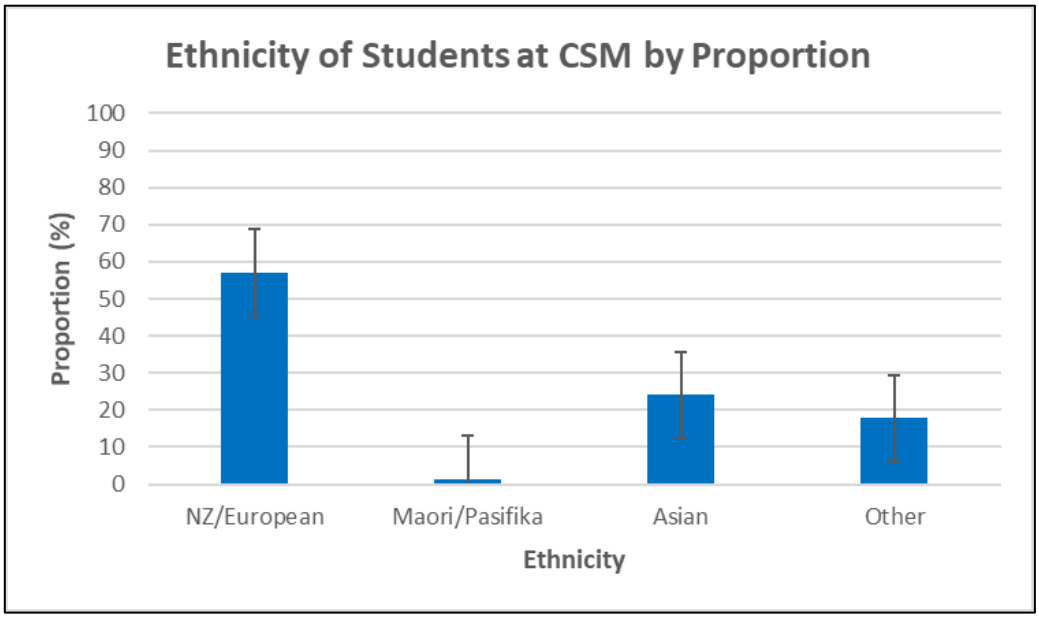

Figure 1: Proportion of various ethnic backgrounds of participants/students enrolled at the Christchurch School of Music as of 2023.

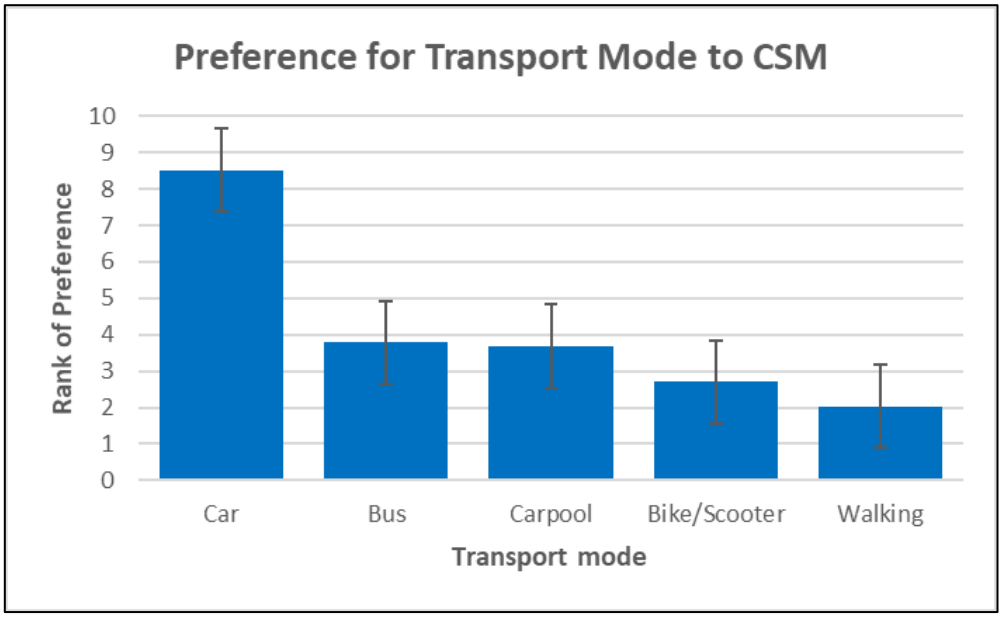

Figure 2: Average preference ranks out of 10 for various modes of transport to the current and future Christchurch School of Music site.

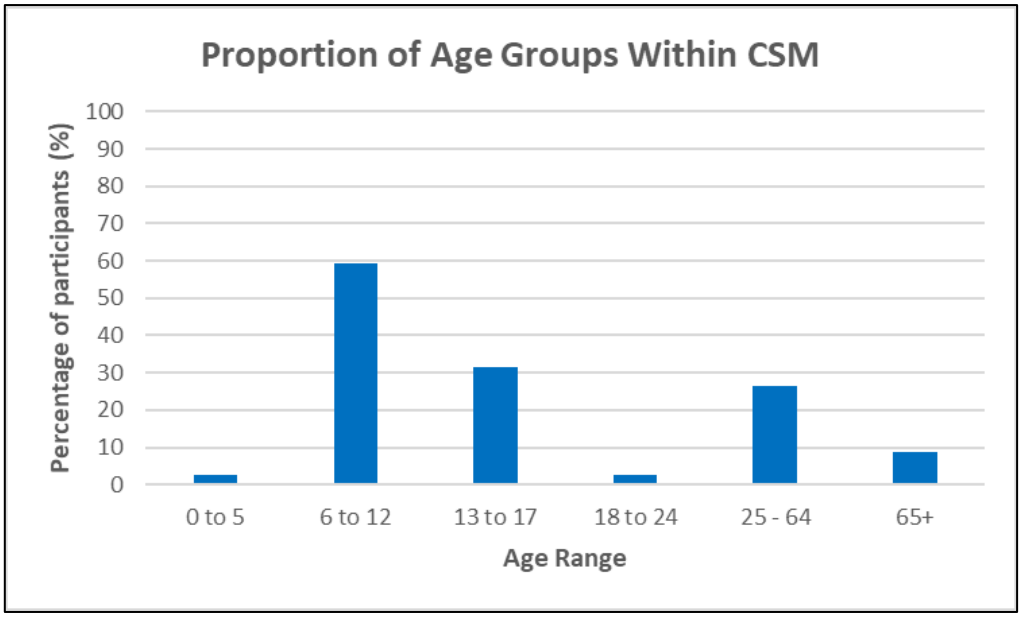

Figure 3: Proportion of age demographics of survey participants enrolled at the Christchurch School of Music as of 2023.

Appendix B

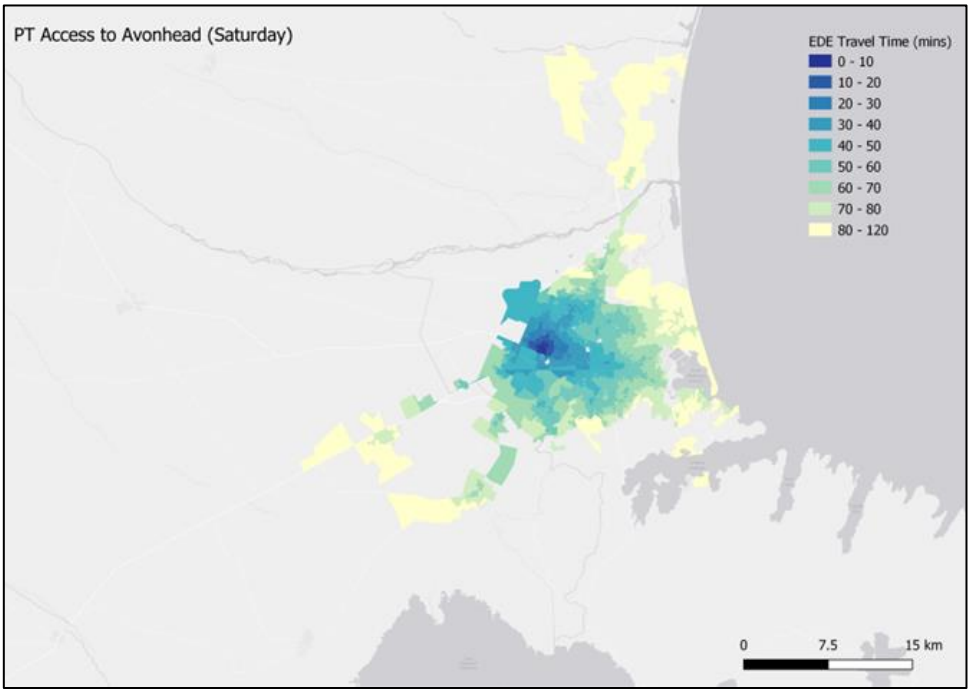

Figure 4: Estimated travel time using public transport (PT) access to the Avonhead School location on Saturdays

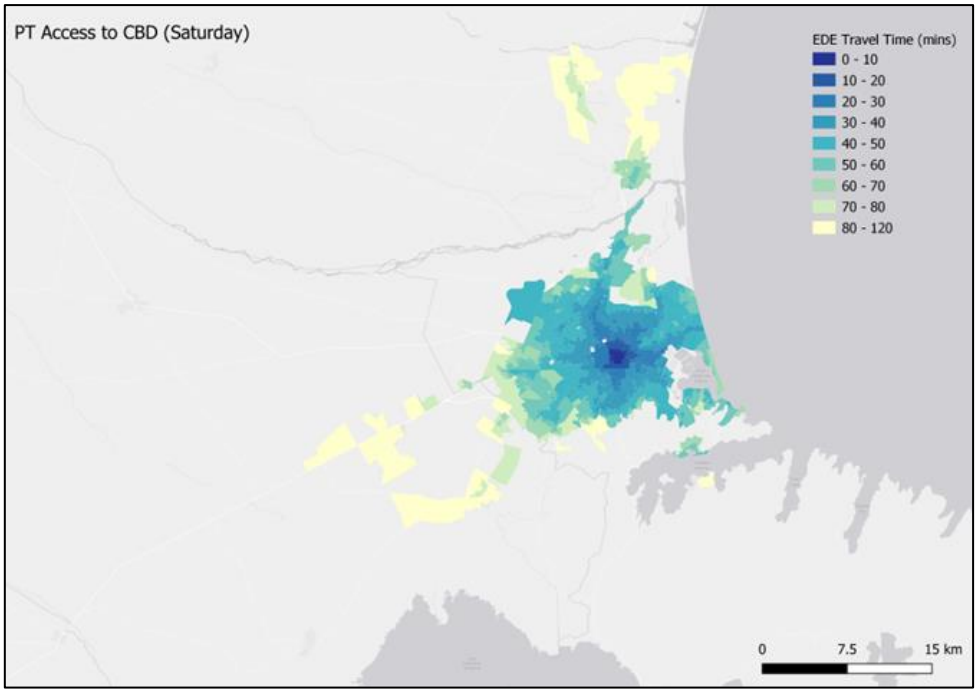

Figure 5: Estimated travel time using public transport (PT) access to the CBD location on Saturdays

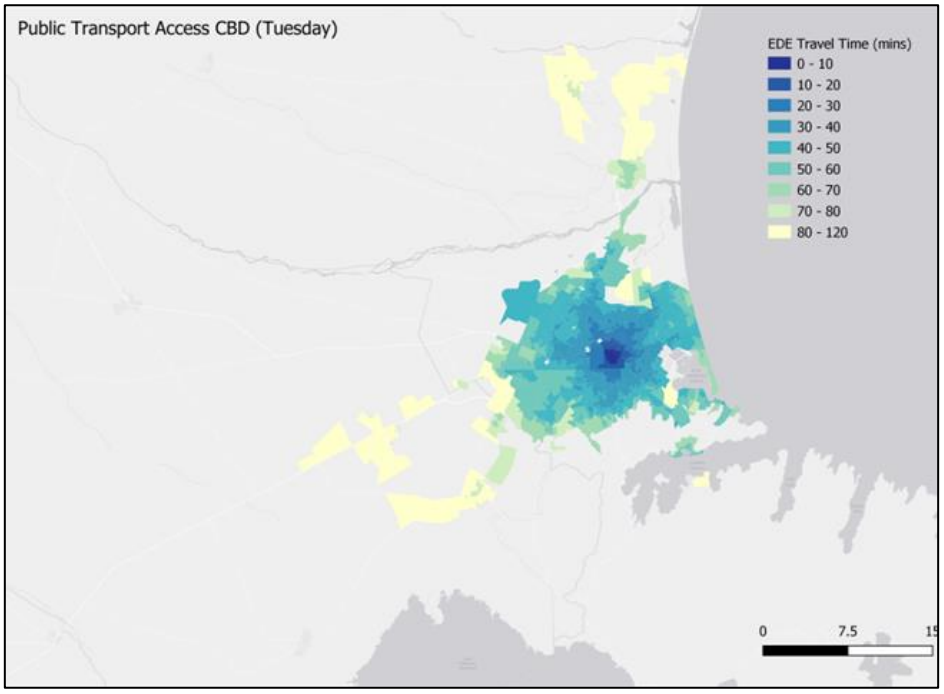

Figure 6: Estimated travel time using public transport (PT) access to the CBD location on Tuesdays

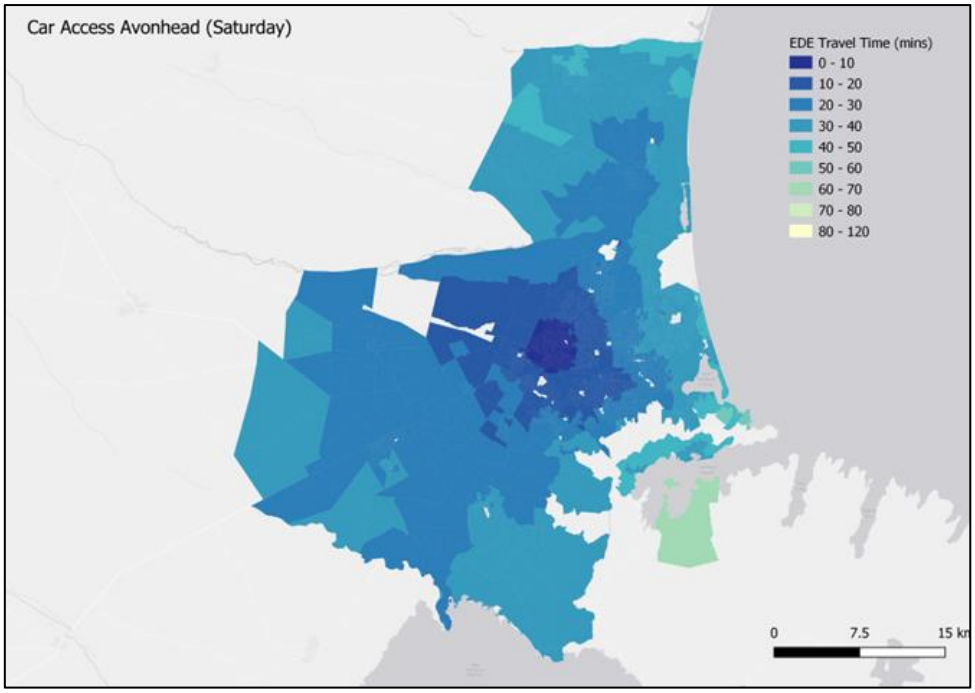

Figure 7: Estimated travel time for car access to the Avonhead School location on Saturdays

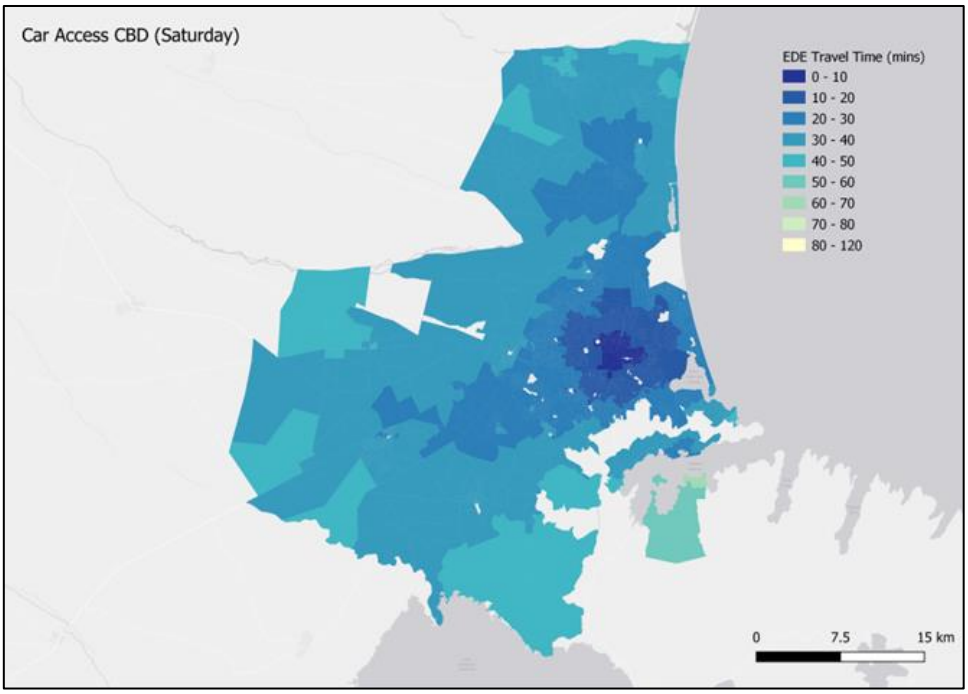

Figure 8: Estimated travel time for car access to the CBD location on Saturdays

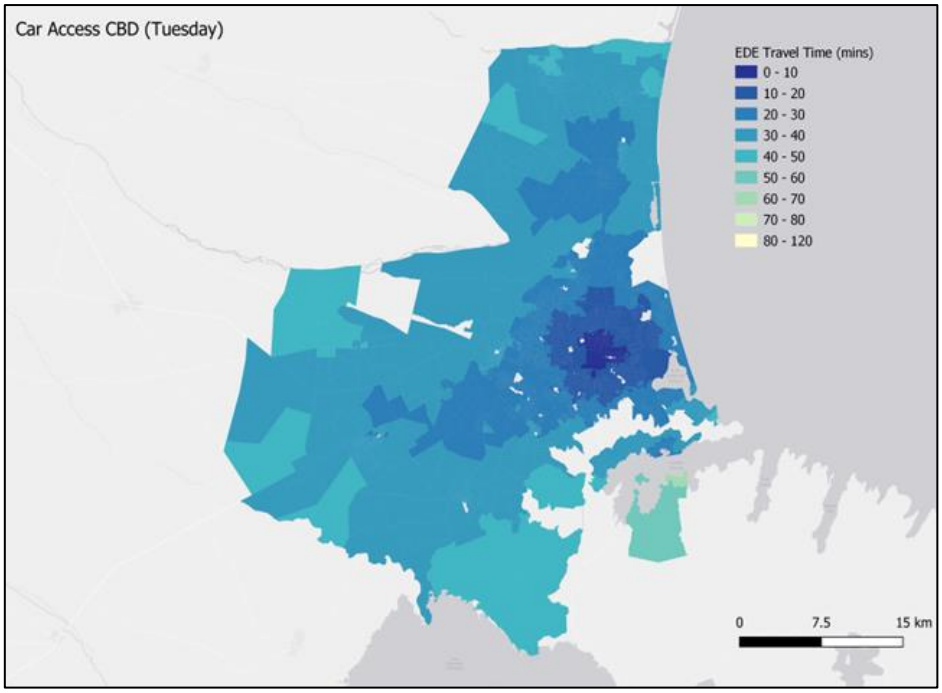

Figure 9: Estimated travel time for car access to the CBD location on Tuesdays

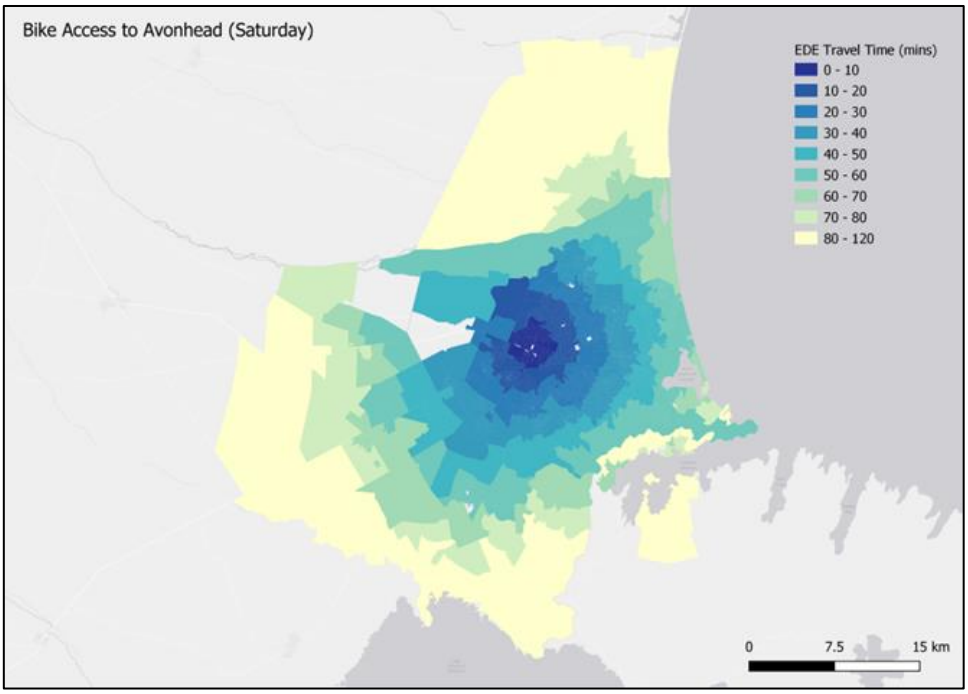

Figure 10: Estimated travel time for bike access to the Avonhead School location on Saturdays

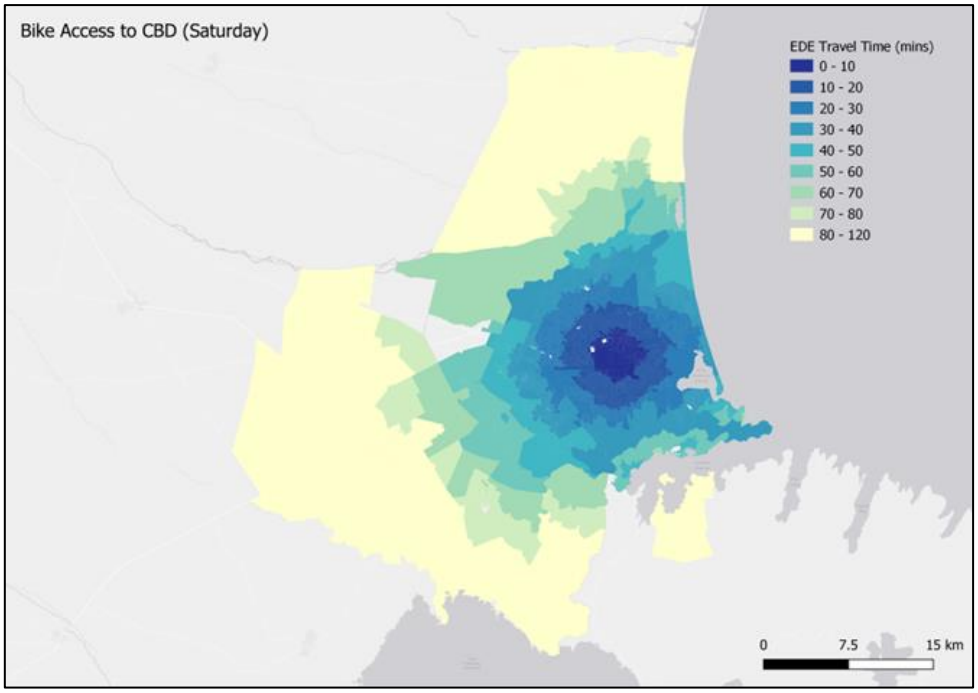

Figure 11: Estimated travel time for bike access to the CBD location on Saturdays

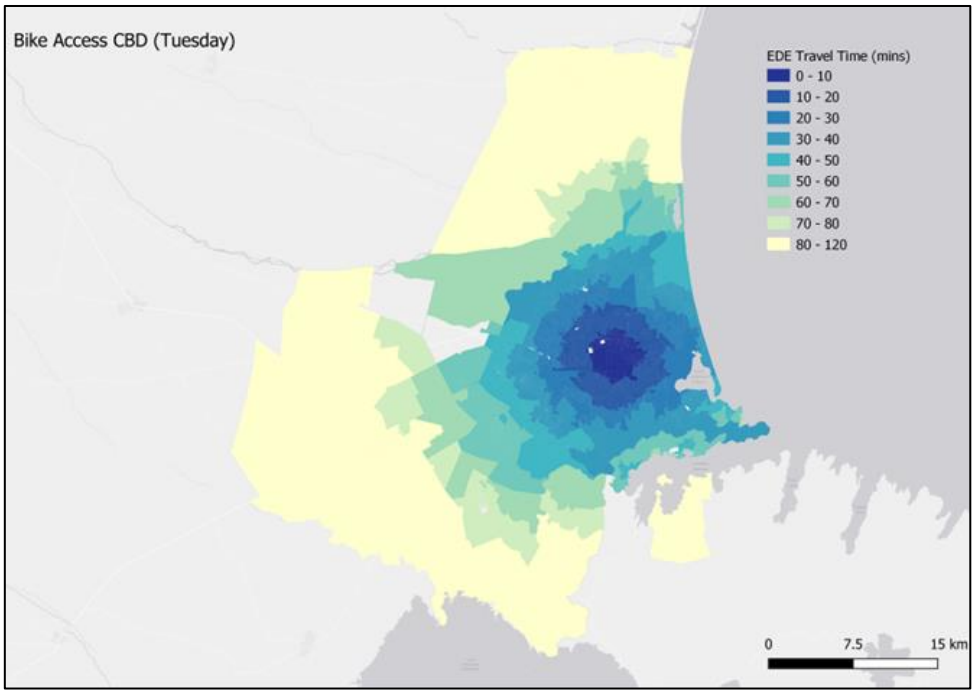

Figure 12: Estimated travel time for bike access to the CBD location on Tuesdays