Waiopehu College

AS91430: Cycleways

Waiopehu College Year 13 Geography
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Cycling is an activity that a large proportion of our national population decides to enjoy and participate within, with an overall 25 million hours spent cycling each year, covering a total of 313 million kilometers and 71 million trip legs (*NZTA Cycling New Zealand Household Travel Survey 2011-2014*). Due to the decision of the Otaki to north of Levin bypass becoming implemented in our local Horowhenua region, the NZ Transport Agency (NZTA) are figuring out whether implementing a cycleway alongside the bypass will be convenient, appropriate and an overall good decision for our region.

Hypothesis

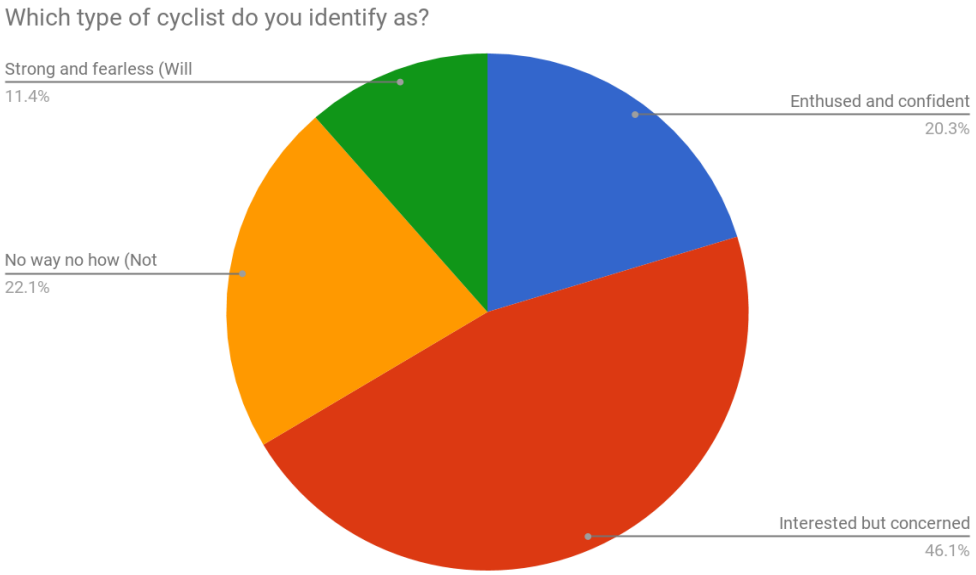
"The most ideal proposed cycleway in the Horowhenua region connected to the Otaki to north of Levin bypass should cater for a wide range of the local population."

I believe that this hypothesis for the proposed cycleway clearly enables us to figure out:

- Which people would regularly use the cycleway
- How often the cycleway would be used if implemented
- How it can cater for a wide range of people

Data collection

In order to collect data for this assessment, we decided to use Google Forms. Using Google's service for collecting data was the easiest and most convenient method, as not only are we able to limit the amount of times users can fill out our form, it automatically puts our data into easily accessible graphs to visualise our data and links our data directly to a spreadsheet where we can analyse specific aspects of our participant's responses. Additionally, we also had paper copies of our survey that we handed out in small groups within the local Levin town in order to collect responses for those who are not technologically capable of filling in our survey online. By doing this, we had 85 of the 270 responses by paper, leaving us with 185 copies completed online.

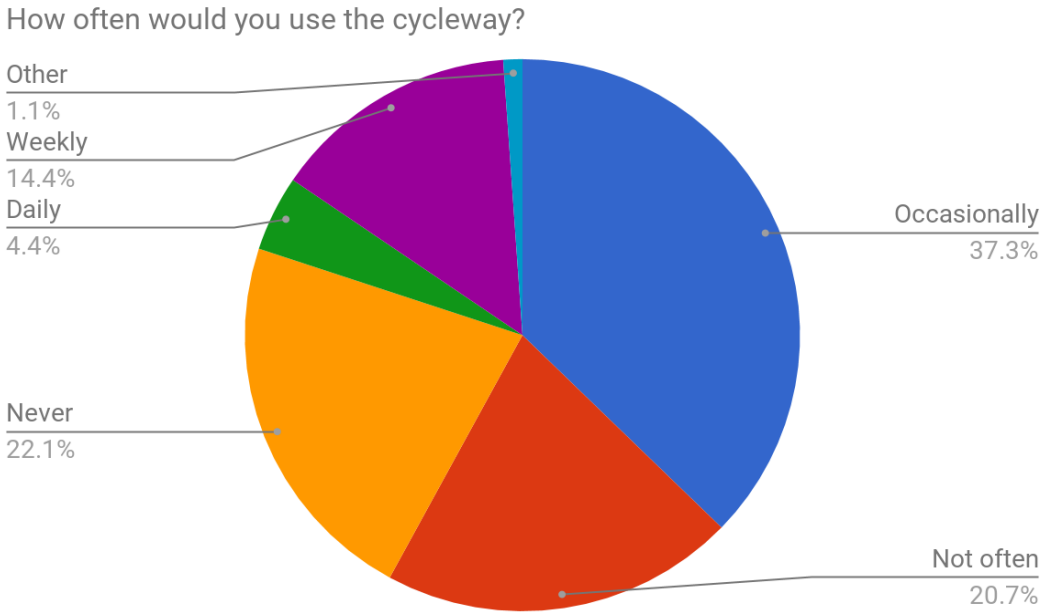


Analysis

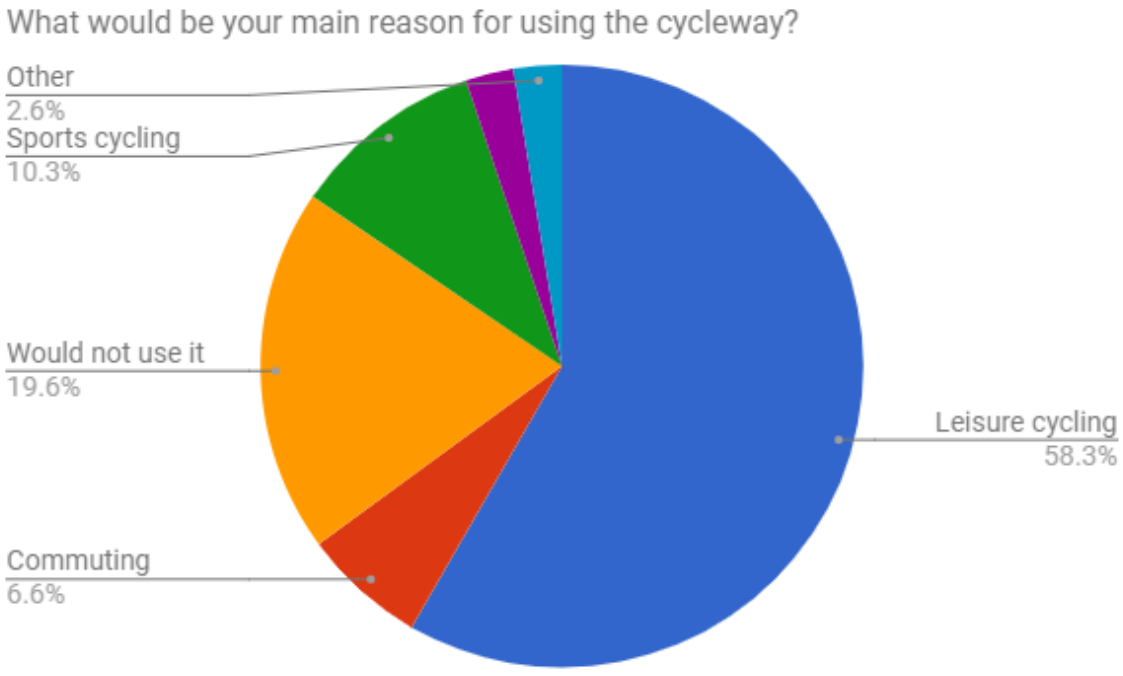
Firstly, when looking at the pie chart for 'which type of cyclist do you identify as', we can see that the majority of people see themselves as cyclists who are 'interested but concerned'. When we are to look at the types of cyclists there are, we can break down them down into four categories. The first category, 'strong and fearless', are the types of cyclists who choose to cycle in any conditions for usually longer distances at a time, as these are the types of people who can cycle with other traffic with ease. According to the NZTA, ***"The 'strong and fearless' should never be considered a suitable target audience, for planning and design of cycle networks. The subset comprises a very small proportion of the total population and, in any case, these people require little in terms of provision."*** We see that this is accurate to our study in the Horowhenua, as the 'strong and fearless' are the smallest percentage on our chart, this being 11.4%. The next category is the 'enthused and confident', the people who will cycle on networks that are scarcely separated from motor traffic. According to the NZTA, ***"These people place a higher importance on directness and will therefore not generally divert far to choose a more attractive route such as an off-road path"***, meaning that these people generally prefer cycle tracks that offer a shorter distance rather than a scenic path. In our study, 20.4% of the people participating identified as 'enthused and confident'. The next type of cyclist, 'interested but concerned', involve people who are wary around cycling on given cycle lanes and cycling with other traffic, as NZTA says ***"a large majority in this group consider that they know how to cycle in traffic, yet these people often do not feel comfortable doing so; therefore they should not be considered as incompetent cyclists but rather risk-averse."*** We can see that the interested but concerned portion on our pie chart is the largest, with 46.3% of people feeling risk-averse while cycling. The final type of cyclists are the 'no way no how', the people who do not feel confident with cycling whatsoever for both commuting and leisure. According to NZTA, ***"The choice to not cycle for transport could be due to perceived practical constraints such as long distances, or the need to transport luggage or passengers. Some have physical***

limitations, others simply have a personal dislike of cycling that cannot be influenced." On our pie chart, we can see that there is 22.2% of people in the 'no way no how' bracket. When comparing the results of our study with the results of the 2012 study in the city of Portland (as can be seen below), we can see the same pattern and general trend of 'interested but concerned' being the majority of the population, 'strong and fearless' being the smallest category, 'no way no how' being the second largest category and 'enthused and confident' being the second smallest category. This demonstrates to us that even in completely different regions of the world, the same trends can be seen within the data, therefore portraying accuracy in our study in showing the types of cyclists in the Horo when ua.

Classification of transportation cyclists,
adaptation of Geller (2009), based on values for



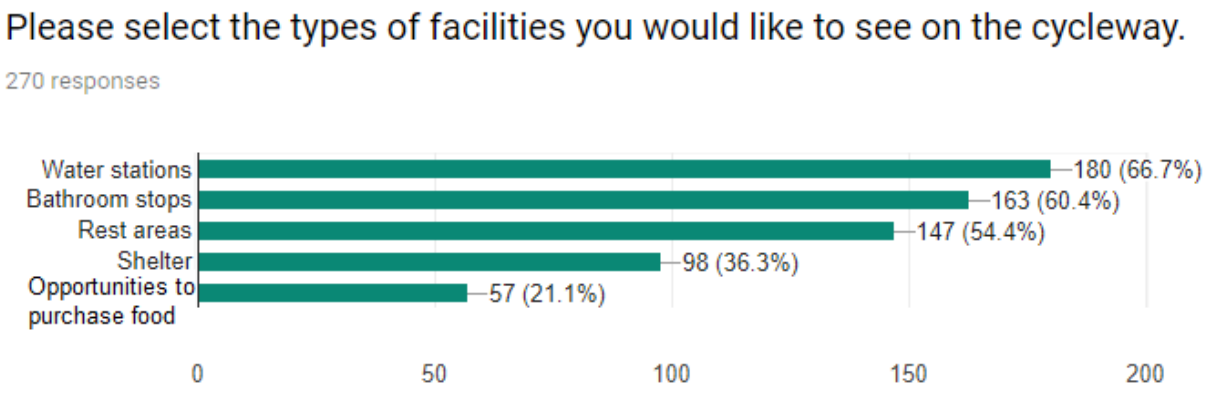
As we can see on the 'How often would you use the cycleway' pie chart above, the majority of people have said that they would occasionally use the cycleway, with this value being at 37.4%. This tells us that the majority of participants from the Horowhenua region would only use the cycleway casually and wouldn't rank cycling as important to them as other things would be. From this, we can believe that cycling should be more a necessary skill that children should learn and should love to do, as cycling is a very simple way to exercise should be done by a higher percentage of our local population. Additionally, we can see that the 'never' and 'not often' options were quite popular, with them having 22.2% and 20.7% respectively. This illustrates to us that although the people may wish to be able to use the cycleway, they may be unavailable to do so for being too busy with other important tasks. However, the 'never' section may also have been this high due to the also high percentage of those who identify as 'no way no how' cyclists, as they would have answered never in this section also. Due to such, we can believe that these people will probably not change their beliefs in the future and won't use the cycleway.



Cycling trip purposes and

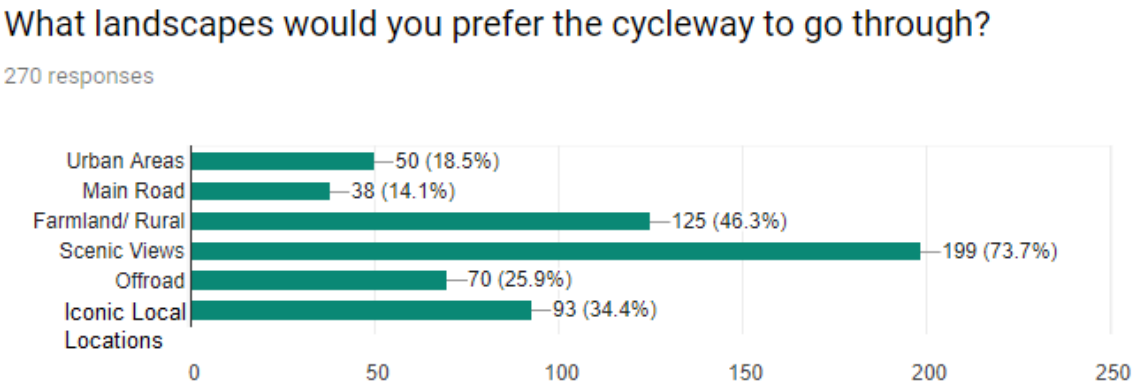
There are a large variety of reasons why people choose to cycle. As we can see on the venn diagram to the right, the reasons for cycling can be broken down into the two categories of utility and recreation, but these reasons can also build into one another and can be a mix between both categories. As we can see on the pie chart above, the majority of participants believed that they would use the cycleway for leisure cycling, this being 58.3%. This massive figure informs us that the majority of cyclists would only use the cycleway casually and tend to have more time while enjoying cycling. This is supported by the NZTA, as they believe ***"Leisure cyclists ride mainly for non-competitive recreation and place a high value on enjoying the experience; they are usually less constrained by time. The skill and experience of these people varies widely, and can influence the level of provision required for a particular facility."*** This is rather accurate within our study, as the conditional probability of a participant answering occasionally for 'how often would you use the cycleway' given that they are a leisure cyclist is 49.4% (or 78 out of the 158 leisure cyclists), which we can perceive that the leisure cyclists are the most likely to only use the cycleway casually compared to any of the other types of cyclists. The second largest figure for types of cyclists on this chart is sports cycling at 10.3%. These types of cyclists have a higher skill range and would use the cycleway as practice for when they are competing. According to NZTA, they believe sports cyclists are ***"People who cycle on-road for sport generally cycle long distances, mainly along urban arterial or rural roads, and may seek challenging terrain. They often travel in groups of two or more and sometimes like to ride two abreast."*** From this, we can believe that the sports cyclists will want a cycleway track which can offer to them something either urban or rural when cycling longer distances. However, this is also dependent on the types of sports cycling that they are interested in, as sports cycling can be broken down into road and track cycling. Additionally, the conditional probability of a participant answering weekly or daily for 'how often would you use the cycleway' given that they are a sports cyclist is 39.3% (or 11 out of 59 sports cyclists). This demonstrates to us that sports cyclists are most likely to use the cycleway more often than any of our other types of cyclists would for practice and training for their competitive races.

As we can see on the graph above, 66.7% of people would prefer to have water stations along the cycleway. Due to this question being multiple choice, participants also preferred to have bathroom stops at 60.4% of people and also rest areas at 54.4% of participants. In order for the NZTA to add such features within the cycleway, these options would come into the cost of producing the cycleway, which may up the price that would have to be paid. Although, this cost may be necessary to construct the cycleway, as these facilities seem quite crucial for those cyclists who would use the cycleway for leisure and recreational purposes, as these would be the type of cyclists who would be willing to stop if deemed necessary compared to the sports cyclists. Additionally, we can see that the two options of shelter and opportunities to purchase food were less popular choices, with 36.3% and 21.1% of participants choosing such options respectively. Shelter may not have



been seen as necessary to the leisure cyclists, as if it is raining on a day they are looking to cycle on, they would most probably decide against riding altogether instead of riding in shelter. Furthermore, if shelter was added to the cycleway, the natural aspects of cycling in the environment would be removed when using the cycleway and it would lose attractiveness. Also, adding a shelter could be a very costly process and would not be what NZTA would be looking at spending to produce a simple cycleway for the Horowhenua region. Quite like adding shelter, opportunities to purchase food would not have been seen as needed to both the leisure and sports cyclists. Making stops to eat while cycling would be unnecessary and unwanted to such cyclists, as their whole reason for cycling in the first place could possibly be to go out for a casual cycle for exercise or training for sports, meaning that they would not want to eat. Additionally, these cyclists would want to make as least stops as possible and being offered frequent stops may not be what they are looking for from a cycleway journey. Moreover, we also enabled participants to also enter in their own suggestions to gather other ideas and options for possible facilities. One great idea that was suggested was adding an air pump. An air pump would be very convenient to those who tyres of their bicycles had gone flat, giving them the opportunity to refill the air in their tyres. If this facility were to be added, it could be added alongside any possible water stations, giving cyclists another reason to stop if it is needed.

As we can see on the chart above, when people are given multiple choices, the majority of participants would prefer the cycleway to go through scenic views at 73.7%. This is a massive percentage which informs us that if possible, the cycleway should go through a path which can offer the best views of the natural environment. Additionally, we can build this into the next three highest options on this chart, as farmland/rural with 46.3%, iconic local locations with 34.4% and off-road with 25.9% can all be built into having views of natural aspects of the environment and can lead them to our iconic locations. In the Horowhenua region, our natural iconic locations include Lake Horowhenua and the Trig Walkway, which could be options of where our cycleways can detour to. The other two options of urban areas and main roads were less popular choices, with 18.5% and 14.1% respectively. This tells us that for various reasons, the people of the Horowhenua region who participated in this survey believed that having a cycleway which was either in urban areas or connected to the main road was insufficient for their needs. When looking at conditional probability in our data, we can see that 77.8% (or 14 out of 18) of our cyclists using the cycleway for commuting answered that they would prefer either urban areas or the main road, indicating to us that most of the people who would use the cycleway for

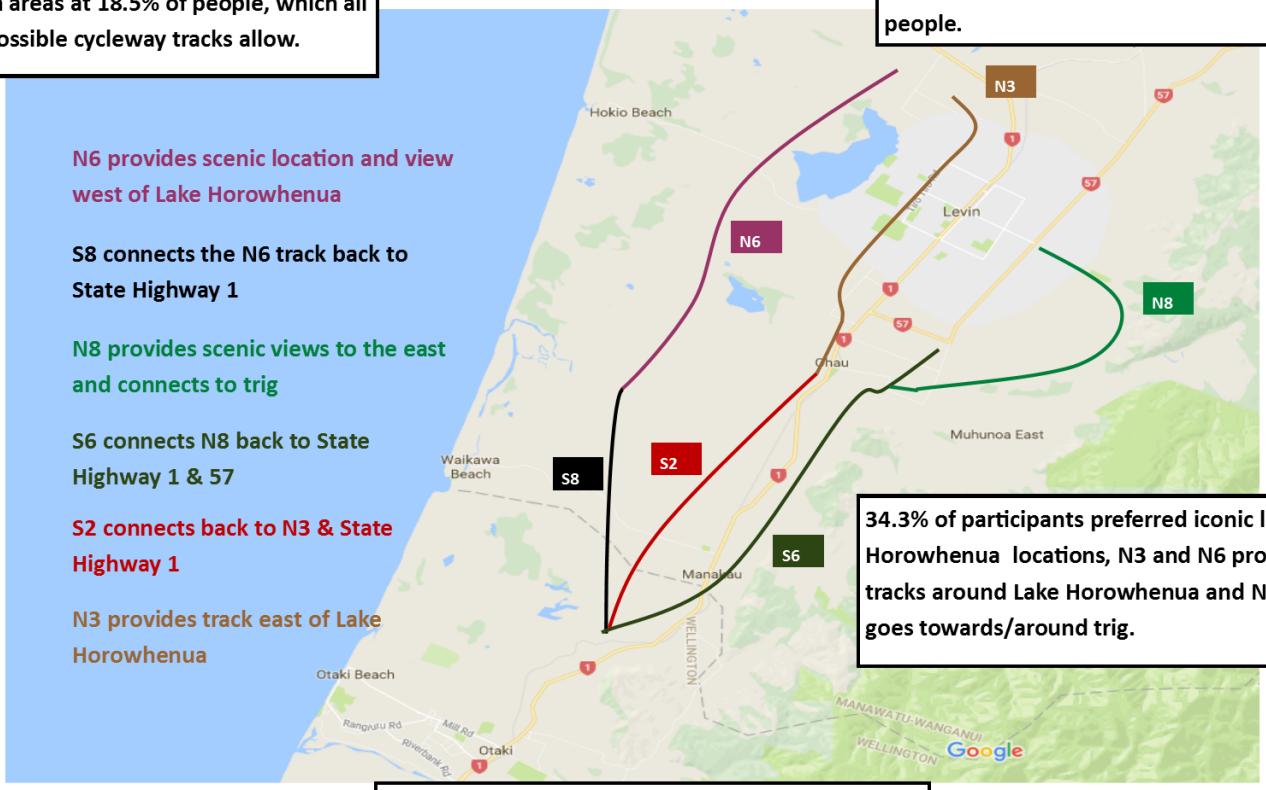


commuting would prefer an urban route or one connected to the main road. Furthermore, when looking at the ideas that people left in the other section of this question, some people suggested that they would prefer the route that is the shortest and most convenient. This would best suit the needs of the commuting cyclists (6.6% of the study), as they would prefer a track which would be the most direct and offer the shortest distance.

Possible cycleway positions in the Horowhenua Region

46.5% of participants preferred a track which went through rural areas compared to urban areas at 18.5% of people, which all of our possible cycleway tracks allow.

73.4% of participants preferred scenic views, all of the tracks will provide such for these people.



34.3% of participants preferred iconic local Horowhenua locations, N3 and N6 provide tracks around Lake Horowhenua and N8 goes towards/around trig.

14.1% of people preferred main road options, the S2 and N3 tracks come close to urban areas and main roads.

Conclusion

In order to cater to the needs of the majority of the population in the Horowhenua region, there is a variety of options for the cycleway based on the data we collected. As we can see on the annotated 'Possible cycleway positions in the Horowhenua Region' map, the N6 and S8 tracks provide a scenic location that leads to the west of Lake Horowhenua. Due to the 73.4% of people preferring scenic views, 34.3% of people preferring iconic local locations and 46.5% of people preferring a rural option, these tracks offer the best natural views on the western side of Horowhenua, goes directly past Lake Horowhenua and goes through rural areas. This option would suit the wants and needs for the majority of participants, as it is best suited for all types of cyclists, the reasons for why they cycle. However, to offer more options to those who disagree with this track placement, the N8 and S6 tracks on the eastern side of town also follows the same wants and needs for the majority of participants, as it goes through a rural path that offers scenic views and detours off to the Trig Walkway. This track is more suited for those leisure cyclists (58.3%), as it goes through a larger distance for the sake of being able to cycle for a larger time, although it would not be suited for those commuting cyclists (6.6%), as this track is a larger distance and is better suited for casual cycling. Due to 14.1% of people preferring main road options and 18.5% of people who prefer an urban track, there is the N3 and S2

track suited for the cyclists looking to use the cycleway for commuting, as it travels a shorter distance and is in a central location, better suited for travelling.

Evaluation

When evaluating this study, there are a few limitations I came across, the first of which is during the data collection process. When collecting data through Google Forms, we chose to add the 'other' option for a few questions so that we can add the suggestions of others into our reports. However, when doing such, the pie charts provided by Google's service added every 'other' option as a new point on the chart, making the chart show small slivers of every individual written in response. Although, overcoming such problem wasn't too difficult, as I decided to remake the charts in a new spreadsheet and was able to add such to my report instead, visually portraying my data accurately. There are still many positives when using Google Forms, as one of these is the simplistic matter of the program. Using Google enabled us to make and share our form in the easiest way possible online at no cost, which is best suited for this kind of survey that we needed for collecting our data. If we were to complete the entirety of our survey offline and on paper, we would have more problems with collecting in enough responses, we would have to manually graph our data ourselves and the overall process would take much more time than required.

A positive that I found while completing this study is the use of Google Sheets for conditional formatting/probability. When looking at all of our data in Sheets, I figured out that you are able to use conditional formatting to figure out the statistics of conditional probability, for example how many participants answered occasionally if they were a leisure cyclist and how many participants answered daily or weekly if they were a sports cyclist. Google made this process very easy to figure out and use when analysing my data and enhanced my discussion when comparing these values.

We can believe that the data we received from our survey was quite reliable. Our survey itself had simple questions that were well explained and could be answered by any age bracket. Additionally, the paper copies of the survey that were handed out in person entailed the exact same questions that were on the online version, meaning that any time that the survey would be answered, we would have the same questions and could easily enter these results into our online version for us to visually represent the entirety of the data.

Our survey had some problems when concerning validity. The range of data that we received from the general public was quite minimal, with only 270 responses collected compared to the population of Levin being 20,600 people. This demonstrates that our source of data was small and our survey was unable to reach a wide range of the local Horowhenua region's population, meaning that there were quite a few generalisations made which could not be accurate to the entire Horowhenua population for not having enough data come in. Although, time was quite constrained and we were forced to close the survey short in able to have a constant range of data while analysing. Due to our survey not becoming more popular, we had very limited results coming from the 0-13 age bracket, as we only had 8 out of the 270 responses come from this group. A possible

solution to this problem for the future is to have our survey shared over social media more efficiently. If this were to happen, we would have had a much larger range of our data. However, if we were to do this, there would be no limit on where in the world this survey could be answered from, meaning that our range of data could become very unreliable and we could have received responses from people who have never even travelled to the Horowhenua region. Due to such, it may not have been such a terrible thing that we only received a small range of data, as we know that all of our results have come locally from our region and is accurate to the wider population of Horowhenua.

Bibliography

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