

**GEOGRAPHY 309**

**RESEARCH METHODS IN  
GEOGRAPHY**

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**ASSIGNMENT 4**

**GROUP REPORT**

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<b>HAYDEN J. SLAUGHTER</b>	94544071
<b>TESSA L. MEYER</b>	59287516
<b>JOHANN S. KISSICK</b>	41530684
<b>LOUIS O. GO</b>	96383595
<b>SHUNSUKE . SAKAI</b>	43813302

# **Travel modes and expenditure patterns: A snapshot of South Colombo Street, Christchurch**

HAYDEN J. SLAUGHTER, TESSA L. MEYER, JOHANN S. KISSICK, LOUIS  
O. GO & SHUNSUKE . SAKAI

*University of Canterbury Geography Department, Christchurch, New Zealand*

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## **1. INTRODUCTION**

The Christchurch City Council (CCC) recognizes there is a unique opportunity to develop new transport networks following the Canterbury earthquakes, and there are many voices contributing to the wider debate about what form this restructuring may take. Many plans are underway, such as the Christchurch Transport Strategic Plan (2012) that states the investment in safe cycling is a priority for the city and offers guides on how to achieve this vision. Despite this, there is very little understanding of how this may effect local economic patterns, and this lack of understanding often leads business owners to be special about introducing ‘mixed-mode’ transport infrastructures in their locality. Christchurch, as a 21<sup>st</sup> century city, has been built to accommodate the automobile, and the belief that automobile access to retail areas is crucial for economic sustainability is widespread. However, a growing body of literature argues that having mixed-mode urban centres can create healthy and economically prosperous cities.

This study focuses on the urban suburb of Beckenham, where Colombo Street extends beyond the Central Business District (CBD) and through the suburbs retail core. This section makes up South Colombo Street and ends in



Additionally, a number of studies focus on the impacts cyclists make

Questionnaires were the most popular method of gathering data with several types being utilised. In New York, survey forms were distributed to individuals in an area defined by zip codes that within a given time frame (Transportation



Colombo Street, south of Milton Street to survey. These sites were (1) Countdown Sydenham - a major supermarket in the area, (2) Coffee Culture - a popular café in Beckenham's retail core, and (3) Taste @ Twenty - a café and small grocer in a residential area further down the street. These locations were chosen as they were observed to be busy and were spread fairly evenly across the survey area. Furthermore, although broadly relating to food and drink, the supermarket sells goods that would have to be carried off site, whereas food is often consumed onsite at the café's. Variation in the shopping environment was important to include.

Data was collected between 4 p.m. and 6 p.m. on Monday 8<sup>th</sup> and Tuesday 9<sup>th</sup> September, 2015. Because of the small sample size, we controlled for weather by limiting our data collection to favourable days. The timeframe was chosen because it corresponded with the conventional 'peak-hour' for weekday traffic, and it was hoped the respondents would be broadly representative of the wider population. The survey was administered via convenience sampling. Like existing studies of this type (Clifton *et al*, 2013), this method is appropriate for gaining a sufficient sample of the population at hand and is most resource and time efficient. Respondents were intercepted on their way in or out of the establishment and were asked to complete a two sided questionnaire. A copy of the questionnaire can be found in *Appendix A*.

To address the research question, questions related to the individuals travel choice (that day and on average), what they spent, where this money was spent, and how often they visited the area on average. Supplementary information was also gained such as approximate home location, age, occupation, and their reasons for choosing their travel mode on that day. The questionnaire sought to obtain a snapshot of travel and expenditure patterns on that day, and, for the purpose of calculating averages, these were assumed to be the norm for these respondents. Central to this investigation was extrapolating average expenditure per visit to the average expenditure over a month long period. These calculations were made based on the equation below.



## Expected expenditure per month

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Prior to this calculation, the respondents were categorized based on the mode they travel. 'Spending money each trip' was then separated into the maximum and minimum values for the category in which it was selected (see question 7 in *Appendix A*). A mean expenditure was then derived, and multiplied by the 'frequency of visits per month' made by each individual (see question 6 in *Appendix A*). The resulting values are presented in *Table 11.6*.

#### **4. RESULTS & ANALYSIS**

In this section, the data is analysed and presented to understand the relationship between mode share and expenditure. The results that follow show the spatial distribution patterns, expenditure patterns, and trip frequency of respondents. Throughout, this information is related to mode share and the variation of the above results is compared between survey locations. The analysis draws on the most important data obtained from the survey and are presented as averages. The first set of figures relate to mode-share, expenditure and frequency of visits, while the second set of figures relates to the broader travelling patterns of respondents.

##### **Mode-Share Patterns**



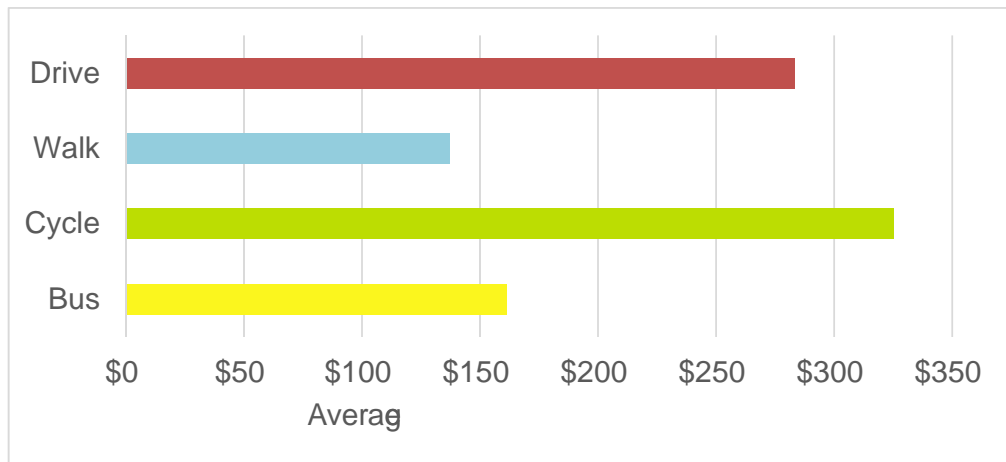
It is important to understand the mode-share patterns for each individual survey location, as well as the mode-share of the whole area. In understanding this further, it is useful to reflect on relevant New Zealand literature. Looking at the New Zealand Transport Survey (NZTS) (Ministry of Transport, 2015)(b) states that average cycling mode-share in Christchurch is around 3%. However, Cycling Action Auckland (2014) indicate, in relation to the 2013 New Zealand census, that cycling mode share in the Beckenham area is actually around 16%. Adjacent suburbs are also high, some around 10%. This supports the 7% cycling mode-share found in this study, and indicates this area has a mature cycling culture, when compared to the New Zealand average of around 1% (Ministry of Transport, 2015)(b). The findings in the research also mirror data found by NZTS, where around half of all trips in New Zealand are made by people driving cars, and 79% are made by both drivers and passengers of cars (Ministry of Transport, 2015)(a). In our survey we did not distinguish between drivers and passengers, but our results support this kind of mode-share distribution. It is important to note, this survey only accounts for individuals who shop in the area, rather than all individuals passing through as the New Zealand statistics account for.

Finally, understanding the nature of the establishments, studied supports the dissimilar results observed at each location. Supermarket shopping tends to be focused on purchasing large quantities of perishable goods. For this reason, this is easiest to transport in an automobile. In comparison, goods purchased at both cafés are usually consumed on site. Transport of goods does not dictate travel choices, as is evident with an even proportion of people employing non-automobile transport at these locations. Again, convenience remained a common consideration for patrons, however this related the distance they travelled (in *Table 1*). Logically, distance determines what is ‘convenient’.

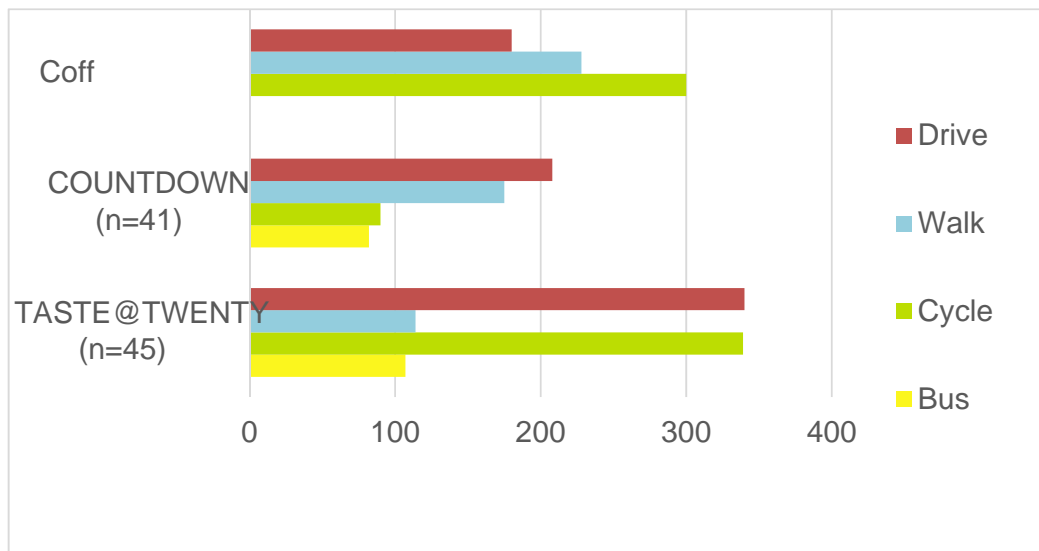
### **Expenditure Patterns**

*Figure 3* shows the average expenditure of o

one month. Cyclists have the greatest expenditure per month at \$325, followed by drivers spending \$283, bus users spend \$161 and walkers spend \$137. Again, breaking this same information into the three locations yields varying results as shown in *figure 4*. At Coffee Culture, cyclists have the greatest expenditure at approximately \$300 per month, followed by walkers and drivers who spend close to \$200 per month. At Taste @ Twenty, cyclists and drivers spend the greatest amount (over \$300 each) followed by walkers and bus users who spend just over \$100.



3 Total average expenditure of survey respondents per mode of transport, per month.



4 Total average expenditure of survey respondents per mode and survey location, per month.

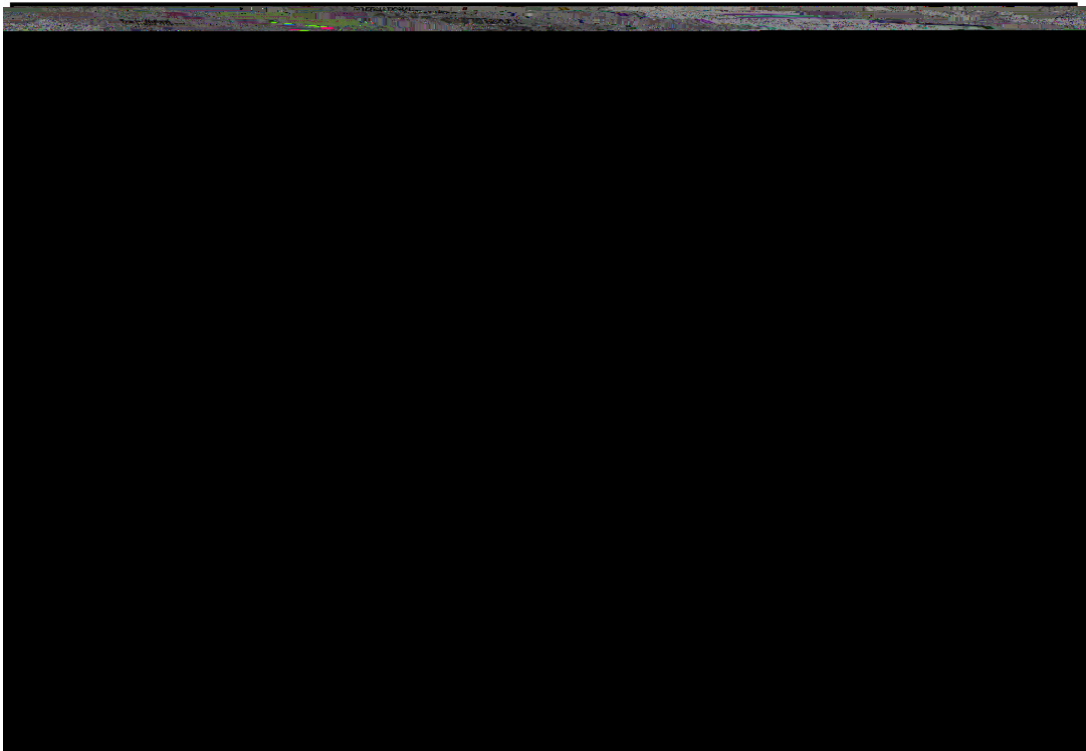
Comparatively, at Countdown, drivers have the highest expenditure per month, being \$200, followed by those walking with \$180, and those cycling and bussing with below \$100 spent per month.

The findings shown in *Figures 3 and 4* allow conclusions to be made

drive who contribute the most retail dollars. The practical application of these findings will be further discussed.

### **Spatial Patterns**

*Figure 5* shows the spatial variation of survey respondents in greater Christchurch. Each point represents a respondent's approximate home location, and the variation in colour represents different transport modes. The shaded areas overlain on the map show the travel mode respondents were expected to employ based on the distance they travelled. This was drawn from the work of Smith et al, (2011) and are two kilometre, five kilometre and 10 kilometres. *Figure 6* simply shows the mode-share observed within the two kilometre five kilometre threshold in percentage bar graphs. Within the former, walking and driving take up the greatest proportion of mode share, being 39% and 42% respectively, however beyond two kilometres it is observed that the majority of patrons drive, making up 73.9% of the mode-share.



5 Spatial distributing of survey respondents home location, and estimated average travel distance buffers.

Finally, *table 1* draws on this travel distance information but enhances



The information shown in *figure 5* is useful in acknowledging the spread of the gathered data, and how the travel patterns represented in this research relate to that found in releva



A further limitation of our study is the restricted time period in which it was completed. This affected the scope of our research and the validity of its results. Obtaining field data was affected by bad weather during the study

## **6. CONCLUSION**

The study provides evidence that suggests consumers who access shops via non-automobile modes are valuable patrons for local businesses in Colombo Street, south of Milton Street. In the final analysis of the data, it appears non-automobile users make more frequent trips than those who drive resulting in a higher average expenditure over the course of a month. These findings challenge the perception that accommodating automobiles is vital for economic prosperity, and it contributes to a wider debate about urban transport infrastructure and its relationship to consumer behaviour. In isolation, the results from this study are encouraging for businesses in the area, but a more detailed analysis of broader travel and expenditure patterns would be essential if this study were to have practical application in Christchurch. Future research is needed to account for the spatial and temporal variation that was beyond the scope of this research snapshot, but alone it does serve as an interesting case-study.

### **Acknowledgements**

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## 7. REFERENCES

Christchurch City Council. (2013). *Christchurch Cycle Design Guidelines*.

Christchurch: Christchurch City Council.

Clifton, K., Currans, K. M., Muhs, C. D., Ritter, C., Morrissey, S., & Roughton, C.

(2013). Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians. *92nd Annual Meeting of the Transportation*

*Research Board*, (p. 22). Washington, DC.

Cycling Action Auckland. (2014, September 3). *The Rise of Cycling in*

*Christchurch*. Retrieved October 5, 2015, from Cycling Action



## Appendix A