Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

Activating the City

Exploring the Application of Best Practice Active Living in Dunedin

A thesis submitted in partial fulfilment of the degree of Master of Resource and Environmental Planning, Massey University, Manawatu, New Zealand.

Cody Davidson

December 15th 2012

Abstract

The built environment has been pinpointed as a significant influencing factor in determining choice of travel to work. Characteristics of the built environment can either hinder or enhance opportunities for active living. Current low active living mode shares within New Zealand and the health problems associated with a sedentary population has resulted in research into interventions to reverse vehicle dominated transport systems. This research investigates the influence of the built environment on active living through comparing provisions for active living in Dunedin's statutory and non-statutory planning documents with international best practice cities. Key Informant interviews expand on the findings of this document analysis. A literature review details five characteristics of the built environment that are common across those cities, and describes methods that are used to improve active transport rates, thus encouraging active living.

This research concludes that current provisions within the Dunedin planning framework with respect to active living are positive and encouraging. However several changes could help the city improve its active travel mode share rates to levels seen in international best practice cities. In particular, walking and cycling infrastructure requirements for new developments and filling in missing connections in the walking and cycling network are two possible changes to the Dunedin planning framework to achieve better active living mode share rates. The research concludes by providing recommendations for changes to the Dunedin planning framework with respect to the five built environment characteristics. Dunedin is well poised to become a successful active living city and through recommended changes to the planning framework, the city could develop comparable active living mode share rates to successful international best practice cities.

Acknowledgements
I would like to thank all who have assisted me throughout this research and particularly to my partner who has been especially supportive

Table of Contents

	Page
Abstract	ii
Acknowledgements	
Table of Contents	iv
List of Tables	vii
List of Figures	vii
List of Boxes	ix
Chapter One: Introduction	1
1.1 Context	1
1.2 Understanding the Issue	3
1.3 Research Aims	5
Chapter Two: Literature Review	6
2.1 Introduction	6
2.2 Active Living	7
2.2.1 Definition of Active Living	7
2.2.2 Benefits of Active Living	8
2.2.2.1 Health Benefits	8
2.2.2.2 Economic Benefits	9
2.2.2.3 Social Benefits	11
2.2.2.4 Summary of Benefits of Active Living	13
2.3 Characteristics of Environments which Promote Active Living	13
2.3.1 Transport Infrastructure	14
2.3.1.1 Case Study: Copenhagen, Denmark	16
2.3.2 Connectivity/Accessibility	19
2.3.2.1 Case Study: Portland, Oregon	22
2.3.3 Funding	24
2.3.3.1 Case Study: Jackson, Michigan	26
2.3.4 Urban Design	29

2.3.4.1 Case Study: Chippendale, Sydney	30
2.3.5 Land Use Mix	31
2.3.5.1 Case Study: Sandnes, Norway	32
2.4 Summary of Built Environment Characteristics	34
2.5 Conclusion to Literature Review	35
Chapter Three: Background	
3.1 Introduction	36
3.2 Active Living in New Zealand	36
3.2.1 Summary of Active Living in New Zealand	41
3.3 Active Living in Dunedin	41
3.3.1 Summary of Active Living in Dunedin	42
3.4 Background Summary	43
Chapter Four: Methodology	
4.1 Introduction	44
4.2 Characteristics of Active Living Planning	44
4.3 Research Design and Methods	45
4.3.1 Document Analysis	46
4.3.1.1 District Plan	47
4.3.1.2 Long Term Plan	48
4.3.1.3 Dunedin Cycling Strategy	48
4.3.1.4 Transportation Strategy	48
4.3.1.5 Physical Activity Strategy	49
4.3.1.6 Tertiary Precinct Development Plan	49
4.3.2 Key Informant Interviews	49
4.3.3 Data Analysis Procedures	50
4.4 Ethics	51
4.5 Validity and Limitations	51
4.6 Conclusion to Methodology	52
Chanter Five: Results and Discussion	53

	5.1 Introduction	53
	5.2 Characteristics	53
	5.2.1 Transport Infrastructure	53
	5.2.2 Connectivity/Accessibility	57
	5.2.3 Funding	60
	5.2.4 Urban Design	63
	5.2.5 Land Use Mix	65
5.3 Methods		66
	5.3.1 Education and Promotion	67
	5.3.2 Consultation and Collaboration	68
	5.3.3 Monitoring	71
	5.3.4 Evidence-based Planning	72
	5.3.5 Integration	73
	5.4 Recommendations	74
	5.5 Conclusions to Results and Discussions	77
Chapter Six: Conclusions		78
References		80
Appendix One		94
Appendix Two		95

List of Tables

Table 1	New Zealand health statistics
Table 2	Walking and cycling mode shares across New Zealand cities
Table 3	Best practice characteristics and methods
Table 4	Dunedin planning framework documents used for analysis and interviews
Table 5	List of Key Informants
Table 6	Infrastructure provisions from plans and strategies
Table 7	Connectivity/accessibility provisions from plans and strategies
Table 8	Key Informant responses to question on funding
Table 9	Key Informant viewpoints on consultation and collaboration
Table 10	Recommendations drawn from results and discussion

List of Figures

Figure 1	Copenhagen's transport mode share per kilometres travelled
Figure 2	Copenhagen's overall transport mode share
Figure 3	Grid street pattern compared to cul-de-sac pattern
Figure 4	Concept plan for Damascus, Portland
Figure 5	Trend in mode share of walking and cycling in New Zealand over 22 years
Figure 6	Percentage share of total travel time per mode in New Zealand
Figure 7	Visual representation of recommended changes to planning framework

List of Boxes

Вох 1	Proposed infrastructure provisions in Copenhagen
Box 2	Strategies and methods from Sandnes Municipal Plan
Вох 3	Characteristics and methods underlying best practice active living