

**Whose *place* is it?  
Examining the socio-spatial geography  
of obesity in young adults for an  
Australian context**

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## ABSTRACT

This thesis was written in a climate of rising obesity rates within our population. In recent times, an inundation of media, marketing and health stories have focused on the „increasing waistlines“ of both adults and children. The research aligns itself with the „geographies of health“ perspective, utilising knowledge from geography, sociology, epidemiology and population health. Extensive literature has shown that those living in the developed world, who are locationally and socially disadvantaged, are more likely to experience the highest prevalence of obesity. This thesis contributes to a broader knowledge base on how socio-spatial factors impose barriers to achieving and maintaining a healthy weight within a young adult cohort (18 to 34 years).

The research design consists of both theory and data triangulation. The theoretical underpinning utilises Giddens' *Theory of Structuration* exploring the structure and agency debate along with a number of geographical theories on space and place. The overarching socio-spatial conceptual framework for the research captures four main theme areas; the social environment, socio-cultural factors, residential perceptions of local areas, and lay perceptions of weight status and health in the context of place. Data were obtained from a biomedical and socio-demographic cohort study (n=4056), the North West Adelaide Health Study (NWAHS) and longitudinal survey information from the South Australian Health Omnibus Survey (SA HOS) between 1994 and 2004. A follow-up telephone interview to NWAHS participants (n=2996) provides additional unique primary data around social environments, housing, residential migration, lifecourse and perceptions of health. Additionally, semi-structured interviews were undertaken with young women from the NWAHS cohort which addressed socio-demographic, geographical and lifecourse themes. Other secondary social environmental data were utilised on accessibility to services, Australian Bureau of Statistics (ABS) Population and Housing Censuses and property valuations data providing additional insight into the complexities of the macro or global level influences.

The thesis discusses the themes from the socio-spatial framework highlighting the social, cultural, historical and geographical aspects that are important for understanding the current increasing prevalence of obesity within young adults. The findings highlight the importance of space and place when thinking about health. Obesity is a complex and multifaceted issue and there is the need for contemporary research methodologies to guide future policy development and interventions.

# DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Natasha Jayne Howard and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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**Howard, N.J.**, Taylor, A.W., Gill, T.K. and Chittleborough, C.R. 2008, „Severe Obesity: Investigating the sociodemographics within the extremes of body mass index“, *Obesity Research and Clinical Practice*, vol. 2, no.1, pp. 51-59.

**Howard, N.J.**, Hugo, G.J., Taylor, A.W. and Wilson, D.H. 2008, „Our perception of weight: socioeconomic and sociocultural explanations“, *Obesity Research and Clinical Practice*, vol. 2, no.2, pp. 125-131.

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Date

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Over time I have learnt from many good friends and colleagues and the journey of the PhD is certainly much more than what is contained within these pages. I am extremely grateful to a number of wonderful friends. In particular, Donna Sundberg and Kate White who have been there from the beginning of the PhD and encouraged me through it all. Katherine Baldock who was a great support to me professionally and personally, and I am glad that we get to work together again in this research area. Dr Julie Franzon who was a great friend to have on the journey and I loved our travels and discussions along the way and Dr Kelly Parker who was an amazing friend to share this experience with and I think over the years we have deliberated every aspect of our work and life. I am glad that this experience has introduced some tremendous people into my life.

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*Thank you lastly to my family, Mum, Dad, James and Sara.  
For your love and belief in me always.*



## THE NOBLE STUDY

This research was a component of the overarching Nutrition Obesity Lifestyle and Environment (NOBLE) study, an Australian Research Council (ARC) linkage project (LP0455737), 2005-2009. The South Australian Government Department of Health was the major industry linkage partner and the primary aim of the relationship was to use population research intelligence to inform effective policy and interventions surrounding obesity. Other study collaborators included the Children, Youth and Women's Health Service (CYWHS), Central Northern Adelaide Health Service (CNAHS), Australian Commonwealth Scientific and Research Organisation (CSIRO), The National Centre for Social Applications of Geographic Information Systems (GISCA), The University of Adelaide and the University of South Australia (UniSA).

The CYWHS contributed a population level, measured data set of four-year old children within South Australia. There were also other social and physical environmental data sources made available through research partners, such as, accessibility, transport, education, health services and property capital valuations. A partnership existed to explore the use of the Australian Bureau of Statistics (ABS) Population and Housing Censuses and other social surveys.

The NOBLE study worked within the areas of psychology, medicine, public health, geography and economics to explore the many aspects of the obesity epidemic. Further research was recognised as a necessity to improve understanding into the social, economic, environmental and biomedical processes related to obesity. This thesis will specifically address NOBLE study aims associated with the socioeconomic factors relating to obesity and the environment (Hugo *et al.*, 2004:68).

### Chief Investigators

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## ABBREVIATIONS

ABS	Australian Bureau of Statistics
ABS NHS	Australian Bureau of Statistics National Health Survey
AIHW	Australian Institute of Health and Welfare
ADPT	Australasian Digital Theses Program
ARC	Australian Research Council
ARIA	Accessibility and Remoteness Index of Australia
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ASGC	Australian Standard Geographical Classification
ATSI	Aboriginal and Torres Strait Islander
BMI	Body Mass Index
BRFSS	Behavioural Risk Factor Surveillance System
CATI	Computer Assisted Telephone Interview
CBD	Central Business District
CD	Collection District
CDC	Centers for Disease Control
CNAHS	Central Northern Adelaide Health Service (South Australian Government)
COPD	Chronic Obstructive Pulmonary Disease
CSIRO	Australian Commonwealth Scientific and Research Organisation
CYWHS	Children, Youth and Women's Health Service (South Australian Government)
DCDB	Digital Cadastral Database
DEH	Department of Environment and Heritage
DEXA	Dual Electronic X-Ray Absorption
DoHA	Department of Health and Ageing (Commonwealth of Australia)
ERP	Estimated Residential Population
EWP	Electronic White Pages
GIS	Geographic Information Systems
GISCA	The National Centre for Social Applications of Geographic Information Systems
GLM	Generalised Linear Modelling
GMH	General Motors Holden
GWR	Geographically Weighted Regression
HiAP	Health in All Policies
IMVS	Institute of Medical and Veterinary Science
IRSD	Index of Relative Socioeconomic Disadvantage
KFC	Kentucky Fried Chicken
LGA	Local Government Area
LMH	Lyell McEwin Hospital
MAUP	Modifiable Area Unit Problem
Metro ARIA	Metropolitan Accessibility and Remoteness Index of Australia
NHANES	National Health And Nutritional Examination Survey (United States)
NHIS	National Health Institute Survey (United States)
NOBLE	Nutrition Obesity Lifestyle and Environment Study
NWAHS	North West Adelaide Health Study

OCSAR	Office of Crime Statistics and Research (South Australian Government)
OECD	Organisation for Economic Co-operation and Development
OR	Odds Ratio
PROS	Population Research and Outcome Studies Unit (SA Health)
RAAF	Royal Australian Air Force
SA	South Australia
SACC	Standard Australian Classification of Countries
SA HOS	South Australian Health Omnibus Survey
SAHT	South Australian Housing Trust
SAMSS	South Australian Monitoring and Surveillance System
SASP	South Australian Strategic Plan
SaTScan™	Software for the spatial, temporal, and space time statistics
SEIFA IRSD	Socio Economic Indexes for Areas, Index of Relative Socioeconomic Disadvantage
SES	Socio Economic Status
SF-1	Short Form-1
SLA	Statistical Local Area
TAFE	Technical and Further Education
TFU	Telephone Follow-Up
TATS	Torrens Automated Titles System
TQEH	The Queen Elizabeth Hospital
UniSA	University of South Australia
UK	United Kingdom
US	United States
WHO	World Health Organisation
WHR	Waist-to-Hip Ratio



## PUBLICATIONS AND PRESENTATIONS

The following peer reviewed publications, conference presentations, posters resulted from work described in this thesis.

### PEER-REVIEWED PUBLICATIONS

Adams, R.J., **Howard, N.**, Tucker, G., Appleton, S., Taylor, A.W., Chittleborough, C., Gill, T., Ruffin, R.E. and Wilson, D.H. 2009, „Effects of area deprivation on health risks and outcomes: a multi-level, cross-sectional, Australian population study“, *International Journal of Public Health*, vol. 54, pp. 1-10.

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**Howard, N.J.**, Hugo, G.J., Taylor, A.W. and Wilson, D.H. 2008, „Our perception of weight: socioeconomic and sociocultural explanations“, *Obesity Research and Clinical Practice*, vol. 2 no.2, pp. 125-131.

### PRESENTATIONS

**Howard, N.** 2007, *Investigating spatial dimensions of obesity in South Australia*. ARCNRSS Summer School, Brisbane, February 11-21 2007.

**Howard, N.** 2007, *Geographies of Obesity: The social environment and the young adult cohort*. NOBLE Conference “The Shape of Things to Come”, NOBLE Conference, Adelaide Town Hall, 5 November 2007.

**Howard, N.** and Franzon, J. 2006, *Space, Place and Health: Small area analysis of Obesity*. Space, Place and Health: Geographical Approaches to Public Health Short Course, Flinders University, 7-11 August 2006.

**Howard, N.**, Wilson, D., Taylor, A., Hugo, G. and The North West Adelaide Health Study Team. 2006, *Investigating spatial relationships and obesity: What role does area and individual level disadvantage play within the north-west region of Adelaide, South Australia*. International Congress of Obesity (ICO), Poster Presentation, Sydney, 3-8 September 2006.

**Howard, N.**, Hugo, G., Wilson, D., Taylor, A. and The North West Adelaide Health Study Team. 2006, *Individual health or area-level health effects: Investigating the socio-spatial aspects of obesity within the north west region of Adelaide, South Australia*. GeoHealth Conference, Nelson, New Zealand, November 27-30 2006.

**Howard, N.**, Hugo, G., Wilson, D., Taylor, A. and The North West Adelaide Health Study Team. 2006, “*Is my neighbourhood making me sick?: a spatial investigation into obesity and inequalities in the north-west region of Adelaide*”. Australian Population Association Population, Poster Presentation, 6-8 December 2006.

**Howard, N.J.**, Taylor, A.W., Dal Grande, E., Gill, T.K. and Carter, P. 2005, *Trends Analysis of Body Mass Index in South Australia 1994-2004: Does Socioeconomic Status make a difference?* Australasian Society for the Study of Obesity (ASSO), Adelaide, 28-30 October 2005.

**Howard, N.**, Grant, J., Montgomerie, A., Taylor, A.W. and the North West Adelaide Health Study Team. *Using a Tape Measure to Examine Chronic Disease and Risk Factors: The North West Adelaide Health Study*. Australasian Society for the Study of Obesity (ASSO), Poster Presentation, Adelaide, 28-30 October 2005.

Hugo G.J., Lienert (Franzon) J., and **Howard N.** 2005. Child Obesity in South Australia: Some Initial Findings. Presentation to Healthy Development Adelaide Thematic Evening on Obesity and Life Style, Union House, University of Adelaide, 4 August.