



# Measurement issues in evaluating the impact of a government-subdivision policy on walking: Preliminary results from RESIDE

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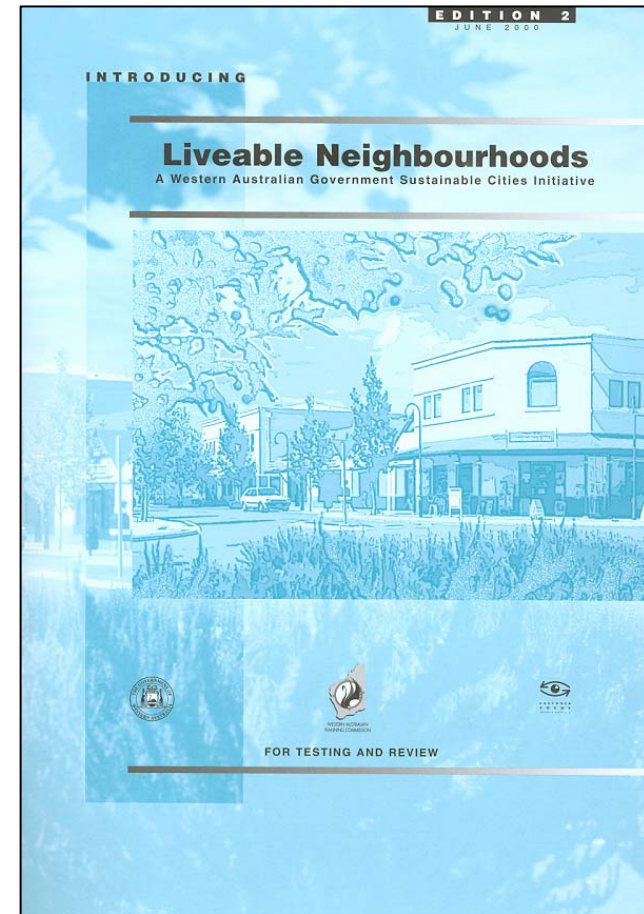
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# Background

- Liveable Neighbourhood Guidelines
- The guidelines incorporate 6 design elements:
  - ◆ Community Design
  - ◆ Movement Network
  - ◆ Lot Layout
  - ◆ Public Parkland
  - ◆ Urban Water Management
  - ◆ Utilities



# Aims of RESIDential Environments Project (RESIDE)

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- To evaluate the impact of the “Liveable Neighbourhood” Guidelines on walking, cycling, public transport use and sense of community in neighbourhoods designed according to these principles.
- To study self-selection



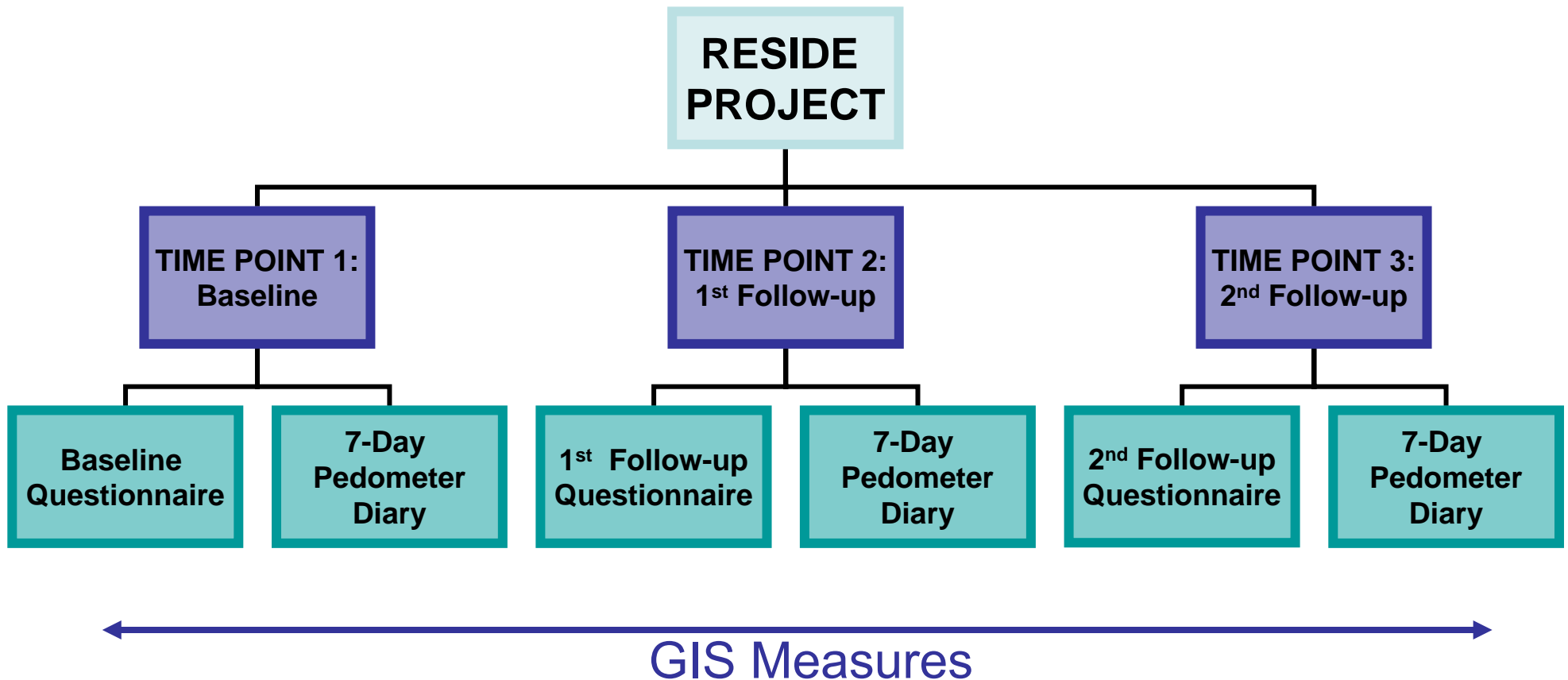
# RESIDE study design

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- 5 year longitudinal study commenced in 2003
- 4 phases of postal and telephone recruitment
  - ◆ ~33% response rate
- Study Participants
  - ◆ 1813 people building new homes 74 new developments
    - 18 Liveable developments (n=538)
    - 11 hybrid developments (n=358)
    - 45 conventional developments (n=917)



# RESIDE Study Design



# Methodological issues for RESIDE

- Evaluation of subdivision design policy
  - ◆ Differentiate between
    - walking and cycling undertaken in neighborhood
    - recreational and transport-related behavior
- Longitudinal design
  - ◆ Required stable measure that could behavior change: last 7 days vs usual behavior
- At what level should we measure the ‘neighborhood’?
  - ◆ Correspondence between behavioral and environmental measures (Giles-Corti et al. ESSR 2005: 34(4):175-181)
  - ◆ How important is scale of ‘neighborhood’?



# Aim of presentation

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- Explore how much walking undertaken within and outside the neighborhood
- Examine the impact of neighborhood 'scale' on the association between a neighborhood walkability index and different types of walking



# Measures

- Behavioral: Neighborhood Physical Activity Questionnaire (NPAQ)
  - Based on IPAQ (usual week) but differentiates between
    - recreational and transport walking *within* and *outside* neighborhood
  - ‘Neighborhood’ defined as 15 minutes from home
  - Excellent reliability (i.e., ICC  $\geq 0.90$ ) walking inside neighborhood
- Environmental: Walkability index (Frank et al) developed at three levels: Suburb, CCD and 15 minute walk from home (developed by Vince Learnihan: Principal Supervisor: Kimberly Van Niel).





# Baseline demographic characteristics

<b>Characteristic</b>	<b>Total</b>	<b>Housing development differences at baseline: p value</b>
% Male	40.5	0.880
Age (Mean (SD))	40.0 (11.9)	0.699
% Married	81.4	0.185
% Children at home	66.9	0.356
% Work outside home	81.6	0.385
% Tertiary Educated	23.1	0.120



# Usual walking behavior by location (%)

Walking by location	Total	Housing development differences at baseline: p value
<b>In neighborhood</b>		
Walk for recreation	52.6	0.210
Walk for transport	36.1	0.547
<b>Outside neighborhood</b>		
Walk for recreation	17.7	0.344
Walk for transport	13.2	0.324

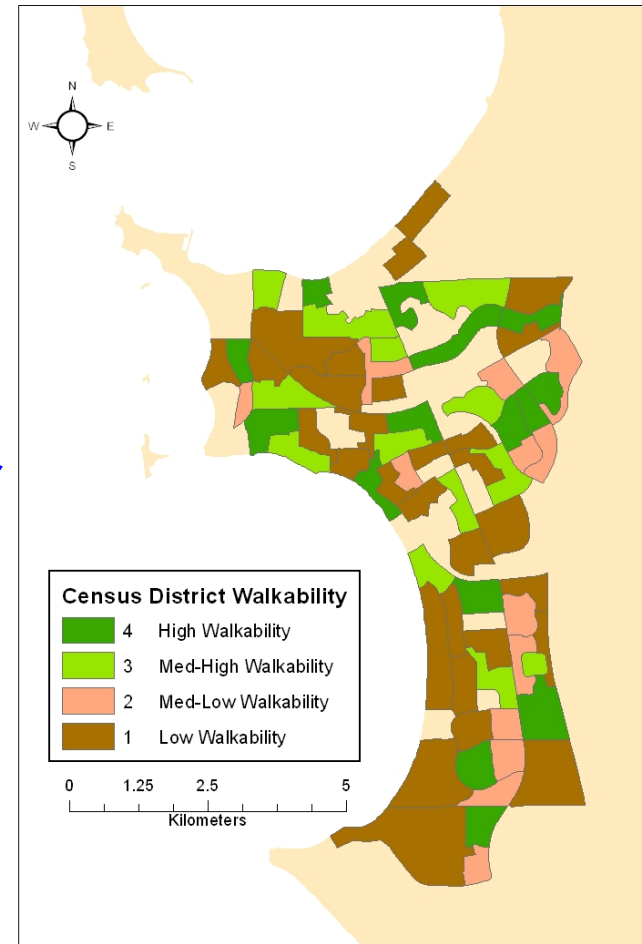
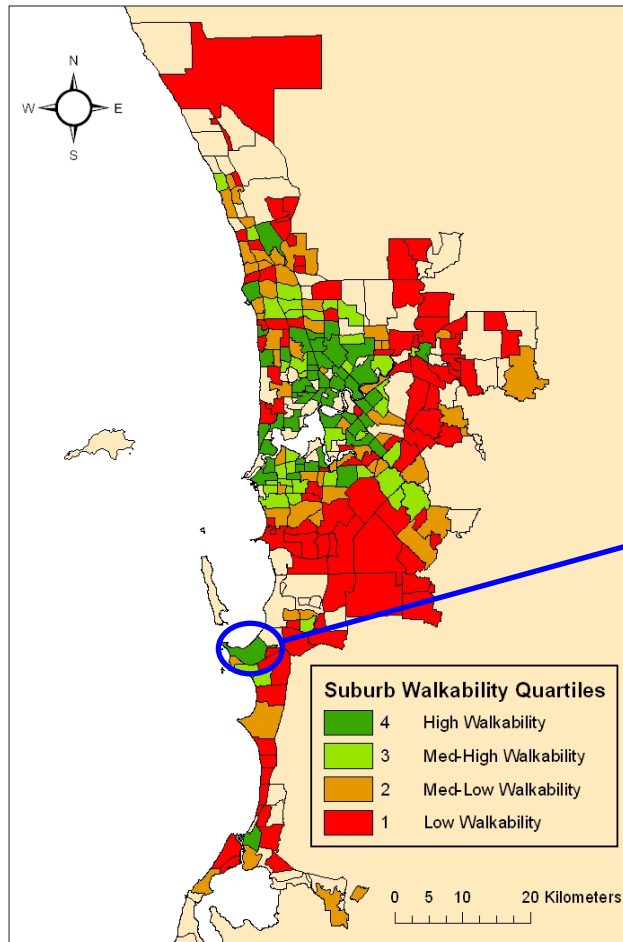


# Minutes of walking (average/week)

Walking by location	Minutes/per week	% of total
<b>Total walking</b>	128	100
<b>In neighborhood</b>		
Walk for recreation	67	52.3
Walk for transport	26	20.3
<b>Outside neighborhood</b>	35	<b>27.3</b>

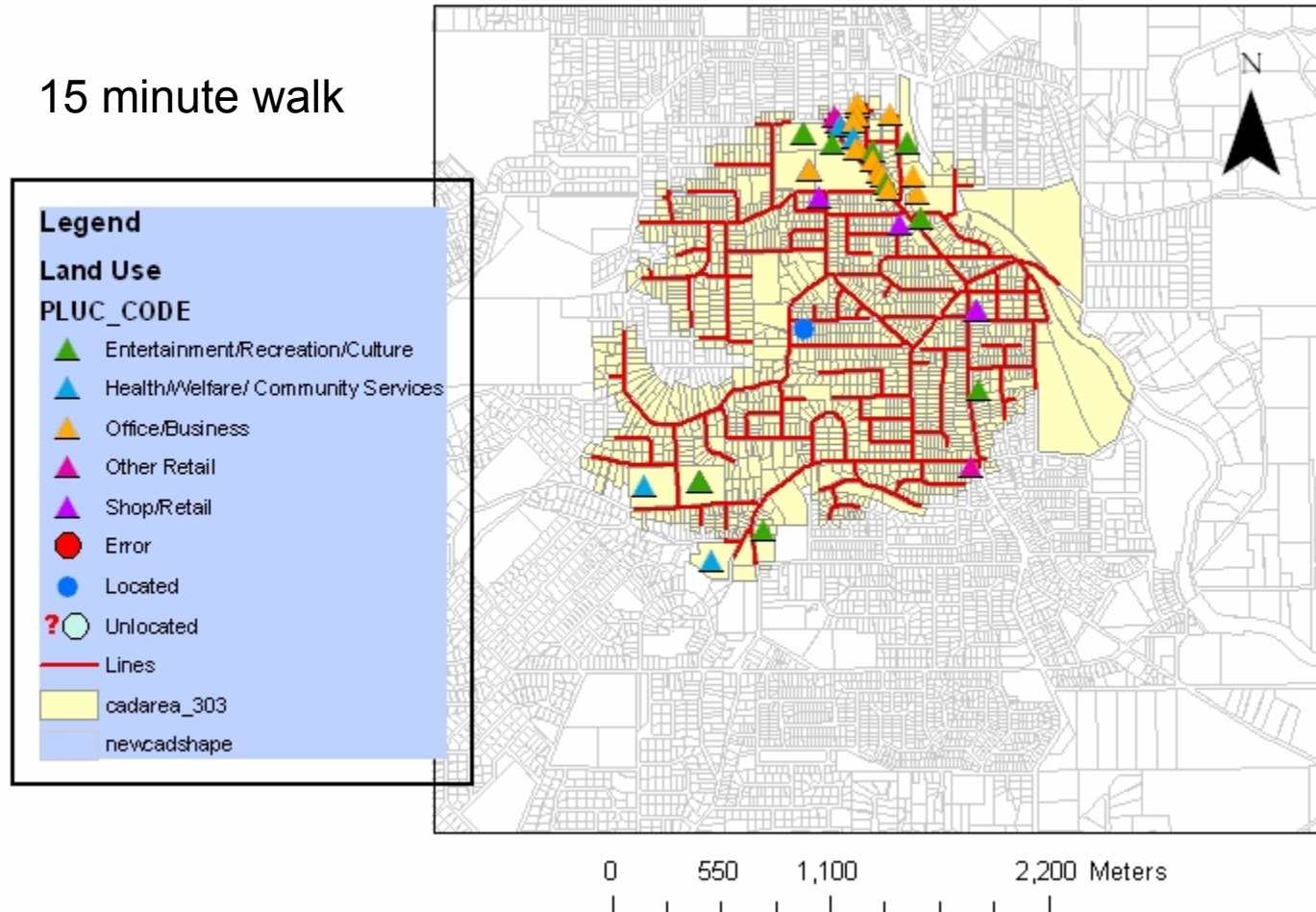


# Walkability at different scales (Learnihan, 2007)



# Walkability at different scales (Learnihan, 2007)

15 minute walk



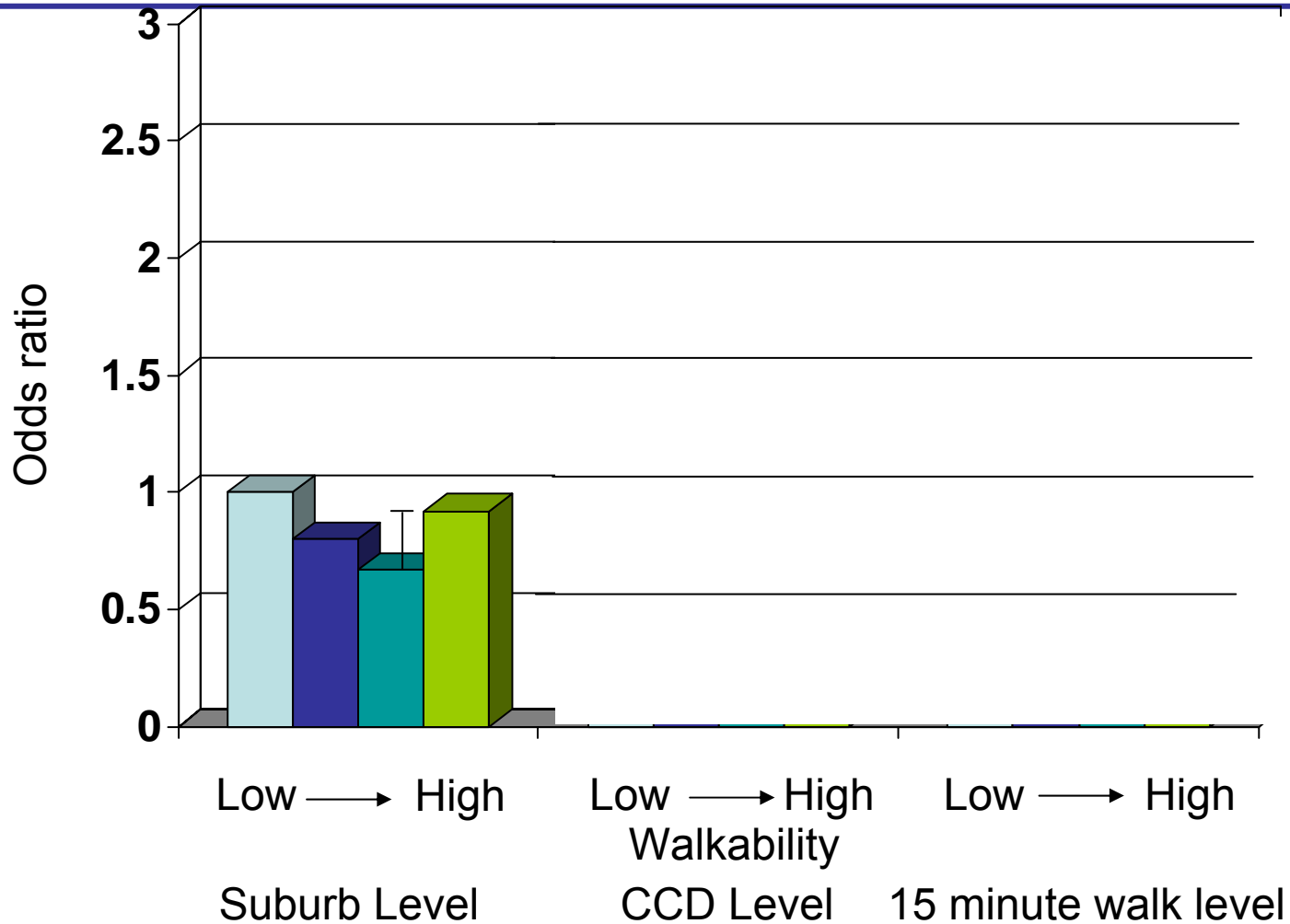
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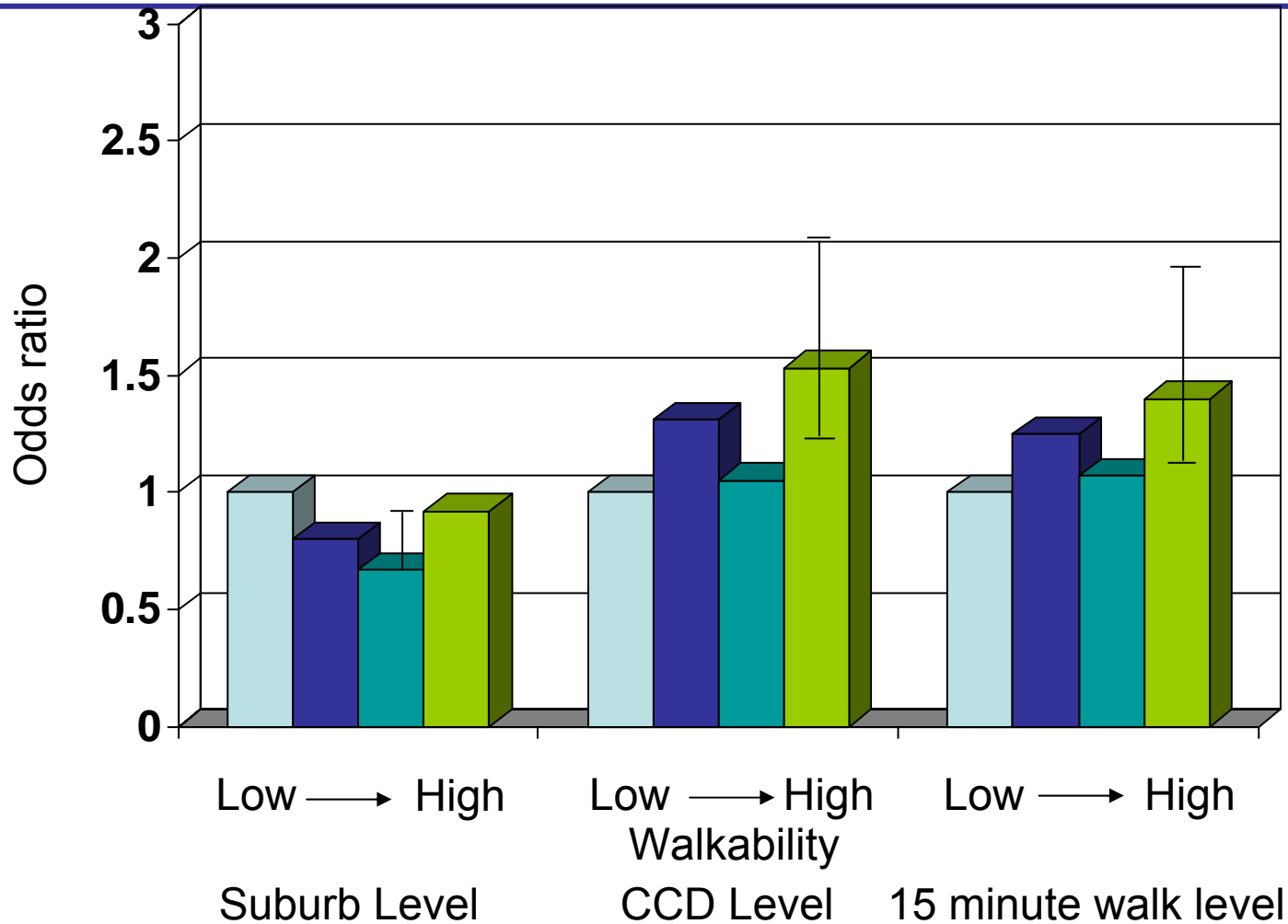
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# Walking in neighborhood by quartiles of neighborhood walkability at suburb, CCD and 15 minute walk scale



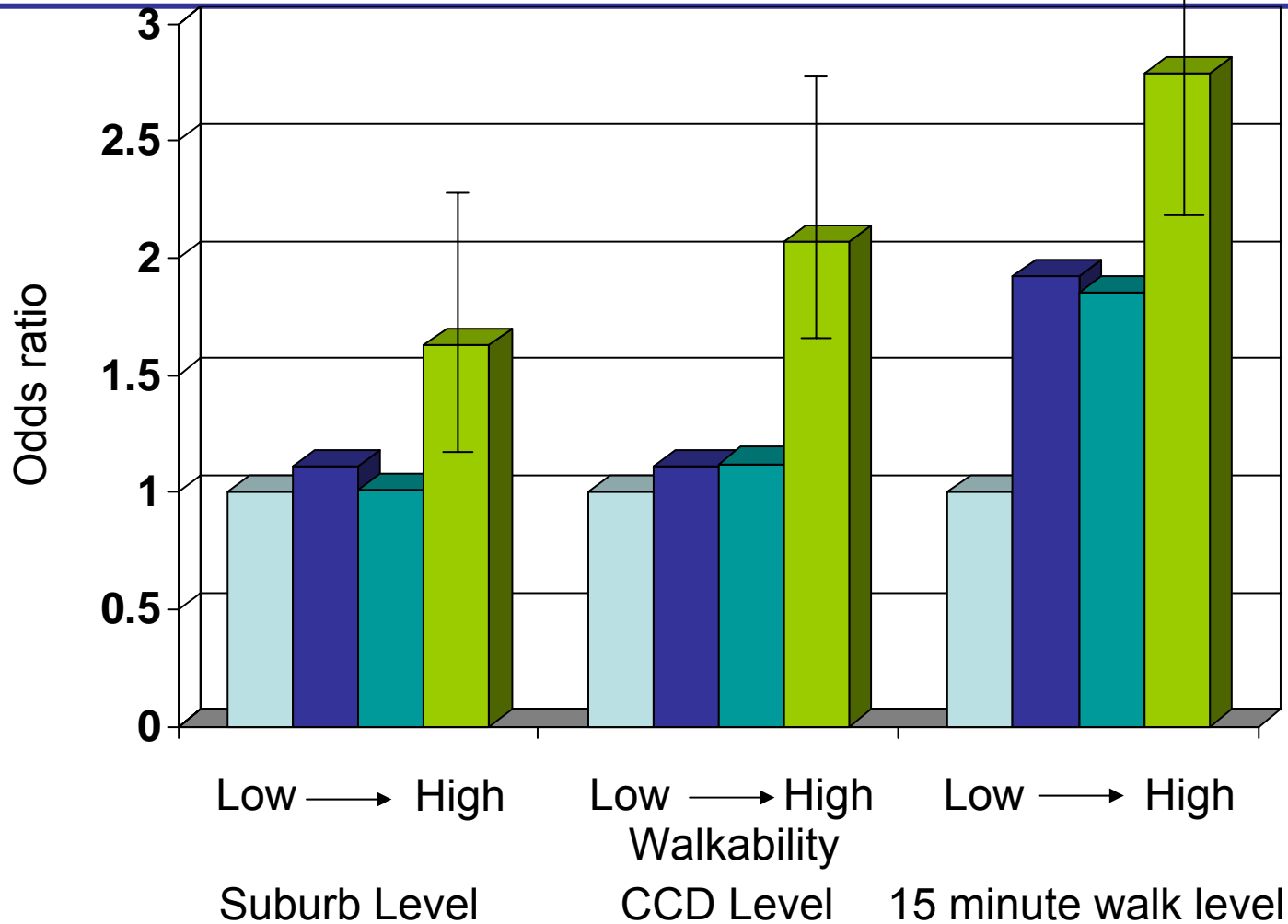
Learnihan (2007)

# Walking in neighborhood by quartiles of neighborhood walkability at suburb, CCD and 15 minute walk scale



Learnihan (2007)

# Walking for transport in neighborhood by quartiles of neighborhood walkability at suburb, CCD and 15 minute walk scale



Learnihan (2007)



# Summary and conclusions

- Nearly 30% of walking took place *outside* the neighborhood
  - ◆ For studies evaluating the impact of sub-division design policies –behavioral measures that are ‘environment-specific’ may be required i.e., walking within the neighborhood
- While walking for recreation is popular, it is *not* predicted by transport-related walkability index
  - ◆ Differentiating between recreational and transport-related walking is important
- The scale at which the neighborhood is measured affects strength of associations
  - ◆ Stronger associations when neighborhood scale specific to behavior of interest i.e, walking for transport within neighborhood **and** walkability index of neighborhood within 15 minute walk of home
- Results confirm - predictive capacity of ecological studies might be enhanced if they incorporate specific measures that differentiate between
  - ◆ type of walking;
  - ◆ where it is undertaken; and
  - ◆ specific measures of environment
- Does this raise questions about ‘gold standard’ objective measures of behavior?



# Acknowledgements

More info: <http://populationhealth.uwa.edu.au/reside>

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- Prof Matthew Knuiman
- Dr Anna Timperio
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