

ACTIVE LIVING  
RESEARCH

Promoting activity-friendly communities.



## Walkshop: Activity-Friendly Streetscapes

James Sallis, PhD

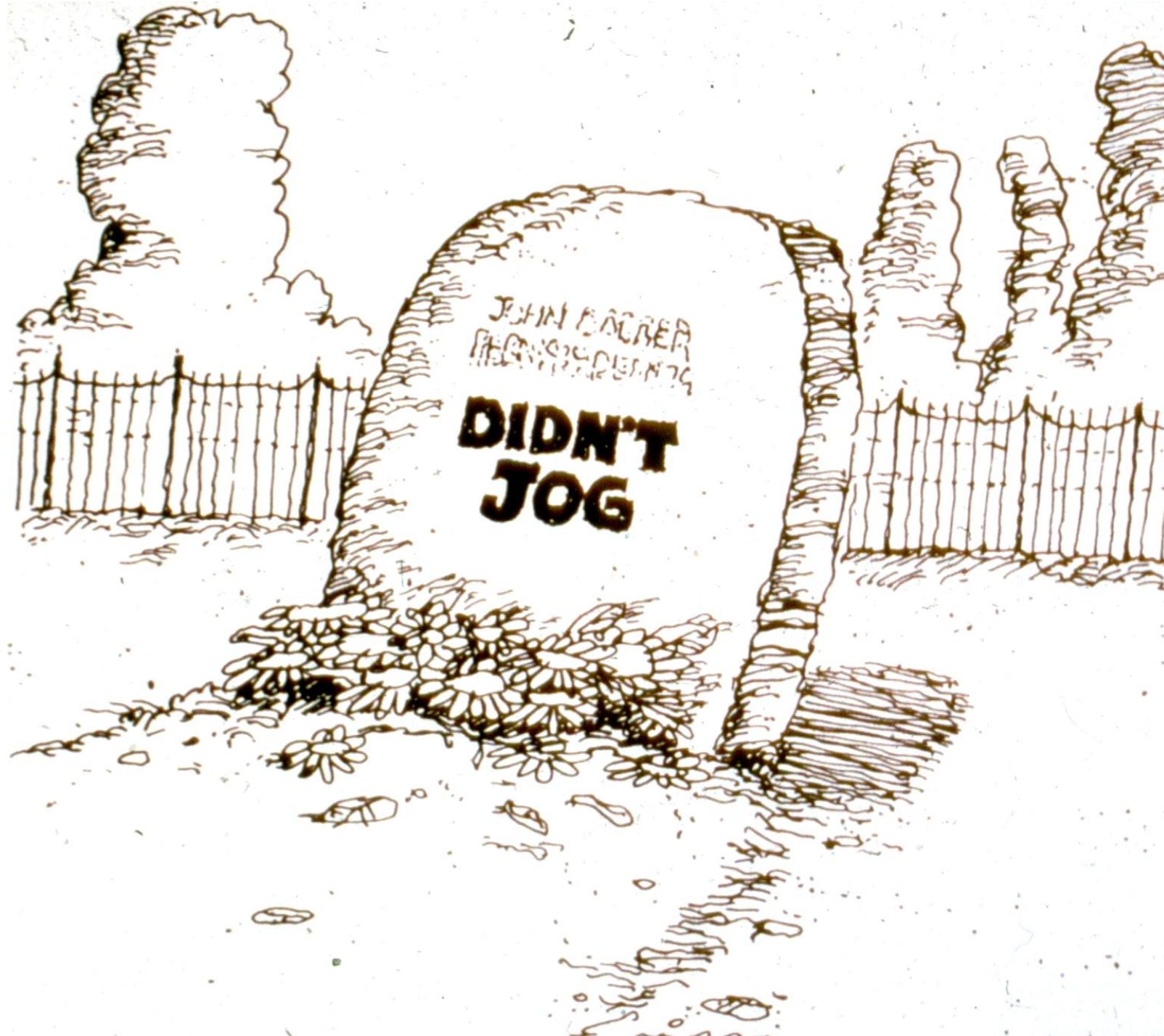
UC San Diego and Australian Catholic University

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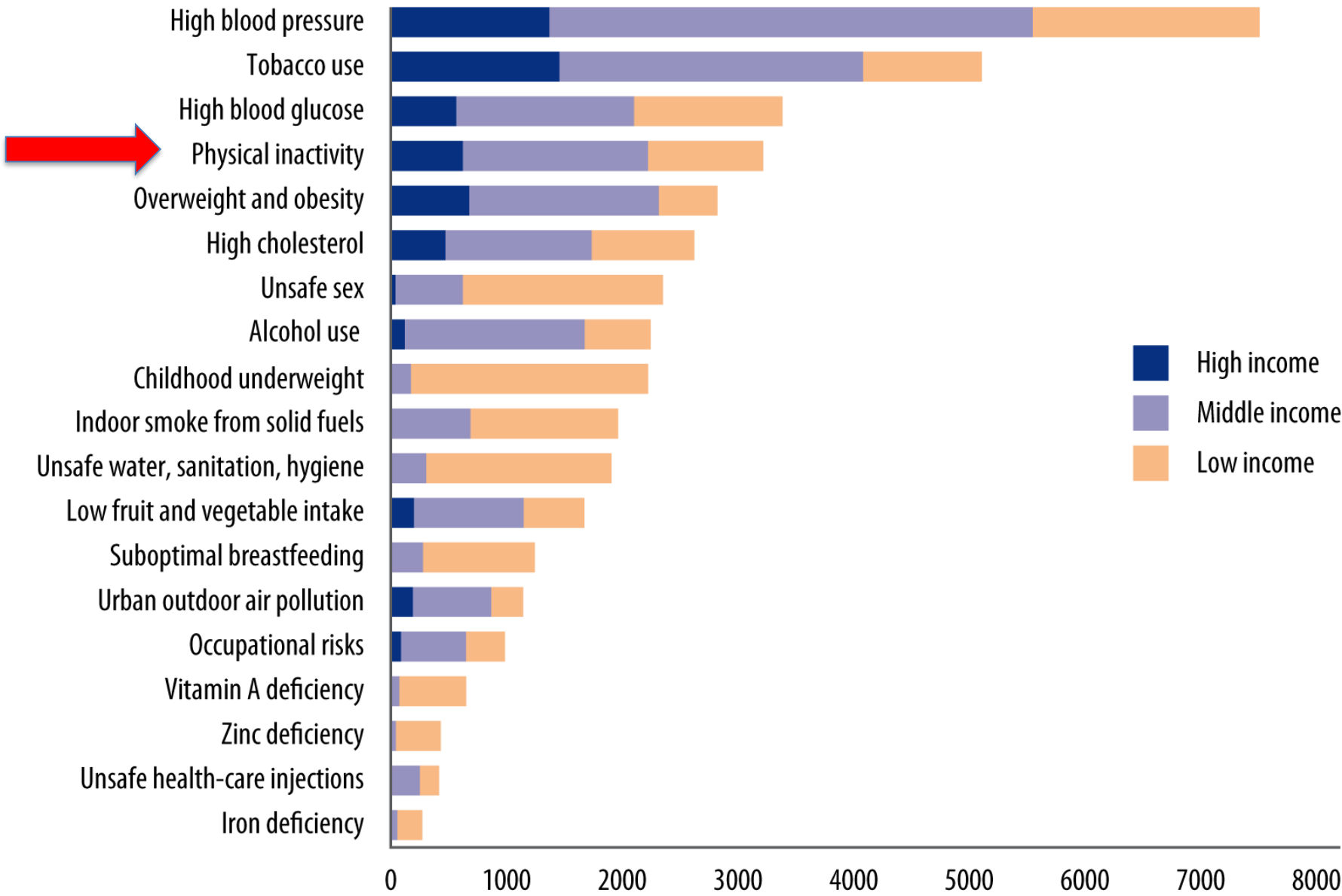
For ACRA in Brisbane. 31 July 2018

# Outline

- Built environment and physical activity is a multi-sector imperative
- **MACRO level**
  - Community design
  - Transport systems
- **MICRO level**
  - Streetscape design
  - Measuring streetscapes
  - MAPS-Mini: Development and relation to physical activity
  - How can the results be used?
- Assess the streets with MAPS-Mini



# Deaths attributed to 19 leading factors, by country income level, 2004



Mortality in thousands (total: 58.8 million)



# 31% of adults fail to meet PA guidelines. Lancet 2012

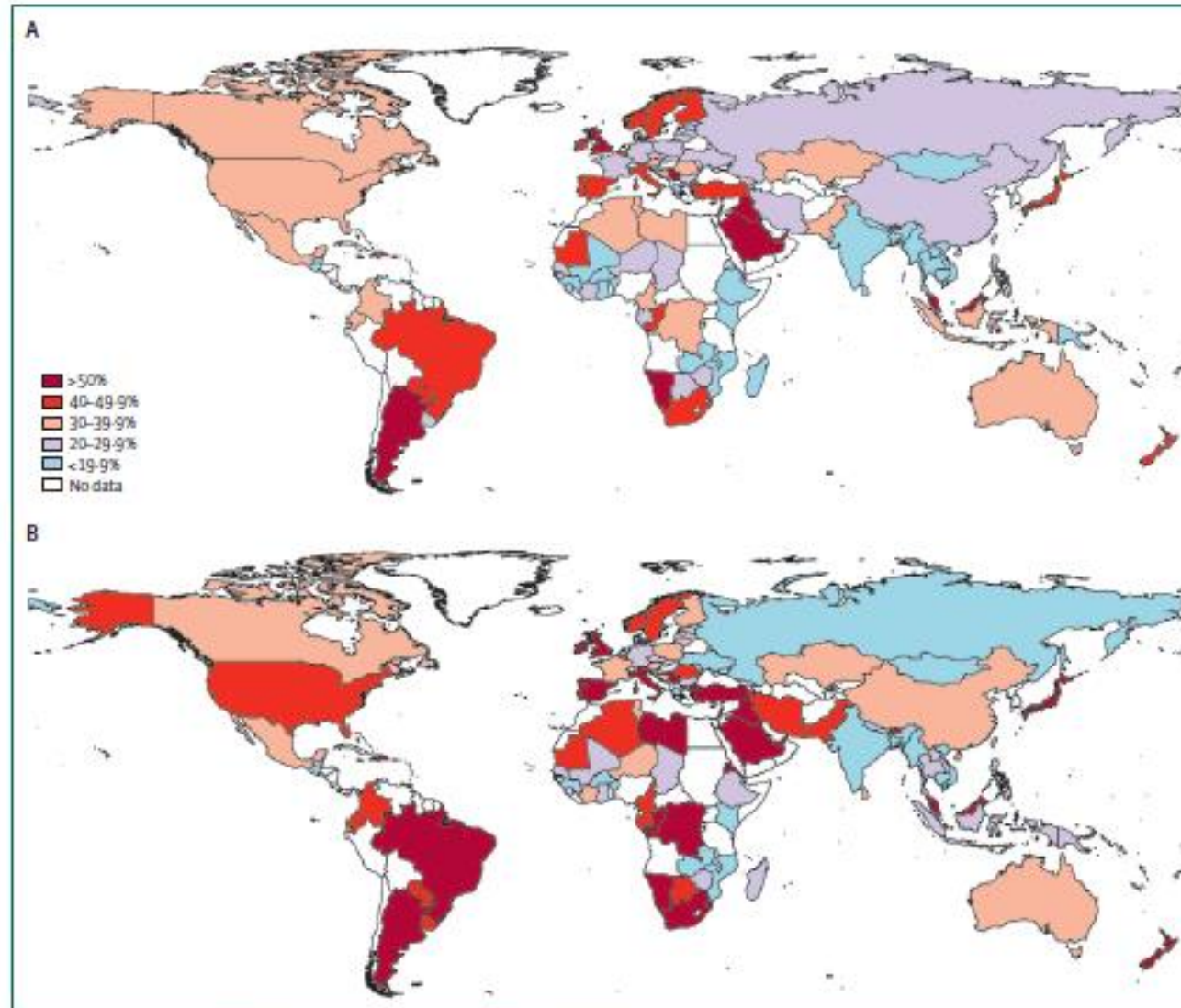


Figure 1: Physical inactivity in adults (15 years or older) worldwide in men (A) and women (B)

# THE LANCET

September, 2016

[www.thelancet.com](http://www.thelancet.com)

## Urban design, transport, and health



"Systematic designing of cities to enhance health through active transport promises to be a powerful strategy for improvements in population health on a permanent basis."





# MACRO View: Cities Can be Designed to Move People or to Move Cars



# Settings of an active city





# Public Health Needs to Partner

## Setting for PA

- Neighborhood
- Transportation facilities (sidewalks)
- Recreation facilities
- Schools & workplaces

## Expertise for Policy, Practice

- Planners
- Transport engineers & planners
- Park & rec, landscape architects
- Educators, architects

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# Physical activity in relation to urban environments in 14 cities worldwide: a cross-sectional study



*James F Sallis, Ester Cerin, Terry L Conway, Marc A Adams, Lawrence D Frank, Michael Pratt, Deborah Salvo, Jasper Schipperijn, Graham Smith, Kelli L Cain, Rachel Davey, Jacqueline Kerr, Poh-Chin Lai, Josef Mitáš, Rodrigo Reis, Olga L Sarmiento, Grant Schofield, Jens Troelsen, Delfien Van Dyck, Ilse De Bourdeaudhuij, Neville Owen*

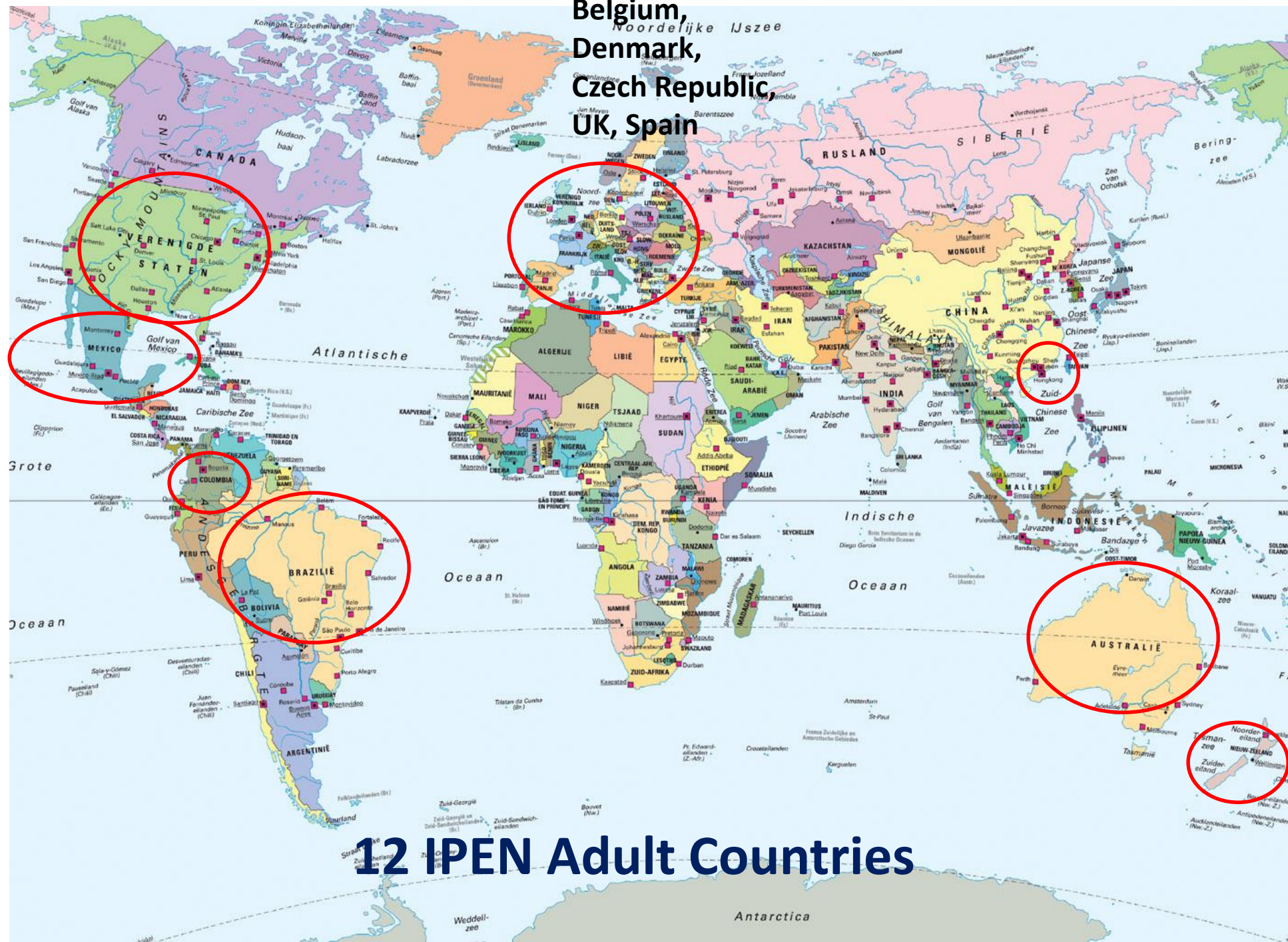
## Summary

**Background** Physical inactivity is a global pandemic responsible for over 5 million deaths annually through its effects on multiple non-communicable diseases. We aimed to document how objectively measured attributes of the urban environment are related to objectively measured physical activity, in an international sample of adults.

Published Online  
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[http://dx.doi.org/10.1016/S0140-6736\(15\)01284-2](http://dx.doi.org/10.1016/S0140-6736(15)01284-2)

Published in The Lancet. April 2016

Belgium,  
Denmark,  
Czech Republic,  
UK, Spain



12 IPEN Adult Countries



# Results: Environmental Attributes + MVPA Min/Week

GIS-based Environmental Variable	Final adjusted model
Net residential density 1km	***
Intersection density 1km	NS
Mixed land use 1km (retail & civic)	NS
Public transit density 1km	*
Number of parks 0.5km	*

## Comparing MVPA by Lowest & Highest Cities on Environmental Variables

- Adults living in the most activity-friendly cities did up to 89 more minutes of MVPA per week compared to those in the least activity-friendly cities
- A commentary estimated that 2 million deaths per year could be prevented if every adult lived in activity-supportive communities



MICRO view:  
Design of  
streetscapes  
matters.


































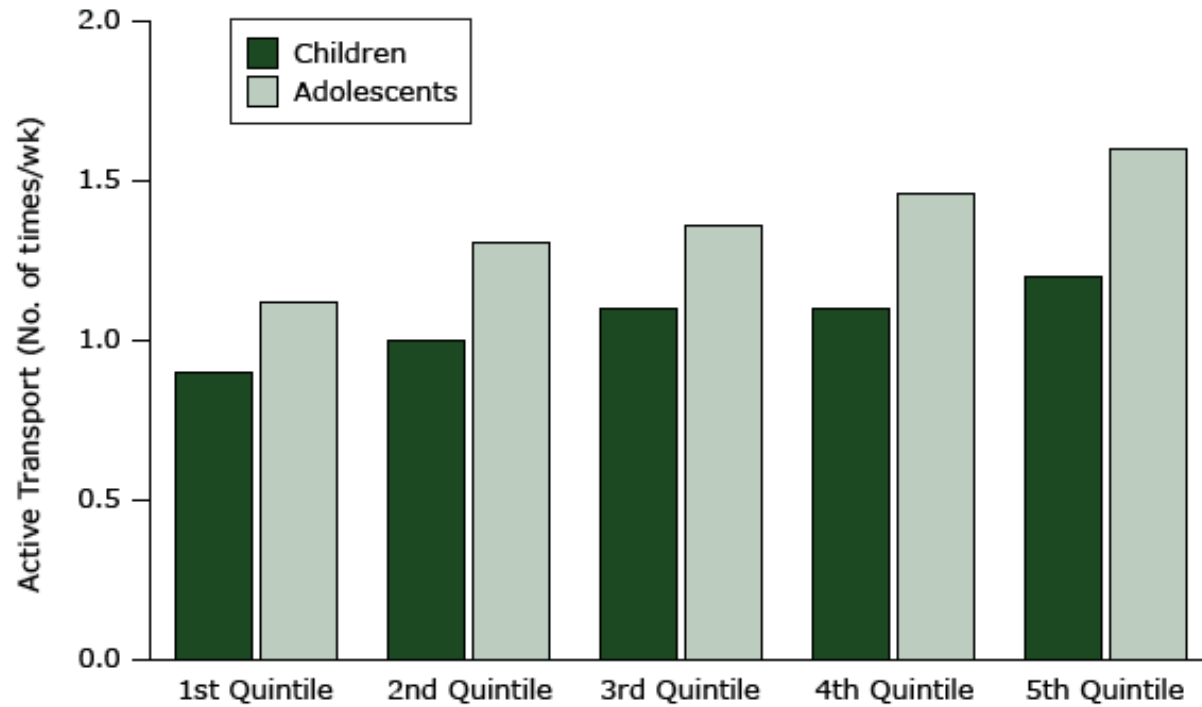


# MAPS-Mini

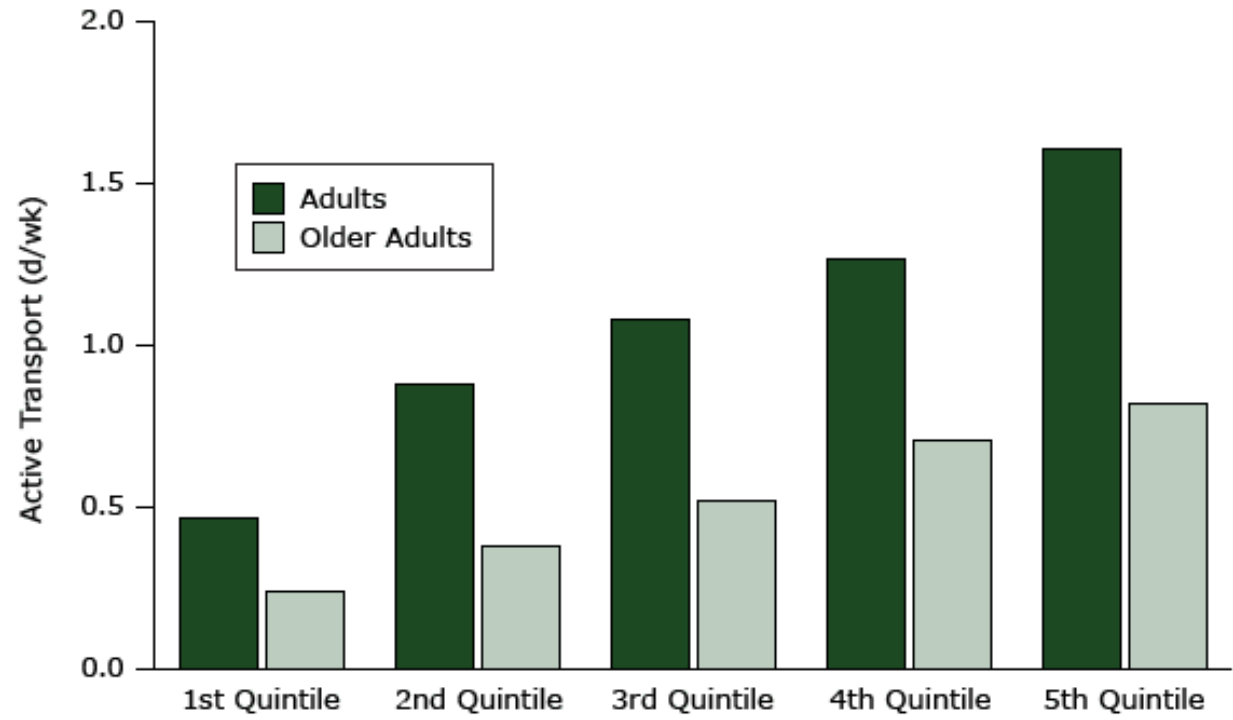
- Microscale Audit of Pedestrian Streetscapes
- Purpose is to assess activity-friendliness of streetscapes
- 15-item, evidence-based tool designed for practitioners and advocates
- Based on original MAPS with 120 items
- Items were selected based on:
  - Correlations with physical activity
  - Guidelines and recommendations
  - Modifiability within realistic budgets & time frames
- Available for paper or online app data collection
- Requires minimal training and free to use
- Tool can be modified to include items from Full or Abbreviated versions for more specificity

## How do MAPS-Mini scores relate to active transportation? ADJUSTED

MAPS Mini Score	Children	Adolescents	Adults	Seniors
Commercial Segments				N/A
Public Parks				
Transit Stops				
Street Lights				
Benches				
Building Maintenance				
Absence of Graffiti				
Sidewalk				
Buffer				
Tree, Awning Coverage				
Absence of Trip Hazards				
Marked Crosswalk				
Curb Cuts				
Crossing Signal				
GRAND SCORE				
GRAND SCORE (for Active Transport)				



**Dose-response of  
MAPS-Mini total  
scores and active  
transport  
Frequency for  
4 age groups**





# Conclusions

- MAPS-Mini is related to transport PA in all age groups & leisure activity, mostly for children
- Effects are large: 40% to 400% difference in active transport between lowest & highest quintiles of MAPS-Mini score
- Feasible for use by practitioners and community groups for local advocacy
- Improving sidewalks and crossings, separating cars from pedestrians, and adding streetlights could help get people active

# What to do with the data?

- Score it
  - Sum scores for segments (0-17) and crossings (0-4)
    - Average across neighborhoods
- Analyze it
  - By segments, crossings or entire neighborhood
    - Syntax for data cleaning and analyses in SPSS is available
    - Can correlate with neighborhood demographics (e.g. Census data) and GIS data
- Map it
  - Geo-code locations to create a map that shows ratings of streets and overall neighborhoods

# Use Results for Advocacy Purposes

- Document disparities in streetscape quality
- Identify great streets and give them awards
- Pinpoint deficiencies and problems so they can be improved
- Evaluate streetscape improvements (e.g., Complete Streets)
- Engage community members in assessment as a basis for advocacy



# Microscale Audit of Pedestrian Streetscapes (MAPS), Mini Version

Training Manual & Picture Guide

Developed by: Carrie Geremia  
Kelli Cain

Revised February 12, 2015

Tool and protocol developed by: James Sallis, Lawrence Frank, Brian Saelens, Kelli Cain,  
Terry Conway, Jim Chapman, Carrie Geremia, Abby King

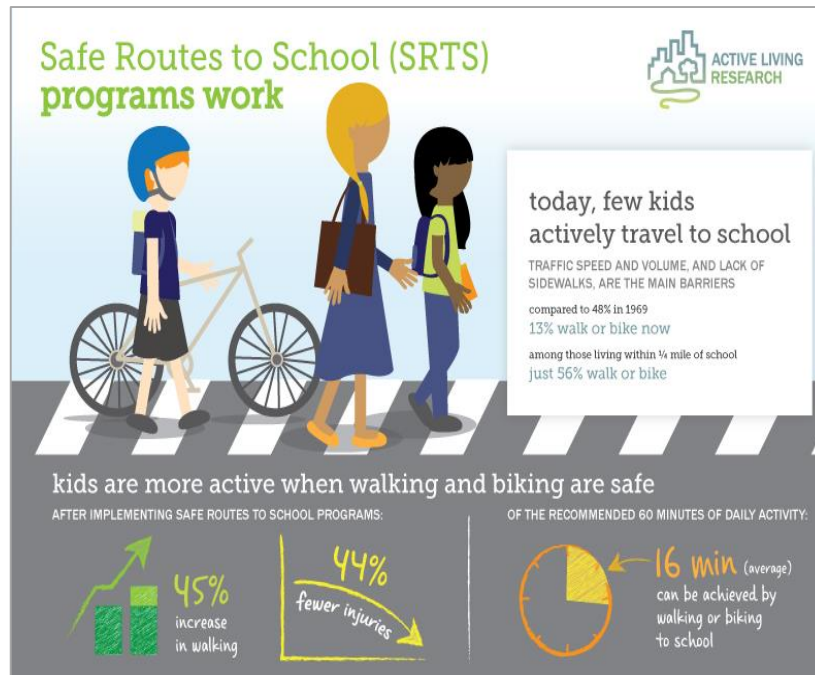
San Diego State University  
Urban Design 4 Health  
Children's Hospital Seattle  
Stanford University Medical Center

## MAPS-MINI Tool & Manual



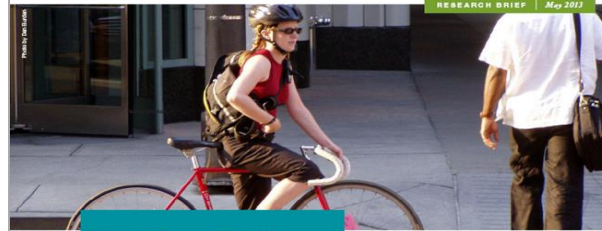
# ALR resources

## activelivingresearch.org



**Active Living Research**  
Building Evidence to Promote Safe and Supportive Active Communities  
www.activelivingresearch.org

RESEARCH BRIEF | May 2012



### How to Increase Bicycling for Daily Travel

**INTRODUCTION**

Bicycling is healthy: it increases physical activity, improves cardiovascular health, and reduces obesity and disease. Bicycling also can be an excellent mode of transportation for people of all ages. In fact, bicycling to school has been shown to improve cardiovascular fitness and overall health among children and adolescents.<sup>1</sup> As with virtually any kind of sport or physical activity, bicycling poses some risk of injury, but recent studies show that the health benefits of bicycling far exceed the health risks.<sup>2,3</sup> Moreover, as bicycling levels increase, injury rates fall, making bicycling safer and providing even larger net health benefits.<sup>4,5</sup>

Only 1 percent of all daily trips in the United States are made by bicycle, including fewer than 1 percent of trips to school by children younger than age 16.<sup>6,7</sup> Many more trips could be made by bicycle, as 40 percent of trips made in the United States are short distance for most people. R



## THE BENEFITS OF STREET-SCALE FEATURES FOR WALKING AND BIKING

**APA**  
American Planning Association  
Making Great Communities Happen

**ACTIVE LIVING RESEARCH**  
Promoting activity-friendly communities.



RESEARCH REVIEW

### Moving Toward Active Transportation: How Policies Can Encourage Walking and Bicycling

**INTRODUCTION**

Walking and cycling for daily trips can provide valuable regular physical activity, but currently, few Americans walk or ride a bicycle as a part of their daily routine. Most rely on their automobiles to go to work, shop for groceries, or just get around. As a result, "active travel," such as walking or biking for routine trips, is not a significant part of daily life for most Americans, providing little, if any, regular physical activity.

Lack of physical activity is a major risk factor in over 6 million, or 6 percent, of premature deaths worldwide.<sup>1</sup> In economic terms, the burden from lack of physical activity is estimated to be \$117 billion dollars or 0-11 percent of total health care costs in the U.S.<sup>2</sup>

According to the latest U.S. household travel survey data, only 11 percent of all trips are taken by foot, 1 percent by bicycle, and 2 percent by public transport (which usually also involves either walking or riding a bicycle to and from a train station or a bus stop).<sup>3</sup> Higher rates of active travel are found in Western European countries such as Germany, the U.K., and the Netherlands (Figure 1).<sup>4,5</sup> Active travel can be a big help in reaching recommended daily levels of physical activity of at least 30 minutes on most days, or 150 minutes per week.<sup>6,8</sup>

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