Seventh-Day Adventist Population (Adventist)

- Religious denomination

- Lower Mortality Rate
  - Cancer
  - Cardiovascular disease

- Diverse dietary habits

- Highest Concentration
  - Southern California
Loma Linda’s Adventist

- San Bernardino County
- Centenarians Adventist
  - Highest Concentration

Loma Linda
Loma Linda Adventist

- Same Religious Lifestyle
- Greater Longevity in Loma Linda
- What is causing the differences in lifespan?

Built Environment?
CDC Recommendations for Improving Health through Transportation Policy

The U.S. transportation system has been shaped by multiple policy inputs and concrete actions which have arisen from transportation and community planners, funding agencies and others at Federal, state and local levels. Today, the system is designed to move people and goods efficiently; however, there is a growing awareness across communities of the impact that transportation systems have on quality of life and health. Government and non-government agencies are seeking innovative policies and programs that promote health while allowing for the efficient transportation of goods and people.

The Opportunity
Expanding the availability of, safety for, and access to a variety of transportation options and integrating health-enhancing choices into transportation policy has the potential to save lives by preventing chronic diseases, reducing and preventing motor vehicle-related injury and deaths, improving environmental health, while stimulating economic development, and ensuring access for all people.

Recommendations
The document CDC Recommendations for Improving Health through Transportation Policy (http://www.cdc.gov/transportation) gives specific recommendations for including the consideration of public health within transportation issues. Key high-level areas include:

- Reduce injuries associated with motor vehicle crashes. Examples of interventions include:
  - Restraint laws; alcohol-impaired driving laws;
  - Comprehensive graduated driver licensing systems;
  - Community designs that promote reduced traffic speeds in neighborhoods; and
  - Addressing roadway safety issues through community design, and policies which improve driver behavior.

- Promote active transportation. Examples of interventions include:
  - Well-lit sidewalks, shared-use paths, and safe roadway crossings;
  - Bicycle-supporting infrastructure such as shared-use paths, protected bikeways, cycletracks and programs that reduce motor vehicle traffic and vehicle speed on neighborhood streets (e.g. bicycle boulevards);
  - Creating safe places to walk, ride, and socialize in low-income and under-served areas.

- Address the public health impacts of transportation in policy documents and transportation plans.

- Develop multidisciplinary partnerships and strategies to implement recommendations.

- Encourage and promote evidence-based research on the health impacts of transportation, and on effective strategies to reduce these impacts.

- Encourage and support health professionals, researchers, and others to use and interpret the research on health effects of transportation for policy, planning, and program development.
Percent of obese adults (BMI $\geq 30$) in U.S., CDC 2010

- 33.8% of adults are obese
- In 2010 no state met obesity control objectives
Study Area

- **Population**
  - Redlands: ≈70,000
  - Loma Linda: ≈23,704

Source: U.S. Census Bureau
Built Environment Factors

Framework: Brownson et al. 2009
Built Environment Toolbox

• Replicable

• Preserve Identifiers
  ▫ join health data

• Standardized indicators
Access
Origin-Destination Matrix tool

1 mile
Quality: Attractive Walking Environment
Walking Boundary Area Tool (1 mile network boundary)
Walking Boundary Area Tool
(1 mile network boundary)
Extract Vegetation tool

Buffer tool

60 feet

NDVI

Extract by Buffer

Percent Vegetation pixels
Normalized Difference Vegetation Index (NDVI)
Extract Vegetation Tool
Data

- **Adventist Health Study-2**
  - Sample size: 1,985
    - Loma Linda- 72.6%
    - Redlands- 27.4%

- **Imagery Data**
  - California Department of Fish and Wildlife
Adventist sample distribution
Average Distance to Recreational Areas
### Independent Sample T-test

#### Average distance to Recreational areas in miles

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Redlands</td>
<td>Loma Linda</td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td>1.6</td>
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</tbody>
</table>

- p-value < 0.001
Access to Recreational Areas
(1 mile network distance)
### Difference proportion test

**At least one Recreational Area 1 mile distance**

<table>
<thead>
<tr>
<th></th>
<th>Redlands</th>
<th>Loma Linda</th>
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<tbody>
<tr>
<td></td>
<td>32.9%</td>
<td>67.1%</td>
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</table>

- p-value < 0.05
Percent of vegetation pixels
1 mile network boundary
### Difference proportion test

<table>
<thead>
<tr>
<th>At least one Recreational Area 1 mile distance</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Redlands</td>
<td>20.2%</td>
<td>19.8%</td>
</tr>
<tr>
<td>Loma Linda</td>
<td></td>
<td></td>
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</table>

- p-value = 0.857
Summary

- **Built Environment Toolbox**
  - 4 factors

- **Significant difference**
  - Access to recreational areas

- **No significant difference**
  - Extract Vegetation tool
Thank you

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