The Influence of the Built Environment on Obesity in Oregon

Daniel Morris, MS, PhD
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Obesity

Diabetes

Chauncy Morlan (1869-1906)
modeledbehavior.com
Average daily per capita calories from the U.S. food availability, adjusted for spoilage and other waste (USDA)
Trends in energy expended at work

http://www.plosone.org/article/info:doi/10.1371/journal.pone.0019657
Transportation to work 1960 - 2009
Preventing obesity

- Avoid sugary drinks and fast food
- Drive less, walk and bike more
- Prepare your own food
- Watch less TV
- Sleep more
- Don’t sit all day
- Have wealthy parents
• Where do the heaviest Oregonians live?

• What about those places contributes to excess weight?

**Obesity data from DMV records**
Mean BMI, Oregon BRFSS and DMV

Age-adjusted estimates from Oregon BRFSS and DMV records, adults 18-84

Avg. diff = 2%

Avg. diff = 5%
### 10 Highest Avg. BMI

<table>
<thead>
<tr>
<th>Rank</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WARM SPRINGS</td>
</tr>
<tr>
<td>2</td>
<td>IRRIGON</td>
</tr>
<tr>
<td>3</td>
<td>WILLAMINA</td>
</tr>
<tr>
<td>4</td>
<td>SILETZ</td>
</tr>
<tr>
<td>5</td>
<td>GRAND RONDE</td>
</tr>
<tr>
<td>6</td>
<td>STANFIELD</td>
</tr>
<tr>
<td>7</td>
<td>CHILOQUIN</td>
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<tr>
<td>8</td>
<td>LAFAYETTE</td>
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<tr>
<td>9</td>
<td>WINSTON</td>
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<tr>
<td>10</td>
<td>AUMSVILLE</td>
</tr>
</tbody>
</table>

### 10 Lowest Avg. BMI

<table>
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<th>Rank</th>
<th>Location</th>
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<tbody>
<tr>
<td>1</td>
<td>ASHLAND</td>
</tr>
<tr>
<td>2</td>
<td>LAKE OSWEGO</td>
</tr>
<tr>
<td>3</td>
<td>SUNRIVER</td>
</tr>
<tr>
<td>4</td>
<td>WEST LINN</td>
</tr>
<tr>
<td>5</td>
<td>BEND</td>
</tr>
<tr>
<td>6</td>
<td>SISTERS</td>
</tr>
<tr>
<td>7</td>
<td>CORVALLIS</td>
</tr>
<tr>
<td>8</td>
<td>CANNON BEACH</td>
</tr>
<tr>
<td>9</td>
<td>PORTLAND</td>
</tr>
<tr>
<td>10</td>
<td>HOOD RIVER</td>
</tr>
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DMV records 2003-2010, among the 200 most populous places in Oregon
Mean BMI of census tracts

From regression analysis of age-adjusted mean BMI for 825 census tracts in Oregon, adjusted for education, race/ethnicity, and home value.
THE FOOD ENVIRONMENT
Food environment in Oregon

Oregon Employment Department, Oregon Farmer’s Market Association
Food environment by RUCA

- Dine-in restaurants
- Fast food restaurants
- Convenience stores
- Grocery stores

Oregon Employment Department
## Food environment and obesity

<table>
<thead>
<tr>
<th>Fast food &amp; convenience stores per square mile (per +1)</th>
<th>Difference in average BMI</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$\beta = +0.02 \text{ kg/m}^2$</td>
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</table>

| Grocery and farm stands per square mile (per +1) | $\beta = -0.08 \text{ kg/m}^2$ |

From regression analysis of age-adjusted mean BMI for 825 census tracts in Oregon, adjusted for education, race/ethnicity, and home value.
THE TRANSPORTATION ENVIRONMENT
Travel in Oregon

• 1,162 miles of freeways
• 6,471 miles of arterial roads
• 186,667 miles of local roads
• ??? Sidewalks (5,330 miles in Metro)
• ??? Bike lanes (648 miles in Metro)
• 76 miles of light rail and street car tracks (+13 miles under construction)
Commuting to work in Oregon

Percent of workers

- Car
- Walk
- Public transit
- Bike
- Other mode
- Work at home

American Community Survey
Intersection density

Number per square mile

- Metro core: 100
- Metro commuting: 2
- Micropolitan: 31
- Small town: 17
- Rural area: 1

Census Bureau
## Transportation and obesity

<table>
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<th>People commuting to work by car (per 10% increase)</th>
<th>Difference in average BMI</th>
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<td>$\beta = +0.13 \text{ kg/m}^2$</td>
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From regression analysis of 825 census tracts in Oregon, adjusted for education, race/ethnicity, and home value.
Next steps

- Regression models using proximity data
- Compare change over time
- Share findings
Thank you!

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