Working Together for Healthier Communities in Oregon: Evidence for Win-Win-Wins

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University of California, San Diego

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Outline of Talk

• Why Physical Activity?
• Need for multi-sector collaboration & action
• Putting all the pieces together
  – Designing activity-friendly communities
  – Designing transportation systems to move people
  – Rediscovering active commuting to school
  – Designing parks
• Co-benefits of activity-friendly communities
• Everyone can play a part
• Resources
Obesity Trends* Among U.S. Adults
BRFSS, 1990
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Deaths (thousands) attributable to individual risk factors in both sexes

Danaei G et al, PLoS Medicine, 2009
High Burden of Disease from Inactivity

- 6% Coronary heart disease
- 7% Type 2 diabetes
- 10% Breast cancer
- 10% Colon cancer
- 9% Premature mortality

Lee et al, Lancet 2012;380:219-29
Obesity & Inactivity in Oregon

• 60% of adults overweight or obese
• 120% increase since 1990
• 27% of 8th graders overweight or obese
• 44% of adults do not meet 150 min/week guideline for physical activity
• 12% walk or bike as part of commute to work
• % of active adolescents decreased from 2005 to 2009
Costs of Inactivity

• New report from CDC estimates 9-11% of US health care expenditures are due to adults not meeting guideline of 150 minutes of PA per week. Carlson, 2014
How are we doing in promoting PA?

Reported Physical Activity by Adults in the USA: 1997-2006 The Healthy People 2010 Database

Healthy People 2010 Database (DATA2010) for men and women combined
Active Transportation by Youth has Decreased Mode for Trips to School – National Personal Transportation Survey

How Did We Become Inactive?

- Sleep
- Leisure
- Occupation
- Transportation
- Household
The Future?
Elements of An Active Living Community

Community Design Destinations

Transportation System

Home

School & Worksite

Park & Rec
<table>
<thead>
<tr>
<th>Setting for PA</th>
<th>Expertise for Policy, Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Neighborhood</td>
<td>• Planners</td>
</tr>
<tr>
<td>• Transportation facilities</td>
<td>• Transport engineers &amp;</td>
</tr>
<tr>
<td>(sidewalks)</td>
<td>planners</td>
</tr>
<tr>
<td>• Recreation facilities</td>
<td>• Park &amp; rec, landscape</td>
</tr>
<tr>
<td>• Schools &amp; workplaces</td>
<td>architects</td>
</tr>
<tr>
<td>• Educators, architects</td>
<td></td>
</tr>
</tbody>
</table>
Exposure to PA Environments Is Significant. So Are Investments.
“Walkable”: Mixed use, connected, dense
Not “walkable”

street connectivity and mixed land use
Low-Walkable Residential Area
Evidence of the link between community design and health

The Neighborhood Quality of Life Study of Adults (NQLS)

Seattle, WA and Baltimore, MD regions
NQLS Neighborhood Categories

Walkability

<table>
<thead>
<tr>
<th>Socioeconomic Status</th>
<th>Walkability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>4 per city</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>4 per city</td>
</tr>
</tbody>
</table>
Adults’ Objective Physical Activity Min/day in Walkability-by-Income Quadrants

Walkability:  $p = 0.0002$
Income:  $p = 0.36$
Walkability X Income:  $p = 0.57$

* Adjusted for neighborhood clustering, gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address.
Adults’ Percent Overweight or Obese (BMI >25) in Walkability-by-Income Quadrants

- Walkability: $p = 0.007$
- Income: $p = 0.081$
- Walkability X Income: $p = 0.26$

* Adjusted for neighborhood clustering, gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address.
Estimated Public Health Impact of Walkability

- 50 minutes per week = 2+ miles per week
- 2 miles per week = 100 miles per year
- 100 miles per year X 100 calories per mile = 10,000 kcal per year
- 10,000 kcal per year = 2.9 pounds/1.3 kg
- More than the average adult weight gain per year in the U.S.
Adolescents’ Objective Physical Activity Min/day in Walkability-by-Income Quadrants

Walkability: $F=13.74; p = .000$
Income: $F=2.59; p = .108$
Walkability X Income: $F=.001; p = .981$

- Low Income
  - Low Walk: 58.8
  - High Walk: 65.6

- High Income
  - Low Walk: 61.8
  - High Walk: 68.5

* Adjusted for gender and age
Seniors: Walk/Bike for *Errands/Transport* (Min/wk)

(Adjusted for Time, Region, Demographics)

**Walkability: \( p < .0001 \)**

**Income: \( p = \text{NS} \)**

We can learn from international studies.

Atlanta, USA

Ghent, Belgium
Associations Between Individual Environmental Characteristics and HEPA/Minimal Activity Among Respondents who Live in Cities with Population ≥ 30,000

Built Environment Features Related to Physical Activity in 11 Countries

'Odds Ratio for HEPA/Minimal Activity

Single Family Houses
Shops Near Home
Transit Stop Near Home
Sidewalks Present
Facilities to Bicycle
Low Cost Rec Facilities
Unsafe to Walk due to Crime

'Agree' with Environmental Characteristic ('Disagree' is referent)
Number of Activity-Friendly Attributes Is Related to Physical Activity: Evidence for Putting All the Pieces Together

Sallis. Am J Prev Med. 06/09
How to do Density

28 Units per acre
Pedestrian-Oriented Design: Floor Area Ratio

- Building fills the parcel
- Oriented to sidewalk
- Visual interest for pedestrians
- Building is small % of parcel
- Built for cars
- Hostile to pedestrians
There is not equal access to activity-friendly environments
Walking/Cycling Facilities in Walkability-by-Income Quadrants

Income: $p = .029$
Walkability X Income: $p = .89$

*All models adjusted for gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address. Neighborhood was included as a random effect to adjust for clustering.
Pedestrian/Traffic Safety in Walkability-by-Income Quadrants

Income: $p = <.0001$

Walkability X Income: $p = .48$

*All models adjusted for gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address. Neighborhood was included as a random effect to adjust for clustering.
Getting the Details Right:
Micro-Scale Features
MAPS Mini: Assessing the Details

• **15-item** MAPS-Mini was designed for practitioners and advocates
  – Reduced from 120 items

• Items were selected based on
  – Correlations with physical activity
  – Guidelines and recommendations
  – Modifiability

• Evaluated for validity in 3677 children, teens, adults, older adults
  – 3 regions
<table>
<thead>
<tr>
<th>MAPS Mini Score</th>
<th>Children</th>
<th>Adolescents</th>
<th>Adults</th>
<th>Seniors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Segments</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Public Parks</td>
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<tr>
<td>Transit Stops</td>
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<tr>
<td>Street Lights</td>
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<tr>
<td>Benches</td>
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<tr>
<td>Building Maintenance</td>
<td></td>
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<tr>
<td>Absence of Graffiti</td>
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<tr>
<td>Sidewalk</td>
<td></td>
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</tr>
<tr>
<td>Buffer</td>
<td></td>
<td></td>
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<tr>
<td>Tree, Awning Coverage</td>
<td></td>
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<tr>
<td>Absence of Trip Hazards</td>
<td></td>
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<tr>
<td>Marked Crosswalk</td>
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<tr>
<td>Curb Cuts</td>
<td></td>
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<tr>
<td>Crossing Signal</td>
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<tr>
<td>GRAND SCORE</td>
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<tr>
<td>GRAND SCORE (for Active Transport)</td>
<td></td>
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</tbody>
</table>
MAPS-Mini Grand Score & Active Transport: Adults

222% difference
Putting the Pieces Together: Designing an Activity-Friendly Street

Clever, MO: Clarke Street

Credit: National Assn. of Realtors & Urban Advantage
Clever, MO:
Clarke Street

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Credit: National Assn. of Realtors & Urban Advantage
Activity-Friendly Transportation Systems
Not designed for active travel
Obesity is strongly related to walking, cycling, and transit use!

Credit: John Pucher
The Good News: Many trips are short

41% of all trips are 3 miles or less (walkable & bikeable distances)

Short trips are convertible trips
Can we increase bicycling?
According to controlled studies, any single cycling intervention does not work well

- bike lanes
- cycling paths
- education
- bike parking
- bike crossing signals
- connected networks
- colored bike lanes
- bikes on buses
- bikes on trains
- signed routes
- bike boxes
- traffic calming
- car free zones
Increase in Bike Share of Trips in Cities Around the World

Increase in Bike Share of Trips in Cities Around the World

Where do people bicycle in Portland, OR? Based on GPS.

<table>
<thead>
<tr>
<th>Type of road</th>
<th>% of bicycle miles</th>
<th>% of road miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without bicycle facilities</td>
<td>51</td>
<td>92</td>
</tr>
<tr>
<td>With bicycle facilities (lane, separate path, bike boulevard)</td>
<td>49</td>
<td>8</td>
</tr>
</tbody>
</table>

A Danish study found that adolescents (N=3847) who walked or cycled to school were less likely to be overweight than those who rode to school in motor vehicles (passive transport).

Odds Ratio

<table>
<thead>
<tr>
<th></th>
<th>Passive (Reference)</th>
<th>Walking</th>
<th>Cycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds Ratio</td>
<td>1.00</td>
<td>0.47</td>
<td>0.63</td>
</tr>
</tbody>
</table>
Step 1: Site schools where the students are
Step 2: Create Safe Routes to School
Multistate Evaluation of Safe Routes to School Programs

Orion Stewart, MUP; Anne Vernez Moudon, Dr Es Sc; Charlotte Claybrooke, MS

American Journal of Health Promotion

January/February 2014, Vol. 28, No. 3 Supplement
% of SRTS Projects, By Type

- Sidewalk: 35%
- Crosswalk: 15%
- Signage: 10%
- ADA improvement: 10%
- Bicycle lane: 5%
- Bicycle rack: 5%
- Traffic calming: 5%
- Shared use path: 5%
- Ped bridge: 1%

Moving Forward: WASH DOT.
http://www.wsdot.wa.gov/research/reports/fullreports/743.3.pdf
Walking & Cycling to School Pre & Post SRTS Projects in 5 States

Moving Forward: WASH DOT.
http://www.wsdot.wa.gov/research/reports/fullreports/743.3.pdf
Before and after renovation of Denver schoolyards in low-income neighborhoods. Youth were more active AFTER.
People with access to parks & recreation facilities are more likely to be active.
A national study of US adolescents (N=20,745)* found a greater number of physical activity facilities is directly related to physical activity and inversely related to risk of overweight.

Gordon-Larsen et al, Pediatrics, 2006
http://www.pediatrics.org/cgi/content/full/117/2/417

*using Add Health data
People are Most Active on Tracks and Walking Paths

Cohen. RAND
If the best solutions solve multiple problems, then building activity-friendly communities is an exceptional solution.
## Co-Benefits of Designing Activity-Friendly Environments

<table>
<thead>
<tr>
<th></th>
<th>Physical Health</th>
<th>Mental Health</th>
<th>Social Benefits</th>
<th>Environmental Sustainability</th>
<th>Safety / Injury Prevention</th>
<th>Economic Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Open spaces / Parks / Trails</strong></td>
<td>57.5+ 3.5(0)</td>
<td>93+</td>
<td>42.5+ 4(0)</td>
<td>20+ 4(0)</td>
<td>23+</td>
<td>19+ 4(0)</td>
</tr>
<tr>
<td><strong>Urban Design</strong></td>
<td>105+ 54(0) 19-</td>
<td>31+ 4-</td>
<td>80.5+ 29(0)</td>
<td>265.5+ 45.5(0) 3.5-</td>
<td>13.5(0)</td>
<td>69+ 10.5(0) 4-</td>
</tr>
<tr>
<td><strong>Transport Systems</strong></td>
<td>7+ 3.5-</td>
<td>3+ 3.5(0)</td>
<td>23+</td>
<td>70+ 21(0) 3-</td>
<td>67+ 14(0) 4-</td>
<td>56+ 3.5(0) 4-</td>
</tr>
<tr>
<td><strong>Schools</strong></td>
<td>19.5+ 3.5(0)</td>
<td>21+</td>
<td>11+</td>
<td>21.5+</td>
<td>4+ 3-</td>
<td>15+</td>
</tr>
<tr>
<td><strong>Workplaces / Buildings</strong></td>
<td>55+ 3.5(0)</td>
<td>18.5+ 4-</td>
<td>20.5+</td>
<td></td>
<td></td>
<td>48+ 3.5(0)</td>
</tr>
</tbody>
</table>
Barriers to Active Transportation

- **Zoning laws** that require separation of land uses and low density
- **Transportation policies** that favor autos over all other modes
- **Lending practices** that discourage mixed-use development
- **Parking policies & standards** that increase distances
- **Pedestrian-hostile architecture & community design** that makes walking unpleasant
- **Locational/siting practices** that increase distances
Solutions to Zoning Barriers
Examples of Code Changes Under Review or Approved in Oregon Cities

Dundee, OR:
- More land uses allowed in commercial zones
- Easier approvals for residential-commercial mixed-use buildings

Nyssa, OR:
- Bike parking requirements
- No auto parking requirements for Main Street

Grants Pass, OR:
- Smaller lots allowed
- Higher-density allowed
- Standards for accessory dwelling units
Better Transportation Policies

- Performance/mobility standards for pedestrians and bicyclists, as well as motorists.
- Narrower lanes in urban areas
- Slower speeds in urban areas & match “design speeds” with posted speeds
- Complete streets policies that design streets for all users
- Counting pedestrians and bicyclists
But What Can I/My Agency Do?

• Get informed
  – Learn the research

• Health In All Policies: Change internal goals & policies so they are consistent with activity-friendly environments

• Commit to working with multi-sector coalitions

• Find win-win-win solutions that help each sector/agency/discipline solve their problems
Active Living Research wants to be your partner

- We have spent the past 13 years researching active living environments
- We have expertise in all aspects of active living communities and are ready to put our evidence into practice
- We are looking for partners who share our vision for--

Creating the Healthiest Communities in America
Healthy Community Design Resources in Oregon

- HEAL Cities NW Campaign
  - www.HEALcitiesNW.org
  - Promoting local policies that encourage healthy eating and active living

- Safe Routes to School, Pacific NW Regional Network
  - www.saferoutespacificnorthwest.org

- Oregon Walks
  - www.oregonwalks.org

- Bicycle Transportation Alliance
  - www.BTAOregon.org

- 1,000 Friends of Oregon
  - www.friends.org
Healthy Community Design Resources in Oregon

• Oregon Transportation & Growth Management Program
  – Local resources to support the creation of vibrant, active communities: [www.oregon.gov/LCD/TGM/Pages/index.aspx](http://www.oregon.gov/LCD/TGM/Pages/index.aspx)

• Oregon Health Authority – Public Health Division
  – OHA-ODOT partnership activities and programs addressing physical activity, obesity and chronic disease [heather.gramp@state.or.us](mailto:heather.gramp@state.or.us)
  – Injury Prevention Program: [adrienne.j.greene@state.or.us](mailto:adrienne.j.greene@state.or.us)
  – Environmental Health Program: [julie.early-alberts@state.or.us](mailto:julie.early-alberts@state.or.us)

• Local public health agencies (34)
  [http://public.health.oregon.gov/ProviderPartnerResources/](http://public.health.oregon.gov/ProviderPartnerResources/)

• Tribal public health agencies (9)
  [http://www.npaihb.org/member_tribes/](http://www.npaihb.org/member_tribes/)

• Local land use and transportation planning departments!