Activity-Friendly Communities Can Make Our Lives Better: Get Involved

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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 communities
  – Designing transportation systems
  – Designing parks
• Co-benefits
• Everyone can play a part
• Think Big. Be Bold.
Why Focus on Health Behaviors Like Physical Activity?

What Makes Us Healthy

- Genetics: 20%
- Environment: 20%
- Healthy Behaviors: 50%
- Access to Care: 10%

Source: Bipartisan Policy Center

What We Spend On Being Healthy

- Medical Services: 88%
- Healthy Behaviors: 4%
- Other: 8%

Source: Bipartisan Policy Center
Obesity Trends* Among U.S. Adults
BRFSS, 1990
(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2010

(*BMI ≥30, or ~ 30 lbs. overweight for 5’ 4” person)
Why target physical activity?
Deaths (thousands) attributable to individual risk factors in both sexes

[Bar chart showing the deaths attributable to various risk factors, ranked from highest to lowest.]

- Tobacco smoking
- High blood pressure
- Overweight-obesity (high BMI)
- High blood glucose
- High LDL cholesterol
- High dietary salt
- Low dietary omega-3 fatty acids
- High dietary trans fatty acids
- Alcohol use
- Low intake of fruits and vegetables
- Low dietary polyunsaturated fatty acids

Danaei G et al, PLoS Medicine, 2009
Panel 1: Health benefits of physical activity in adults\textsuperscript{3-5}

Strong evidence of reduced rates of:
- All-cause mortality
- Coronary heart disease
- High blood pressure
- Stroke
- Metabolic syndrome
- Type 2 diabetes
- Breast cancer
- Colon cancer
- Depression
- Falling

Strong evidence of:
- Increased cardiorespiratory and muscular fitness
- Healthier body mass and composition
- Improved bone health
- Increased functional health
- Improved cognitive function
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
Physical Activity and Brain Function in Children During a Cognitive Task

After 20 minutes of Sitting Quietly

After a 20 minutes of Walking

(Hillman et al., Neuroscience, 2009)
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?
Healthy Lifestyle

Behavior change is hard

30/60/90 Minutes Exercise

Food Pyramid

Community Barriers

Individual Responsibility

Healthy Community

Individual Motivation
Elements of An Active Living Community

- Community Design Destinations
- Transportation System
- School & Worksite
- Home
- Park & Rec
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
Studying the Relation of Neighborhood Design to Health

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

Walkability: $p = .0002$
Income: $p = .36$
Walkability X Income: $p = .57$

* 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.
We can learn from international studies.

Atlanta, USA

Ghent, Belgium
Built Environment Features Related to Physical Activity in 11 Countries

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

Odds Ratio
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
Getting the Details Right:
Micro-Scale Features
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
• **15-item MAPS-Mini** was designed for practitioners and advocates
  – Reduced from 120 items
• Trained observers walk down streets and evaluate presence and condition of key attributes
• MAPS-Minis was evaluated in 3677 children, teens, adults, older adults
  – 3 regions
### How do MAPS-Mini scores relate to active transportation? ADJUSTED

<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>
<td></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>
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<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>
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<tr>
<td>Crossing Signal</td>
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<tr>
<td>GRAND SCORE</td>
<td></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
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Clarke Street
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Activity-Friendly Transportation Systems
Not designed for active travel
Driving >> Obesity

The more miles a person travels by vehicle, the more likely they are to be obese.

Lopez Zetina 2006
Obesity falls sharply with increased 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
Case studies of multi-level, multi-component, multi-year interventions suggest a different conclusion.

Increase in Bike Share of Trips in Cities Around the World

Increase in Bike Share of Trips in Cities Around the World

Walking and Biking to School Reduces Odds of Being Overweight

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</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

- Ped bridge
- Bicycle lane
- Shared use path
- Traffic calming
- Bicycle rack
- ADA improvement
- Signage
- Crosswalk
- Sidewalk

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.
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>Open spaces / Parks / Trails</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>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>
<td></td>
</tr>
<tr>
<td>Urban Design</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) 18.5-</td>
<td>69+ 10.5(0) 4-</td>
</tr>
<tr>
<td>Transport Systems</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>Schools</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>Workplaces / Buildings</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>
Business Performance in Walkable Shopping Areas

With success, enterprises in walkable shopping areas are able to pay higher rents for their space, and housing near walkable commercial areas commonly sells for higher prices than in more distant areas.
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
• Please be a voice for changes in these policies. Communities designed for active transport have better health, economic, and environmental outcomes
But What Can I Do?

• Get informed
  – Learn the research

• Join with others
  – Join an advocacy group
  – Start an advocacy committee in your organizations

• Speak up—often
  – Attend & speak at city council & local planning group meetings
  – Get to know your local and national reps
  – Write an op-ed, letter to editor, blog

Resources at www.activelivingresearch.org
Brisbane, Australia has invested in pedestrian facilities

* Beautiful pedestrian bridge
* Walkways along the river
* Pleasing aesthetics
Bogota, Colombia has invested heavily in walking, cycling, & PA events
Bergen, Norway

Special streets designed for children’s play

Pedestrian streets, Like most European cities
Amsterdam is a model for being friendly to pedestrians & cyclists

The Incredible Bicycle Parking Structure At the Train Station
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!
Active Living by Design
5 “P” Community Action Model

• Multi-Sector Coalition
  – Public health
  – City planning
  – Transportation
  – Parks & rec
  – Schools/education
  – Walk/bike advocates
  – Community groups
  – Faith groups
  – Philanthropy

• 5 “P”s
  – Preparation
    • Get coalition together
  – Promotion
    • Of opportunities
  – Programs
    • To appeal to many groups
  – Policy
    • To remove barriers
  – Projects
    • To change environments