Health – Land Use – Safe Routes to School

What is the Connection?

www.idahosmartgrowth.org

encouraging vibrant communities through sensible growth
The Problem - Health

A new epidemic in the US - Obesity

- Chronic Disease
The Consequences

Health impacts of low activity

- Obesity in Idaho is reaching epidemic proportions

Source: Idaho BRFSS, Bureau of Vital Records and Health Statistics U.S. Source: BRFSS (median), Centers for Disease Control and Prevention
The Consequences

Health impacts of low activity

Increased Diabetes in Idaho, Diabetes has doubled in 13 years from 4% in 1997 to 8% in 2009

Source: Idaho BRFSS, Bureau of Vital Records and Health Statistics U.S. Source: BRFSS (median), Centers for Disease Control and Prevention
Childhood Obesity = increased Type II Diabetes and other Chronic Disease

Affects our kids
Conventional Response to Promoting Physical Activity

Organized sports/vigorous activity
- Instead of Routine Behaviors

Glamorizing pro athletes
- Unrealistic Identity

Exercise as added activity
- Must “find the time”
A New Public Health Approach

Active Community Environments:

- Growing interest among policymakers and public.
- “Collateral benefits” of community design
- Action at the state and local level - not national
“Places where people of all ages and abilities can easily enjoy walking, bicycling, and other forms of physical activity as part of a daily routine.”

CDC
Old Approach

Changes in individual behavior

Proactive encouragement by health care providers

A New Approach

Community designs that make walking & biking safe, easy & enjoyable!
The Problem – Land Use

Land use practices have converged to generate haphazard, inefficient, and unsustainable urban sprawl:

- Regulations isolate employment, shopping, services, housing from each other
- Transportation policy aimed at automobile access open increasing expanses of land to low-density growth.
Land Use

What does it look like?

→ Traditional town site

← Suburban pattern

Drawing by Duany Plater Zyberk, in ITE Journal 1989;59:17-18
Consequences of sprawl

Affects all of these factors

- Air pollution
- Greenhouse gas emissions
- Transportation costs
- Physical activity
- Car crashes
- Pedestrian/bike injuries
- Water quantity and quality
- Mental health
- Social capital
The Consequences
Air Pollution

Major pollutants of concern:

- ozone
- NOx
- CO
- particulates
- hydrocarbons
- lead
- Sox
- allergens

From cars and trucks
The average household spends $6,000 per year on each car owned.

- More cars and car use = lower disposal income.

**Other Consequences**

Relationship Between Sprawl and Physical Activity, Obesity, and Morbidity, American Journal of Health Promotion, Sept 2003
Sprawl and income inequality
Other Consequences

People in Sprawling Communities:

- Walk less
- Weigh more
- Have higher blood pressure

Relationship Between Sprawl and Physical Activity, Obesity, and Morbidity, American Journal of Health Promotion, Sept 2003
The Consequences
Walk and Bike less in sprawl conditions

- Pedestrian and Bicycle Infrastructure is inadequate/incomplete
Other Consequences

Increased

- Car, bicycle, pedestrian Accidents
Other Consequences

Decreased

- Water Quality and Quantity
What is Social capital?

Social capital defined as:

- Social networking and engagement
- Civic Engagement
- Trust and reciprocity
The Consequences of a loss of Social Capital

- More driving time means less time with family, friends, and civic organizations.
  - Putnam: every 10 minutes of commute time means a 10% decline in social capital

- Suburban voters tend to favor more individualized, less collective solutions.

- Residential stability across the lifespan is compromised: elders cannot age in place.

- Aggravated income inequality
The Consequences

Children lose independence and mobility

- Kids must rely on adults to drive them.

Everything is a Drive Away
The Problem - Schools

Fewer children walking or biking to school

- Percent of kids walking to school dropped 23% between 1969 and 2001 while distance to school increased by over 50%

Source: CDC 2005 and National Household travel survey
The Causes

School Sites have moved and grown larger

- Schools sited on overly large sites far from the neighborhoods and students they serve

- Site boundary
- ½ mile walking radius
- 1 mile walking radius
School Siting Obstacles

School based obstacles affect ability to establish small walkable schools:

- Administrative costs
- Land costs
- Excessive size requirements
- Busing reimbursement policies
- Choice schools
School Siting Obstacles

Barriers to establishing walkable schools

- Educational program needs
- Athletic field needs/wants
- School choice
The Consequences
Correlated increase in children overweight

Source: Surface Transportation Policy Partnership, Mean Streets 2000
The Consequences

Congestion at schools is worsening

- up to 25% of peak hour trips are created by parents driving kids to school

= increases of asthma and other chronic respiratory diseases.
Improved School Siting Process

Community wide Preferences should drive outcome. Consider:

- School size/Site size
- Renovation opportunities
- Cost tradeoffs
- Meeting everyone's goals
- Facility sharing/Athletics
- Walking/biking priorities
- Other community goals
Solution

Smart Growth =

- Better Health
- Lower Costs
- Higher Quality of Life
What is Smart Growth

Asks how and where new development should be accommodated. Can be measured by:

Four D’s

- **Density**
  - Compact
- **Diversity**
  - Mixed Use
- **Design**
  - Streets, Setbacks, Pattern
- **Destinations**
  - Walk distance to needs
The Four D’s

Density

- Can be very well designed
- Can fit into a neighborhood

Guess the number of units per acre?

Source: Consequences of Residential Infill in the Treasure Valley, Idaho Smart Growth 2007
The Four D’s

Is Density really a 4-letter word?

Higher AVERAGE densities are needed, not uniform high density everywhere

7 d.u. per acre

12 d.u. per acre

9 d.u. per acre

43 d.u. per acre
The Four D’s

Diversity

- Mix of housing types offers ability to age in place
The Four D’s

Diversity

- Mix of Uses offers useful destinations that are nearby generate more walk trips
The Four D’s

Diversity

- Includes good public art, greens and open space
The Four D’s

Design

- Accessibility through connected systems
“A well-connected network of small streets is safer and provides more capacity and mobility than a limited network of wide streets.”

Jim Charlier, Charlier and Assoc.
Connectivity Study CA

24 CA cities analyzed at block level

12 “Safe Cities” (severe/fatal crash rates 1/3 state avg)
12 “Less Safe Cities” (severe/fatal crash rates near the state avg).

- **Safe Cities**
  - Avg intersection density - 106/sq mi
  - Walk/bike/transit mode share - 16%
  - Fatality rate per 100,000 people - 3.2 / yr

- **Less Safe Cities**
  - Avg intersection density - 63/sq mi
  - Walk/bike/mode share - 4%
  - Fatality rate per 100,000 people - 10.5 / yr

Interestingly, the safe cities were well established prior to 1950; the less safe cities were largely developed after that time.
Street Connectivity

Impacts of Poor Connectivity

- Massive, congested arterials
- Increased driving/household
- Transit voids
- Inactive living
- Poor emergency service access
- Reduced travel safety

<table>
<thead>
<tr>
<th>Measure</th>
<th>Standard</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity</td>
<td>1.4 minimum</td>
<td>Links/nodes - excludes links on perimeter highways</td>
</tr>
<tr>
<td>Intersections/Square Mile</td>
<td>250 minimum</td>
<td>Including perimeter intersections</td>
</tr>
<tr>
<td>Block perimeter</td>
<td>1,400 ft. Maximum</td>
<td>Measured at street centerline</td>
</tr>
<tr>
<td>Block Length</td>
<td>500 ft. Maximum</td>
<td></td>
</tr>
<tr>
<td>Emergency Access</td>
<td>10% Maximum</td>
<td>% of parcels that are inaccessible if one street is blocked</td>
</tr>
<tr>
<td>Proximity</td>
<td>65%</td>
<td>% of DUs within ¼ mile of village nodes</td>
</tr>
</tbody>
</table>
Street design supports walking/biking

Perceptual qualities of the street influence use:

- Interesting streets maintain visual & sensory stimulus
- Calm, narrow, and complex streets
- Have amenities i.e. trees, furniture, crosswalks, sidewalks, bikeways
Smart Growth Best Practices

- Based on the 10 principles of smart growth recognized nationally
- Identifies policies and regulations
- Identifies examples in Idaho.

Find at:
http://www.idahosmartgrowth.org/index.php/resources/resource/best_practices/
Does it Work?

Density

- Changes at lower end make a big difference in the # of miles traveled per year
- Biggest gains at lowest levels

More Places within Walking Distance

In Seattle, 5% increase in walkability = 32% increase in minutes of walking or biking and a reduction in BMI

Does it Work?

Density reduces driving

People who live in smart growth communities drive fewer miles daily and use less energy for both transportation and housing, than sprawling communities.

It Works - Fewer Trips per Day

Mode Choice Comparison of Home Based Trips

- Suburban Communities: 7.73 trips per day
- TOD Communities: 6.50 trips per day

- Other
- Walk
- Bike
- Transit
- Auto Passenger
- Auto Driver
**It Works - Fewer Miles per Day**

Miles Traveled by Residents
Comparison for Home Based Trips

- Suburban Communities: 41.7 miles per day
- TOD Communities: 31.5 miles per day

- Blue: Auto Driver
- Red: Auto Passenger
- Yellow: Transit
- Orange: Bike
- Green: Walk
- Teal: Other
The European Experience

50% of people over 75 walk or bike

The Netherlands

Germany

USA

Private Car
Public Transport
Bicycle
Walk
Do the Four D’s Work?

They affect auto use, walking, biking /capita

<table>
<thead>
<tr>
<th>Environmental Characteristic</th>
<th>Elasticity VT Per Capita</th>
<th>Elasticity VMT per Capita</th>
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</thead>
<tbody>
<tr>
<td>Density</td>
<td>4% to 12%</td>
<td>1% to 17%</td>
</tr>
<tr>
<td>Diversity</td>
<td>1% to 11%</td>
<td>1% to 13%</td>
</tr>
<tr>
<td>Design</td>
<td>2% to 5%</td>
<td>2% to 13%</td>
</tr>
<tr>
<td>Destinations</td>
<td>5% to 29%</td>
<td>20% to 51%</td>
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</tbody>
</table>

Sources: 4D National Syntheses, Twin Cities, Sacramento, Location Efficiency
### Sacramento Results – Auto Use

% Change from Existing

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total VT/Day</th>
<th>Total VMT/Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Trends</td>
<td>+140%</td>
<td>+120%</td>
</tr>
<tr>
<td>Density Only</td>
<td>+114%</td>
<td>+89%</td>
</tr>
<tr>
<td>Dense &amp; Smart Growth</td>
<td>+91%</td>
<td>+62%</td>
</tr>
<tr>
<td>Land Use Balance</td>
<td>+111%</td>
<td>+74%</td>
</tr>
</tbody>
</table>

When population doubles, there will be a big increase in auto use under any scenario.

But 4D model shows smart growth policies could reduce the growth significantly.

Source: 4D study Sacramento, Fehr and Peers 2008
**Sacramento Results – Non-Motorized**

**Walking/Biking, etc.**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Sac County</th>
<th>Total Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>6.6%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Current Trends</td>
<td>5.1%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Density Only</td>
<td>11.6%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Dense &amp; Smart Growth</td>
<td>23.5%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Land Use Balance</td>
<td>13.9%</td>
<td>10.6%</td>
</tr>
</tbody>
</table>

The 4D’s have major impacts on the percentage use of walking and biking that would not be detectable using a conventional model.

Source: 4D study Sacramento, Fehr and Peers 2008
### Sacramento Resulting Mode Split

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Auto</th>
<th>Transit</th>
<th>Non-Motorized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>92.2%</td>
<td>1.1%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Current Trends</td>
<td>93.8%</td>
<td>1.1%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Density Only</td>
<td>84.9%</td>
<td>2.4%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Dense &amp; Smart Growth</td>
<td>71.1%</td>
<td>5.4%</td>
<td>23.5%</td>
</tr>
<tr>
<td>Land Use Balance</td>
<td>83.0%</td>
<td>3.0%</td>
<td>13.9%</td>
</tr>
</tbody>
</table>

4D model does not forecast the demise of the auto mode, even under the most aggressive scenario.

But it does suggest that a more balanced mode split is achievable in Sacramento.

Source: 4D study Sacramento, Fehr and Peers 2008
Complete Streets Policy

Ensures that the entire roadway right of way is routinely designed and operated to enable safe access for all users.
What is a Complete Street?

- Separated and/or wider sidewalks
- Traffic calming
- Narrower traffic lanes
- Bike lanes
How a Complete Street looks
Street Design features That Promote walk/bike trips

Refuge islands create safe zones for pedestrians
Street Design features
That Promote walk/bike trips

Bike lanes create safe space for cyclists

Traffic circles slow down cars and calm traffic
Street Design features
That Promote walk/bike trips

Median islands promote pedestrian safety

Curb extensions create shorter crossing distance
Use Best Practices

Standards changing quickly.

- Update design standards with latest best practices, keep up with changes, allow flexibility.
At Schools First, save $

- e.g. Signs, Striping, Crosswalks, Medians to slow traffic
Safe Routes to School (SR2S) Federal Transportation Law

SAFETEA-LU

Sections(s): 1101(a)(17), 1404

- A Program to Enable Children to Walk and Bike to School Safely
SR2S Federal Funding in Idaho

Minimum Guarantee - $1 million
- Based on a ratio of student population K-8 to total state population

Idaho receives $1 million per year
The Intersection of Public Health, Schools, and Sprawl

Potential intersections for decision makers:

- Zoning decisions
- School location and size
- Green/openspace preservation efforts
- Alternative transportation decisions
- Design issues e.g. sidewalks, bikepaths, crossings
- Watershed protection programs
- Air Quality programs
- Public education
Public health officials do not just work in the Health Department. They also include:

- Urban planners
- Transportation engineers
- Landscape architects
- Developers
- Lenders
- Neighborhood activists

...and many others.
Smart Growth Achieves the Right Balance

Smart Growth Enhances Our Communities

Source: www.urban-advantage.com
Thank you!

For more information:
Idaho Smart Growth
(208)333-8066
www.idahosmartgrowth.org