Impacts of Transportation on Livability in Colorado
10 Principles

1. Mobility Balance
2. Street Connectivity
3. Community Character
4. Forecasting is not Planning
5. Transit will not Alleviate Congestion
6. Active Living
7. Multimodal Streets
8. Sustainable Mobility
9. Empowerment
10. Monitoring & Reporting
Impact of Transportation on

“Livability”

In Colorado
What does “Livability” Mean?

- Thriving Family
- Personal Freedom
- Physical & Mental Health
- Community Engagement
- Economic Independence
- Mobility
Thriving Family
Impact of Transportation on

Thriving Family
Why roads are crowded

From 1970 to 1996, the mileage people drive has grown four times as fast as the population, twice as fast as licensed drivers and 18 times as fast as new roads:

- Miles driven: 2.5 billion (+90%)
- Vehicles: 206.4 million (+61%)
- Drivers: 179.5 million (+30%)
- Population: 265.3 million (+7%)
- Miles of roads: 3.9 million

Source: Road Information Program analysis of December report by the Federal Highway Administration
Moms Become Cab Drivers

Everything is a Drive Away

Suburban mothers spend 17 full days a year behind the wheel, more than the average parent spends dressing, bathing and feeding a child

Source: Surface Transportation Policy Project

Home

Recreation

Workplace
Personal Freedom
Impact of Transportation on Personal Freedom
# Real Families – 3 cars

<table>
<thead>
<tr>
<th>Day</th>
<th>Mom</th>
<th>Dad</th>
<th>Daughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>SOV</td>
<td>SOV</td>
<td>SOV</td>
</tr>
<tr>
<td>Tuesday</td>
<td>SOV</td>
<td>SOV</td>
<td>SOV</td>
</tr>
<tr>
<td>Wednesday</td>
<td>SOV</td>
<td>SOV</td>
<td>SOV</td>
</tr>
<tr>
<td>Thursday</td>
<td>SOV</td>
<td>SOV</td>
<td>SOV</td>
</tr>
<tr>
<td>Friday</td>
<td>SOV</td>
<td>SOV</td>
<td>SOV</td>
</tr>
<tr>
<td>Saturday</td>
<td>--</td>
<td>SOV</td>
<td>--</td>
</tr>
<tr>
<td>Sunday</td>
<td>varies</td>
<td>varies</td>
<td>varies</td>
</tr>
<tr>
<td></td>
<td>Mom</td>
<td>Dad</td>
<td>Daughter</td>
</tr>
<tr>
<td>------------------</td>
<td>-----</td>
<td>-----</td>
<td>----------</td>
</tr>
<tr>
<td>Monday</td>
<td>SOV</td>
<td>LRT</td>
<td>SOV</td>
</tr>
<tr>
<td>Tuesday</td>
<td>SOV</td>
<td>SOV</td>
<td>Bike</td>
</tr>
<tr>
<td>Wednesday</td>
<td>SOV</td>
<td>LRT</td>
<td>SOV</td>
</tr>
<tr>
<td>Thursday</td>
<td>SOV</td>
<td>SOV</td>
<td>Bike</td>
</tr>
<tr>
<td>Friday</td>
<td>Bike</td>
<td>LRT</td>
<td>SOV</td>
</tr>
<tr>
<td>Saturday</td>
<td>--</td>
<td>SOV</td>
<td>--</td>
</tr>
<tr>
<td>Sunday</td>
<td>varies</td>
<td>varies</td>
<td>varies</td>
</tr>
</tbody>
</table>
Per Capita Auto Ownership - 1980

New York: 0.412
Chicago: 0.445
Boston: 0.465
Denver: 0.666
Copenhagen: 0.246
Frankfurt: 0.387
Hamburg: 0.344
Paris: 0.338
Stockholm: 0.346
Zurich: 0.374

Source: Newman/Kenworthy
One less car: - $4,000/yr.
(net about $3,500)*

At least $50,000 in additional mortgage capacity

* assumes 2\textsuperscript{nd} or 3\textsuperscript{rd} car for household
Physical and Mental Health
Impact of Transportation on

Physical & Mental Health
Walking

...is not an “alternate mode”
Walking
...is Human
We Walk Because We are Human

We are Human Because We Walk
Because We Walk...

- We speak
- We sing
- We use tools
- We orient spatially at 3 mph
We cannot escape our DNA...
...no matter how hard we try
Community Engagement
Impact of Transportation on Community Engagement
It’s about connections...
Mobility Impacts of Poor Connectivity

- Massive, congested arterials
- Increased VMT/household
- Transit voids
- Inactive living
- Poor emergency service access
- Reduced travel safety
We are forcing bad design with public policy
To achieve a higher rate of traffic flow, you plan corridors.

To achieve better connectivity, you plan networks.
Other Impacts of Poor Connectivity

- Disassociation from community
- Reduced economic activity
- Lowered social cohesion

“The Geography of Nowhere”
Other Impacts of Poor Connectivity

- Disassociation from community
- Reduced economic activity
- Lowered social cohesion

“The Geography of Nowhere”
Economic Independence
Impact of Transportation on Economic Independence
The end of the age of...

...cheap oil
The stone age did not end...

...because we ran out of stones
Worldwide supply of oil

- 100%
- 50%

Time

42 years

1.3 trillion barrels
Worldwide supply of oil

Time

Daily demand

Daily production capacity

mbls/day

Time
Colorado’s Family Budgets – 2000

- Shelter: 20.61%
- Transportation: 17.37%
- Food: 12.08%
- Utilities: 10.81%
- Insurance & Pensions: 9.76%
- Other Household: 8.26%
- Apparel & Services: 5.69%
- Education: 4.68%
- Health Care: 4.04%
- Entertainment: 5.02%
- Education: 1.67%
- Miscellaneous: 0%
Total Direct Household Expenditures on Transportation in 2000 in Colorado’s Front Range:

$8.0 billion
Money Leaving the Colorado Economy

- Cost of $1/gal price increase for motor fuel consumed in Colorado: ≥ $38 million / week
- Annual cost to Colorado: ≥ $2 billion
Sustainable Transportation Systems:

- Enable families to reduce daily VMT without sacrificing income.
- Provide a high degree of choice and flexibility in mode of travel.
- Are resilient to economic fluctuations.
Things We Are Not Doing to Ensure Future Resiliency

- Providing a collector/connector street network for bus transit & bikes
- Building pedestrian environments into residential & commercial development
- Planning for dense, mixed-use areas as part of local land use planning
- Providing rail envelopes in freeway & major arterial corridors
- Building multimodal streets
Mobility
Impact of Transportation on Mobility
Mobility Elements

- Travel – Moving over distances
- Circulation – Moving within areas
- Access – Getting in the door
Built for...

Seattle

...travel

Redmond
Built for...

HSST

...travel

Denver
Built for...

Flagstaff

Redmond

...circulation
Built for...

Portland

Boulder

...circulation
Built for...

Boulder

Winter Park, Fl

...access
We build too much for travel and too little for circulation and access
Impact of Transportation on:

- Thriving Family
- Personal Freedom
- Physical & Mental Health
- Community Engagement
- Economic Independence
- Mobility
So...
What if we approached transportation planning & design as tools to be used in building “livable communities”
The central problem in Colorado transportation today is we are building “facilities” rather than “communities”
Predict Growth

Widen Streets

Forecast Traffic
1. What do we want?
2. How much traffic will there be?
3. What should we do?
1. What do we want?
2. How much traffic will there be?
3. What should we do?
1. How much traffic will there be?
2. What should we do?
3. What do we get?
Induced Traffic

Def.

The additional traffic that results directly and indirectly from transportation capacity or travel time improvements – traffic that would not otherwise have occurred at that location.
Types of Induced Traffic

Changes in travel route ................................ Immediate
Changes in mode of travel .......................... < 6 months
Changes in time of travel ......................... < 6 months
Changes in amount of travel ............... < 6 months
Changes in origins & destinations ...... < 10 years
% of new capacity consumed by induced traffic...

Long Term: five to 10 years

Short Term: less than five years
If you build it . . .

. . . they will come
If you build it . . .

. . . they will come
Road Size, Not Congestion is the Choice

Credit: Kulash
Expanding streets to accommodate traffic growth is self-fulfilling and self-defeating at the same time.
Sustainability of Transportation Strategies 1

Natural Resource Efficiency

- Add travel capacity at expense of access & circulation
- Improve traffic flow rates on existing facilities
- Shift mobility away from SOV reliance
- Increase connectivity within existing development
Sustainability of Transportation Strategies 2

Add travel capacity at expense of access & circulation
Improve traffic flow rates on existing facilities
Shift mobility away from SOV reliance
Increase connectivity within existing development
### Transportation Corridors
- **Major Roads**
- **Rail**
- **Pathways**

### Architecture
- **Civic**
- **Residential**
- **Commercial**

### Landscaping
- **Trees**
- **Other Plantings**

<table>
<thead>
<tr>
<th>Hundreds of Years:</th>
<th>200</th>
<th>400</th>
<th>600</th>
<th>800</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Corridors</td>
<td>![Major Roads]</td>
<td>![Rail]</td>
<td>![Pathways]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture</td>
<td>![Civic]</td>
<td>![Residential]</td>
<td>![Commercial]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landscaping</td>
<td>![Trees]</td>
<td>![Other Plantings]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank You