



## Measuring Success:

Steps for a Healthier, Wealthier, more Equitable Future



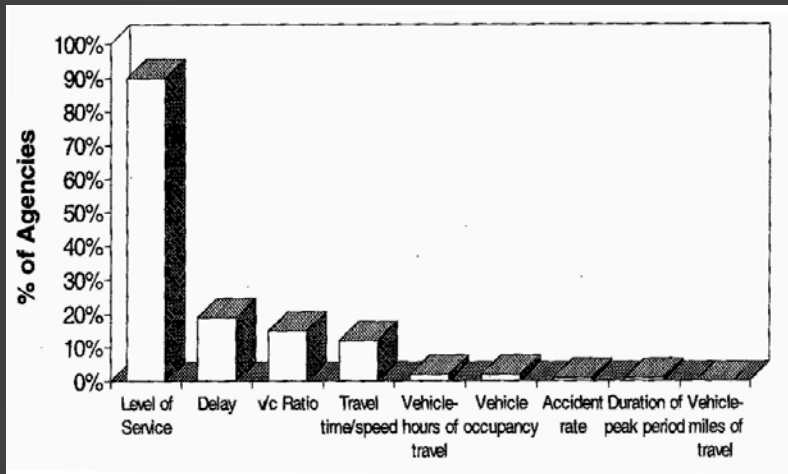
Jeffrey Tumlin

## Presentation Outline

- Paradise LOST: Why focus on LOS makes our cities poorer and more congested.
- Other approaches to LOS
- Case Study: Santa Monica



## Commonly Used Performance Measures



Source: Reid Ewing

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## Old Speed Paradigm -> Roadway LOS

Arterial Class	I	II	III
Level of service	Average Travel Speed (MPH)		
A	≥ 35	≥ 30	≥ 25
B	≥ 28	≥ 24	≥ 19
C	≥ 22	≥ 18	≥ 13
D	≥ 17	≥ 14	≥ 9
E	≥ 13	≥ 10	≥ 7
F	< 13	< 10	< 7

Source: Reid Ewing

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### What's important depends upon perspective



Traffic engineer:

F

A

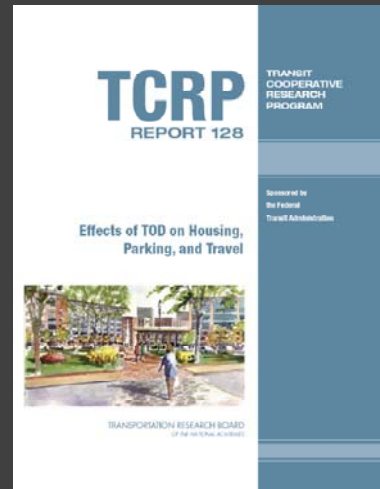
Economist:

A

F

## What's wrong with LOS?

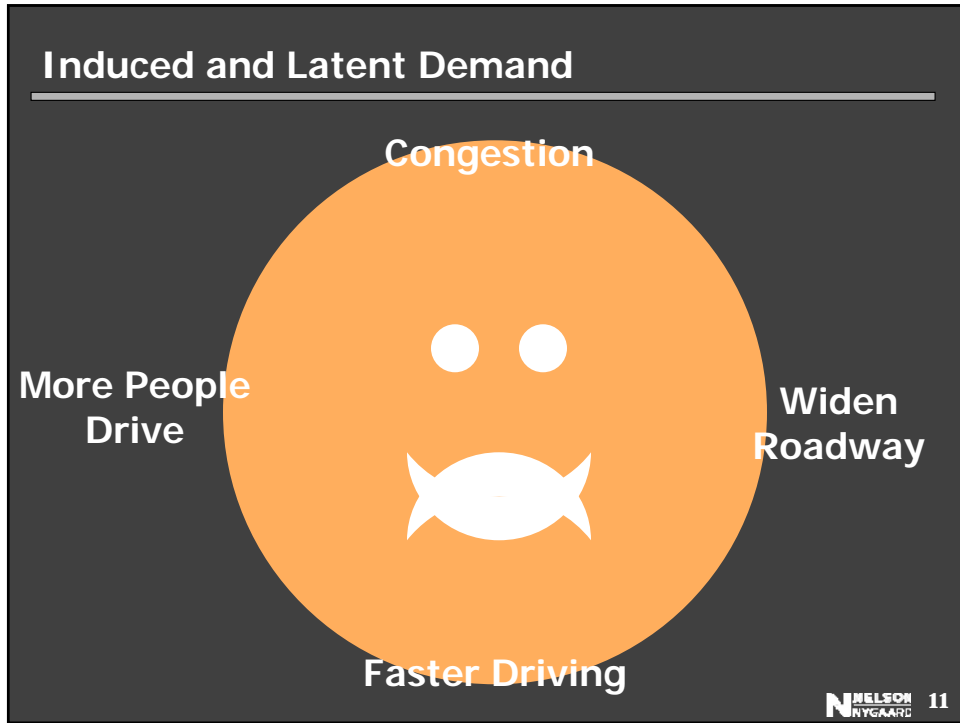
- To be "conservative," transportation analyses typically use ITE trip generation rates, data from isolated, single-use projects with no access except by car.
- TODs typically generate ~50% fewer vehicle trips than predicted by ITE. ("Effects of TOD on Parking, Housing and Travel," TCRP 128, 2008)
- Guidelines focus on localized traffic impacts and ignores regional impacts.



## LOS *Increases* Congestion

- To mitigate a negative transportation impact:
  - Reduce density
  - Widen roadways
  - Transportation Demand Management
  - Move the project to a more isolated location with less existing traffic congestion
- Result: Less walking, biking and transit. Mitigation becomes a self-fulfilling prophesy





What Get Measured Get Done

## How do we use Performance Measures?

- Improving efficiency of system operations
- Managing a given road or corridor
- Prioritizing funding
- Measuring impact of new development
- Imposing development fees
- Reporting to Congestion Management Agency
- Reporting on achievement of various goals

## What is transportation for?

- Transportation is not an end in itself
- It is merely a means by which we support individual and collective goals and objectives



## How Transportation Meets Goals

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- **Mobility:**

- Can I travel freely and easily to where I want to go?
- Reduce roadway congestion
- Increase transit frequency, reliability and speed
- Create bicycle lanes and complete sidewalks

- **Accessibility**

- Can I get the things and services I want?
- Bring people, goods and services closer together
- Mix uses
- Technology, delivery

## Measure what matters

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### Why not Consider...

- **Economic Development**

- Job creation
- Real estate value increase
- Retail sales

- **Quality of Life**

- Access to jobs
- Access to shopping
- Residential property value impact

- **Social Justice**

- Do benefits accrue equitably?
- Are investments spread equitably?

- **Ecological Sustainability**

- VMT per capita (=CO<sub>2</sub>, NO<sub>x</sub>, runoff, etc.)
- Land use/transportation connection



## Some performance measures

- Substitute *person* delay for *vehicle* delay
- Substitute *Quality of Service* for *Level of Service*
- All modes



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## Some performance measures

- **Transit**: Frequency, span of service, reliability, loading, speed
- **Automobile**: Average corridor travel time
- **Bicycle**: Bicycle Compatibility index
- **Pedestrian**: Perceived safety; Pedestrian environmental quality measures; Protected crossing frequency; Cumulative crossing delay



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## Pedestrian LOS

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Degree of comfort that pedestrians feel along the roadway

- How **SAFE** is the pedestrian from vehicular traffic?
- How much **TRAFFIC** is there?
- How **FAST** is the traffic moving?
- Is there **SEPARATION**?
- Are there **OBSTRUCTIONS**?

## Pedestrian LOS

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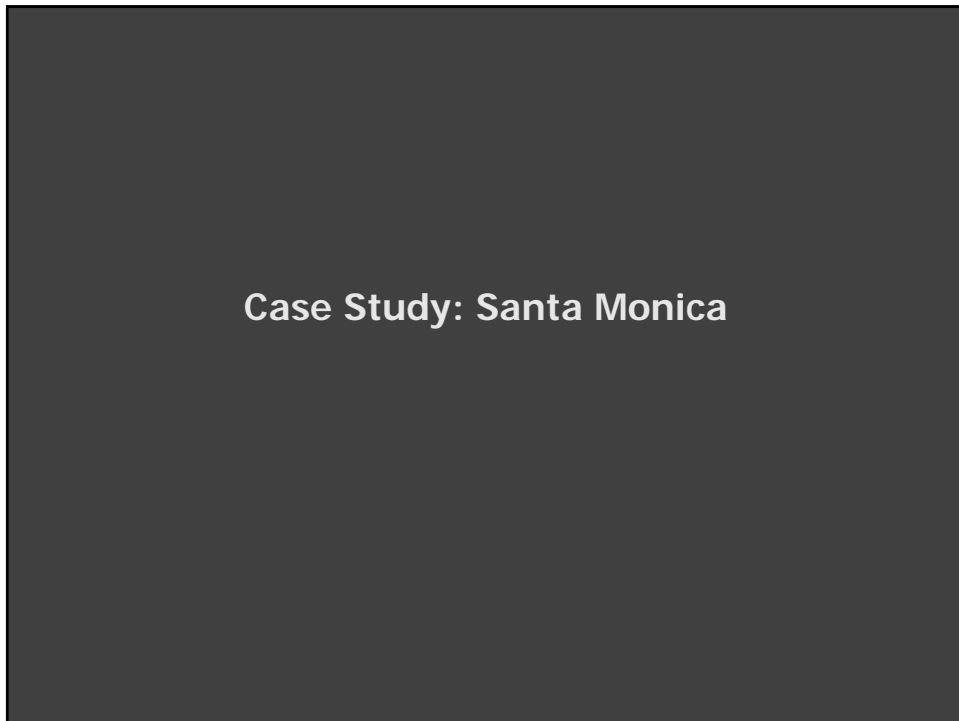
### *Sprinkle Consulting/FDOT Model*

*Ped LOS =*

$$-1.2021 \ln (Wol + Wl + fp \times \%OSP + fb \times Wb + fsw \times Ws) + 0.253 \ln (Vol_{15}/L) + 0.0005 SPD^2 + 5.3876$$

*where*

<i>Wol</i>	= Width of outside lane (feet)
<i>Wl</i>	= Width of shoulder or bike lane (feet)
<i>fp</i>	= On-street parking effect coefficient (=0.20)
<i>%OSP</i>	= Percent of segment with on-street parking
<i>fb</i>	= Buffer area barrier coefficient (=5.37 for trees spaced 20 feet on center)
<i>Wb</i>	= Buffer width (distance between edge of pavement and sidewalk, feet)
<i>fsw</i>	= Sidewalk presence coefficient = $6 - 0.3Ws$
<i>Ws</i>	= Width of sidewalk (feet)
<i>Vol<sub>15</sub></i>	= average traffic during a fifteen (15) minute period
<i>L</i>	= total number of (through) lanes (for road or street)
<i>SPD</i>	= Average running speed of motor vehicle traffic (mi/hr)



## Process

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- Identify local values
- Identify long list of performance measures
- Refine into short list:
  - Assess today's conditions
  - Predict future conditions
  - Evaluate projects
  - Conduct EIRs
- Create tools and gather data
- Establish targets and thresholds
- Report back to public and Council
- Adopt impact fee

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## Start with Transportation Principles

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- |                   |                   |
|-------------------|-------------------|
| • Measure Success | • Health          |
| • Management      | • Affordability   |
| • Streets         | • Economy         |
| • Quality         | • Equity          |
| • Public Space    | • Safety          |
| • Environment     | • Public Benefits |

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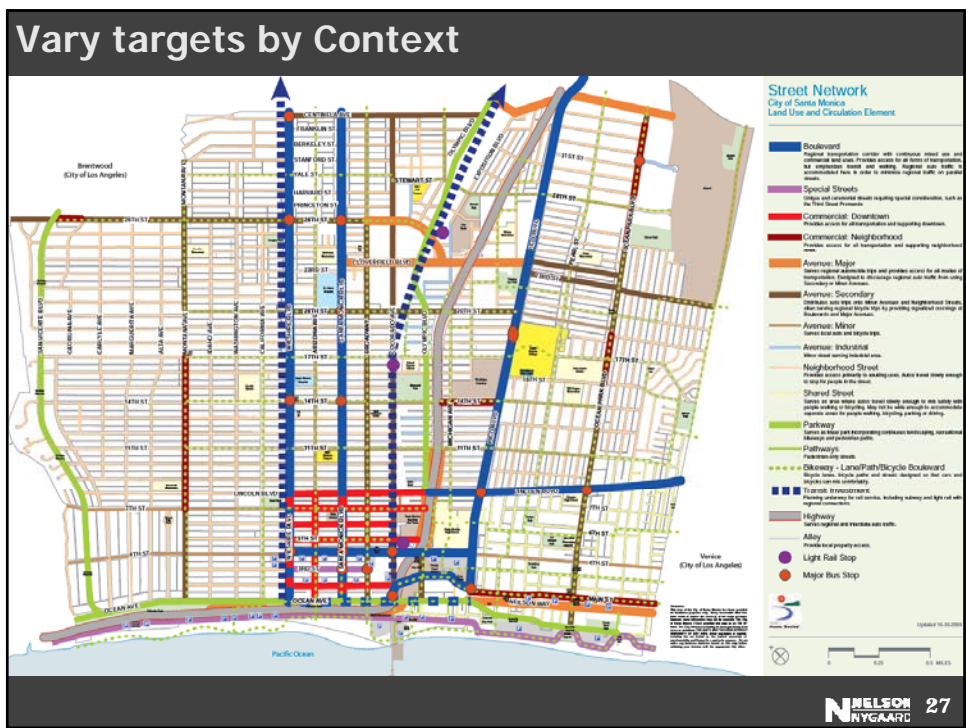
## Creating a Shortlist

- For each principle, a long list of potential measures – and tools for measuring
- Next step: Short list:
  - Shortest list of measures that captures Santa Monica values
  - Minimize data collection costs
  - Maximize clarity
- Some measures, like per capita Vehicle Miles Traveled, capture many values: Greenhouse gases, congestion, air quality, etc.



## The Long List

Measure	Cost/Time Consumption	Implementation	EIR	Project Review	Corridor Review	Report Card	Travel Model
<b>MANAGEMENT</b>							
-Relative travel times by mode	Medium	Can be modeled; see WeHo traffic model. Can also be collected through data collection. Transit travel times can be automated in GPS.	✓	✓	✓	✓	✓
-Person capacity – walking, bike, transit, auto, parking, bike parking	Medium - Heavy	This is a GIS/Excel type function that can be included if there is survey data available. Can be modeled. This needs to be further defined.	✓?		✓		✓?
-Transit LOS: productivity, farebox return, delay, reliability	Medium - Heavy	This will take extensive model development if we want to get to this level in the demand model. Direct ridership modeling would be another option and would require less data/development time. Transit LOS could also be developed and monitored separate from the model in an Excel spreadsheet. BBB already does a basic collection of this info, and full transit LOS data may be available in upcoming GPS reporting from BBB. Seattle uses transit LOS in an annual GIS report card map, focusing on transit speed and frequency. SF uses transit LOS in their EIRs	✓	✓	✓	✓	✓
-Neighborhood spill-over	Medium	Either traffic volumes or driver behavior (speed, etc)	✓			✓	
Congestion	Light	The sustainability report card currently measures intersection LOS. Congestion is also indirectly measured in the relative travel times by mode and the person capacity analysis above. (There is community resistance to using intersection LOS.) Adjust significance thresholds if used for EIRs.	✓	✓	✓	✓	✓



### Santa Monica: Application

- Main Street

FUNCTION	CONTEXT ZONE	Minimum	Desirable	Preferred	Measured
<b>Transit</b>					
Secondary	N'hood Commercial	≥-1	≥-0.5	≥+1	-0.8
<b>Auto</b>					
Secondary	N'hood Commercial	<1.2	<0.8	>0.6	0.75
<b>Pedestrian</b>					
Primary	N'hood Commercial	E	A	A	B

- Result: OK to slightly degrade auto QOS to improve transit and pedestrian QOS. Signal prioritization OK, but not dedicated transit lane.
- Goal: Bring all measures into *balance*

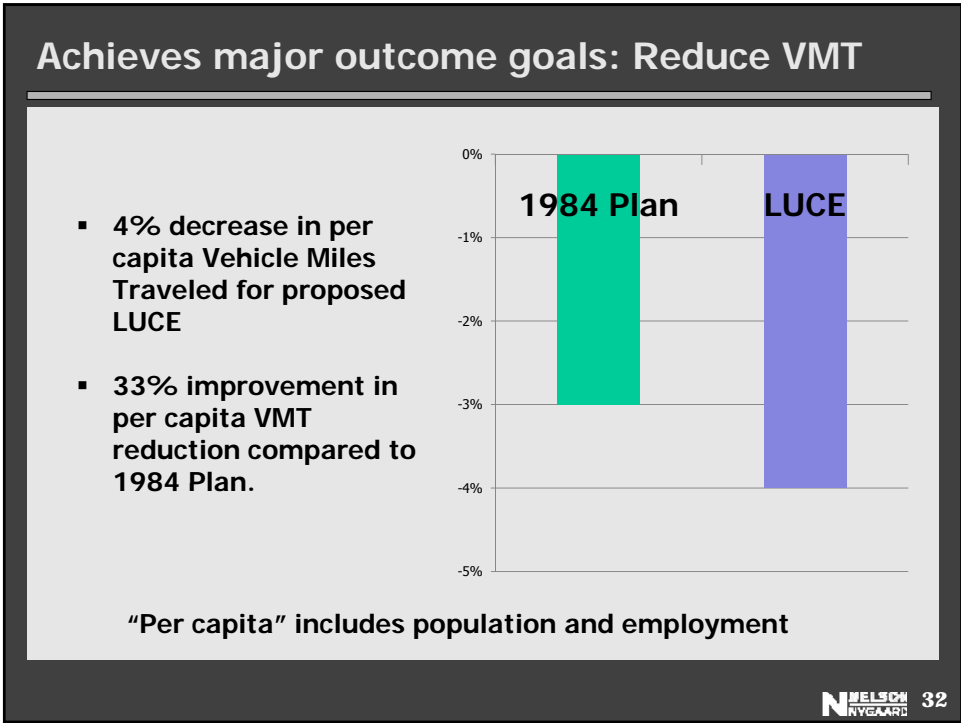
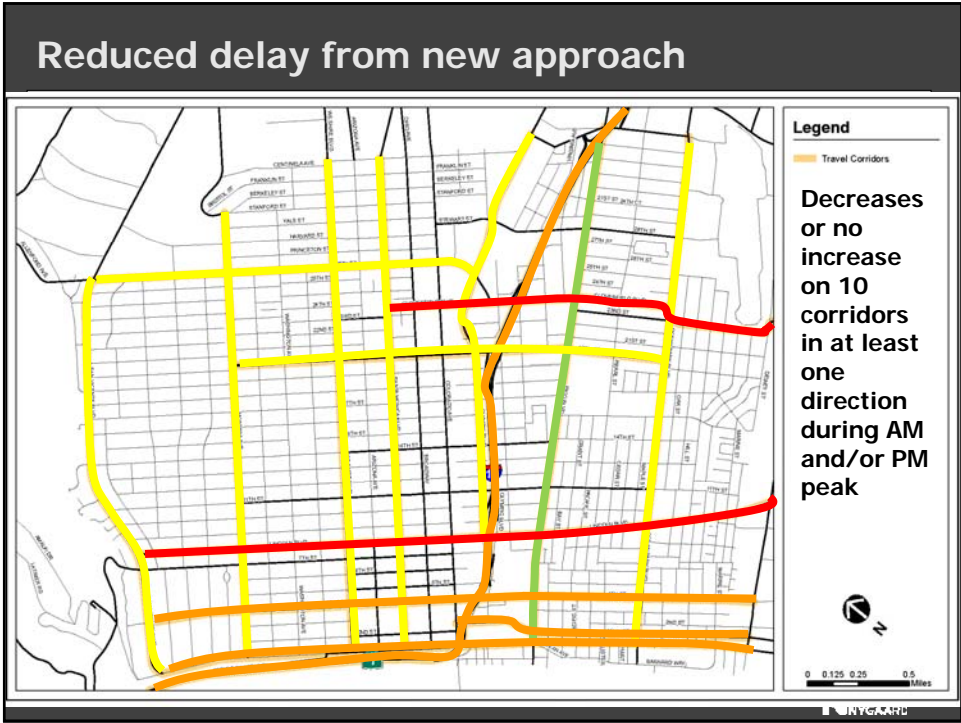
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## Tools and Data

- GIS mapping
- Transportation Demand Management reporting data
- Big Blue Bus GPS data
- Public perception surveys
- Traffic counts

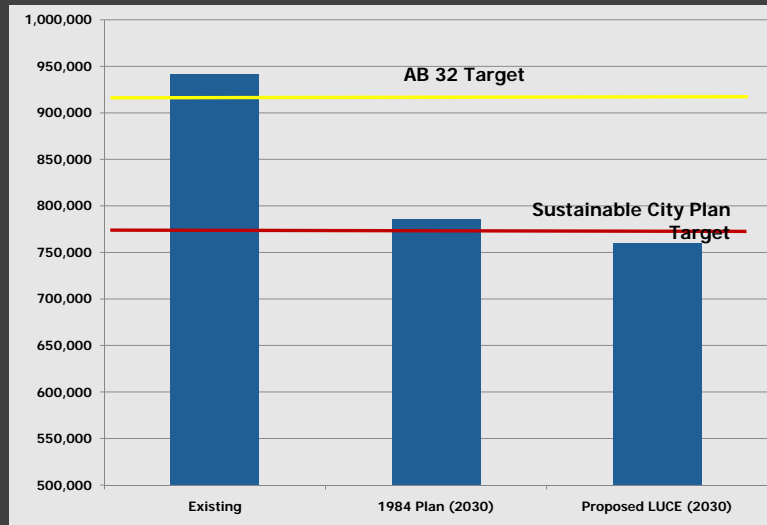
## Results: Delay from Previous Tools







## Results: Achieves GHG Reduction Goals



## Best practice

- Focus on outcomes.
- Ensure your local values are reflected and quantified. Include the triple bottom line.
- Use available or easily collectable data.
- Focus on citywide or regional impacts: don't make things a lot worse for everyone in order to make things a little better for a few.
- MMLOS can be bad for transit, biking and walking if misapplied.
- Focus on quality, not crowding.
- For congestion, focus on per capita Vehicle Miles Traveled.

## For More Information

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