Sorting Things Out: TOD Classification & Its Consequences

Railvolution 2010
Panel on TOD & Gentrification
Scott Bernstein, CNT
October 19, 2010
http://htaindex.cnt.org
http://toddata.cnt.org
scott@cnt.org
Purpose

- Help think about the city of the future by understanding how we got where we are today
- Review recent research on what causes the demand for transportation and how this affects affordability
- Review what recent research tells us about gentrification and Transit Oriented Development
- Review recent research on the combined cost of Housing + Transportation
- Recommend some priority areas for innovation and deployment
- Key themes of reconnection, inclusion and acceleration
The Challenge Ahead— Regional Readiness

- Inter-Agency Partnership for Sustainable Communities- Redefining Affordability
- HUD—New Office Of Sustainable Communities
- USDOT—Likely New Program in Livable Communities
- Congress—Livable Communities Act will make funds available and performance accountable
- Congress— THAT Act will codify H + T Affordability Index and Link to MLS
- New Funds Will Be Regionally Focused and Competitive
- Reauthorization delayed, but pilots possible (LA 30/10)
- Strong possibility of a new rental housing focus
Demographic & Price Trends Promote Urbanism and Demand Reduction

- Continuous drop in household size since 1790

- HH Size dropped from 3.3 to 2.6 1960-2000 while home size built increased 1400-2100 square feet

- Aging in place

- “Married w/kids” only 23% of total, HHs w/Kids 30%

- Rising energy and gas prices

- Limited public funds to keep sprawling
25% of net new American HHs will demand housing near transit in 2030—

- 409,497 HHS in 2005
- 286 Station Areas Now
- Planned Increase 75 More
- 832,418 Projected 2030 HHs
- Growth of 422,921 is 48% of Projected Regional Growth
- Only NY, LA & Chicago Will See More TOD HHs

Center for Transit-Oriented Development
Hidden in Plain Sight—
The Coming Demand for Housing Near Transit
CTOD for Federal Transit Administration, 2005 and Updated Demand Estimate Feb. 2007
What a Nourishing Economy Does—
Reduces Risk, Increases Gain
What a Nourishing Economy Does, Reduces Risk, Increases Gain, Offers Both Higher Wages AND Lowers Waste, Inclusively
Change in Gasoline Prices from June 2000 to June 2008, $1.65 to $4.15/gallon, dropped and then note recent rebound to $2.87

Source: USDOE Energy Information Administration Weekly Rocky Mountain PADD4 Time Series, [www.eia.doe.gov](http://www.eia.doe.gov)
2000-2008 Gas Costs Soared 2.4 Times Faster Than Home Owner Costs, 4.4 Times Rents & 8 Times Faster than Income

- Median HH Income Increased $10606 or $889/Month
- Mean HH Income Increased $14379 or $1198/Month
- Median weighted housing costs increased $406/month
- Median driving costs increased $271/month
- Left just $207/month to pay for all other increases in the cost of living—food, medical, mass transit & mortgage resets

Modest drop in Share of bottom 6 income quintiles

Big increase in Share of top 4 Income quintiles
Metropolitan Memphis Income Distribution 1999-2008

- Median monthly HH income increased by $663
- Monthly Housing + Transportation expense increased by $513 for 1-car HHs and $619 for 2-Car HHs
- *Increase wiped out all but $150 for 1-car and $44/month for 2-car HHs*
- Left very little to pay for all other COL increases—food, medical and mortgage resets

Median increased from $40-$48k
Mean increased from $54-$66k
Distribution & Disposition of Household Incomes in the Greater Bay Area 1999 and 2008

- Household income grew $11033 or $920/month
- Housing + Transportation costs grew $917
- Left just $3/month to pay for all other increased expenses: food, medical, mortgage resets

All cohort shares <$100k dropped

Largest decile share went From $50-75k in 1999 to $100-$150k in 2008

Calculated by CNT from Census, ACS and HTAIndex.org information
• Median HH Income grew by $660 per month
• Housing costs grew by $429 and transportation by $299, wiping out income gains
• Had no money available to pay for other cost of living increases including food, medical and mortgage reset expenses
Chicago MSA 1999-2008
Median Grew from $51046 to $61295
Mean Grew from $67768 to $82623

- Growth in median income was $854/month
- Growth in H+T costs was $803
- Left just $51/month for all other expense increases, e.g., food, medical, mortgage resets
- Better in places with more transport choice, worse in the exurbs
DuPage County Household Income and Expense Distribution 1999-2009

- Median income increased $469/month
- Median housing costs increased from $1536 to $2089 or $553/mo
- Transportation costs for 2-car HHs went from $994 to $1215 or $221/month
- Increase of $774 for H+T exceeded median increase by $302
- Increase of $774 wiped out all but $400 leaving little for increased food, medical and mortgage reset expense

3.1% earned <10k
5.6% earned <15k
12.7% earned <25k
20.6% earned <35k
32.6% earned <50k

Median income up $469/month
Mean income up $1144/month
Mean/median = 2.44, skewed

All increases in the upper Income deciles
What Is Location Efficiency and How Can It Help Address the Perfect Storm of Climate Change and Economic Recession?
An Urban Asset: Location Efficiency =
A Measure of Accessibility & Convenience & a Spatial Analogue to Thermodynamic Efficiency

- Density, Transit Access (Proximity, Frequency, Connectivity), and Amenities Determine Transportation Demand
- Statistics Used to Estimate Likely Travel Demand
- Demand is Verified by Measuring Vehicle Ownership and Extent of Use
- Demand is Then Valued in Dollars and Cents
How is Location Efficiency Determined? Explain Using Regression?

(Memorize This... Or.....)

Veh/Hh, VMT/Veh and VMT/Hh in metropolitan San Francisco

\[
\frac{\text{Veh}}{\text{Hh}} = 4.72 \left( 22.520 + \frac{H}{RA} \right)^{-0.3471} \left( 1 - e^{-\left( \frac{0.000112 \frac{S}{P}}{1.2386} \right)} \right)^{1+1.0519 \frac{P}{H} \left( Tr + 60.312 \right)^{0.2336}}
\]

\[
\frac{\text{VMT}}{\text{Veh}} = 1038.605 \frac{H}{TA}^{-0.0419} \left( 1 + 0.02759 \frac{P}{H} \left( -0.0704 \sqrt{Ped} \right) - 0.01743 \left( \frac{S}{P} - 221.36 \right) \right)
\]

For the 3 metropolitan areas, the \( R^2 = 79 - 96\% \) for Veh/Hh and 80 - 94\% for VMT/Hh.


Also reported at http://www.sierraclub.org/sprawl/transportation/holtzclaw-awma.pdf

Peer-reviewed by Brookings and National Academy of Sciences 2008

Driving vs Residential Density

- SF
- LA
- Chicago
Even Easier to See: Mapping the Benefit

- Good transit access yields one less car per household
- Lowers cost of living by $5-8,000
- Equivalent of increasing income 10-20 percent

Driving vs Residential Density
Idea Was Well Received, Outperformed Market—No Foreclosures

Skip the car, buy a house

There’s a lot of hand-wringing nowadays about suburban sprawl and the need for “smart growth.”

But like the weather, nobody’s doing much about it. Much of the home-buying public still opts for wide-open spaces along the metropolitan fringe. And despite thoughtful warnings from civic and regional groups, political realities in Illinois militate against significant governmental action.

Now comes a modest but innovative pilot program that just might make a small difference. Maybe even a big difference—if it educates the public about the true cost of living “out there.”

It’s called the Location Efficient Mortgage, or LEM, and it has been developed by environmental groups such as Chicago’s Center for Neighborhood Technology along with Fannie Mae, the government-chartered, stockholder-owned repurchaser of home mortgages.

It works like this: Participating lenders, in evaluating applicants, take into consideration how close the dwelling is located to public transportation. If it’s so close the applicant can live without a car, or a working couple can get by with just one, the estimate of disposable income is increased, and with it, the size of the mortgage for which they qualify.

A couple jointly earning $60,000 and buying into Chicago’s transit-rich Edgewater neighborhood, for instance, would qualify for a home selling for $212,218. Out in the boonies, under traditional guidelines, the limit would be $158,364.

And there are sweeteners. LEMs are not subject to income limits and they offer more flexibility, including lower down payments, than conventional mortgages. The City of Chicago, moreover, is offering vouchers worth $900 toward the purchase of energy-efficient appliances to the first 100 LEM borrowers.

Downsides? There’s mandatory counseling. And for now it’s limited to Chicago and three West Coast cities.

The ultimate value of LEM, however, may be to show, in ways people readily understand, that sprawl does impose costs. Some of that cost is paid, knowingly and gladly, by those who choose to live “out there.” Much of it, however, is hidden, and paid indirectly by those who live “back here.”

For more information about LEMs call 1-800-732-6643.
Thinking About Both Ownership and Rental Housing

- From 2005-2009
- Owner households increased vehicle ownership from 1.89 to 2.02
- Renter households stayed almost even, increasing from 1.20 to 1.22
- Homeownership rate actually dropped
Emerging Federal Opportunities

- Livable Communities Act
- Transportation & Housing Affordability Transparency Act
- GSE Reform
- Infrastructure Finance
- Renewed Rental Housing Interest
- Renewed Interest in Regional Economic Development Strategy (—Reverse RFPs)
- Continued HUD and DOT Leadership through new offices
Effect of *Drive til You Qualify*: Transport Costs Can Exceed Housing Costs for HHs Earning $20-$50,000

- Transportation emissions can also equal or exceed emissions from residential energy.
- Creates a "driving to green buildings" challenge.
Another Approach — Indexing Truer Affordability and Relating it to Climate Change

How Housing Affordability is Usually Calculated — Then and Now

• Historically: Traced to 19th Century ideal — A Week’s Pay for a Month’s Rent
• Today benchmark affordability is defined as housing costs/Income less than or equal to 30 Percent of target population AMI
• Problem — Doesn’t include cost of transportation
How We Derive Transportation Costs

6 Neighborhood Variables
- Residential Density
- Gross Density
- Average Block Size in Acres
- Transit Connectivity Index
- Job Density
- Average Time Journey to Work

3 Household Variables
- Household Income
- Household Size
- Commuters per Household

Car Ownership + Car Usage + Public Transit Usage

TOTAL TRANSPORTATION COSTS

© Center for Neighborhood Technology
Housing + Transportation Costs Vary by Place Across the US

Percentages for working families with incomes between $20k - $50k
What Drives These Differences?

- Access to services
- Walkable destinations
- Availability and frequency of transit
- Access to jobs (1/5 of trips)
- Access to amenities
- Density

—Regardless of family size and income, households in location efficient neighborhoods own fewer vehicles and drive fewer miles, and therefore have lower transportation costs.”

(Location Efficiency Study. CNT, STPP, NRDC, 2000)
The Housing + Transportation Affordability Index is an innovative tool that measures the true affordability of housing based on its location.

Americans traditionally consider housing affordable if it costs 30 percent or less of their income. The Housing + Transportation Affordability Index, in contrast, offers the true cost of housing based on its location by measuring the transportation costs associated with place.
Similar — affordability squeeze” in Chicago...
Chicago MSA Mirror Images
Net Density 0-347 HH/RA vs 6600 to 30,400 VMT/HH/Year

Residential Density

<table>
<thead>
<tr>
<th>Household Density</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block Groups</td>
<td>5,970</td>
<td>5,583</td>
</tr>
<tr>
<td>Minimum</td>
<td>0 HHs/Res. Acre</td>
<td>0 HHs/Res. Acre</td>
</tr>
<tr>
<td>Average</td>
<td>11 HHs/Res. Acre</td>
<td>12 HHs/Res. Acre</td>
</tr>
<tr>
<td>Maximum</td>
<td>347 HHs/Res. Acre</td>
<td>347 HHs/Res. Acre</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,890</td>
<td>2,739,718</td>
</tr>
</tbody>
</table>

Vehicle Miles Traveled (VMT) per Household

<table>
<thead>
<tr>
<th>Vehicle Miles Traveled (VMT) per Household</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block Groups</td>
<td>5,970</td>
<td>5,583</td>
</tr>
<tr>
<td>Minimum</td>
<td>6,600 Annual Miles</td>
<td>6,600 Annual Miles</td>
</tr>
<tr>
<td>Average</td>
<td>10,557 Annual Miles</td>
<td>15,386 Annual Miles</td>
</tr>
<tr>
<td>Maximum</td>
<td>30,399 Annual Miles</td>
<td>29,453 Annual Miles</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,528</td>
<td>2,739,556</td>
</tr>
</tbody>
</table>
Mirror Images Again—Net Density 0-347 vs. 0.5 – 2.2 Vehicles Per Household
One Click Shows Area of Highest VMT

**Residential Density**

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Groups</td>
<td>5,970 (5,970 with data)</td>
<td>5,583 (5,583 with data)</td>
</tr>
<tr>
<td>Minimum</td>
<td>0 HHs/Res. Acre</td>
<td>0 HHs/Res. Acre</td>
</tr>
<tr>
<td>Average</td>
<td>11 HHs/Res. Acre</td>
<td>12 HHs/Res. Acre</td>
</tr>
<tr>
<td>Maximum</td>
<td>347 HHs/Res. Acre</td>
<td>347 HHs/Res. Acre</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,890</td>
<td>2,739,718</td>
</tr>
</tbody>
</table>

**Vehicle Miles Traveled (VMT) per Household**

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Groups</td>
<td>5,970 (5,898 with data)</td>
<td>5,583 (5,511 with data)</td>
</tr>
<tr>
<td>Minimum</td>
<td>6,600 Annual Miles</td>
<td>6,800 Annual Miles</td>
</tr>
<tr>
<td>Average</td>
<td>16,567 Annual Miles</td>
<td>15,886 Annual Miles</td>
</tr>
<tr>
<td>Maximum</td>
<td>30,399 Annual Miles</td>
<td>29,453 Annual Miles</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,528</td>
<td>2,739,556</td>
</tr>
</tbody>
</table>
Another Shows Urban Form or Lack Thereof
Another Shows Area of Lowest VMT
While This One Clearly Shows Urban Form and Transit Station Areas
Transit Connectivity and Ridership—If You Build It, Operate It Frequently and Connect to the Region’s Destinations, People Will Ride It
4170/5898 areas are affordable at H<=30% AMI
3198/5898 areas are affordable at H+T<=45% AMI
388,000 additional households financially stressed
Much tighter for households earning 80% of AMI

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Groups</td>
<td>6,970</td>
<td>5,463</td>
</tr>
<tr>
<td>Minimum</td>
<td>3 %</td>
<td>3 %</td>
</tr>
<tr>
<td>Average</td>
<td>36 %</td>
<td>35 %</td>
</tr>
<tr>
<td>Maximum</td>
<td>131 %</td>
<td>131 %</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,838</td>
<td>2,846,872</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Groups</td>
<td>6,970</td>
<td>5,388</td>
</tr>
<tr>
<td>Minimum</td>
<td>15 %</td>
<td>15 %</td>
</tr>
<tr>
<td>Average</td>
<td>57 %</td>
<td>56 %</td>
</tr>
<tr>
<td>Maximum</td>
<td>159 %</td>
<td>159 %</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,500</td>
<td>2,846,734</td>
</tr>
</tbody>
</table>
Showing Effect of Gas Price Spike from 2000 to 2008

Annual Household Gasoline Expenses ($) - 2000 Gas Price

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Groups</td>
<td>5,970 (5,999 with data)</td>
<td>5,463 (5,391 with data)</td>
</tr>
<tr>
<td>Minimum</td>
<td>500 $/Year</td>
<td>509 $/Year</td>
</tr>
<tr>
<td>Average</td>
<td>1,278 $/Year</td>
<td>1,201 $/Year</td>
</tr>
<tr>
<td>Maximum</td>
<td>2,344 $/Year</td>
<td>2,202 $/Year</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,528</td>
<td>2,645,762</td>
</tr>
</tbody>
</table>

Annual Household Gasoline Expenses ($) - 2008 Gas Price

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Region</th>
<th>Viewable Area on Map Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block Groups</td>
<td>5,970 (5,999 with data)</td>
<td>5,463 (5,391 with data)</td>
</tr>
<tr>
<td>Minimum</td>
<td>1,399 $/Year</td>
<td>1,399 $/Year</td>
</tr>
<tr>
<td>Average</td>
<td>3,512 $/Year</td>
<td>3,302 $/Year</td>
</tr>
<tr>
<td>Maximum</td>
<td>6,444 $/Year</td>
<td>6,217 $/Year</td>
</tr>
<tr>
<td>Households</td>
<td>2,971,528</td>
<td>2,645,762</td>
</tr>
</tbody>
</table>
In most efficient areas, cost of living increase from spike kept to 2%, in least efficient areas increased 9%
In Portland OR...Also Happens Even With...
With excellent planning

http://toddata.cnt.org
Rethinking the Drive _til_ You Qualify
Housing Market – Diet for a Leaner Region

Gas = $4.00/gallon, Median Income = $62,000

• 3 Cars, 35,000 VMT, No Transit, $15k/year housing = 64% for H+T (30-50 miles out)

• 2 Cars, 25,000 VMT, No Transit, $18,000/year housing = 56% for H+T (15-30 miles out)

• 1 Car, 15,000 VMT, $150/Month Transit, $25/month for taxis, $20k/year housing = 50% for H+T (10 – 15 miles out)

• 1 Car, 7500 VMT, $125/Month Transit, $50/month for Car-Sharing, $21k/year housing = 49% H+T (7 -12 miles out)

• 0 Car, $200/Month for Transit, $200/Month for Car-Sharing, $22k/year housing = 43% for H+T (0 – 7 miles out)
Thinking About —Gentrification” and Transit Oriented Development
2000-2030 Showing Portion of ½ Mile Transit Zone Households in 2000 with Above-Median Income

Most gentrified in 2000

- Bay Area 51
- DC 46
- Boston 45
- Chicago 42
- New York 42
- Houston 41
- Charlotte 39
- Pittsburgh 37
- Atlanta 36
- Dallas 35
2000-2030 Showing Percentage Increase in Above Median Income Households in ½ Mile Transit Zones

Fastest gentrifying 2000-2030

- 2000 50k+
- 2030 50k+
- % Change
2000-2030 Projections Showing 2030 Percentage of ½ Mile Transit Zones With Above Average Household Incomes

Most gentrified transit zones in 2030
<table>
<thead>
<tr>
<th>Highest 10 &gt; Median Income In 2000</th>
<th>Fastest 10 &gt; Median Income 2000-2030</th>
<th>Highest 10 &gt; Median Income 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF Bay Area</td>
<td>Twin Cities</td>
<td>DC</td>
</tr>
<tr>
<td>DC</td>
<td>Memphis</td>
<td>SF Bay Area</td>
</tr>
<tr>
<td>Boston</td>
<td>LA So Cal</td>
<td>Boston</td>
</tr>
<tr>
<td>Chicago</td>
<td>Portland OR</td>
<td>Chicago</td>
</tr>
<tr>
<td>New York</td>
<td>Cleveland</td>
<td>Twin Cities</td>
</tr>
<tr>
<td>Houston</td>
<td>Miami So Fl</td>
<td>New York</td>
</tr>
<tr>
<td>Charlotte</td>
<td>St. Louis</td>
<td>Portland OR</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>Seattle</td>
<td>Philadelphia</td>
</tr>
<tr>
<td>Atlanta</td>
<td>Galveston</td>
<td>Denver</td>
</tr>
<tr>
<td>Dallas</td>
<td>Denver</td>
<td>Cleveland</td>
</tr>
</tbody>
</table>
Transit Zones Generally More Racially Diverse Than Surrounding Region, Income More of a Mixed Story, More Diverse in Largest Areas

Table 10. Comparison of Race and Income Diversity of Transit Systems to Transit Regions

<table>
<thead>
<tr>
<th>System Size</th>
<th>Transit Region</th>
<th>Race Entropy Index</th>
<th>Income Entropy Index</th>
<th>Race in Transit System More Diverse than Region?</th>
<th>Income in Transit System More Diverse than Region?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensive</td>
<td>Boston</td>
<td>0.688</td>
<td>0.453</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Chicago</td>
<td>0.788</td>
<td>0.710</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>New York</td>
<td>0.857</td>
<td>0.750</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Philadelphia</td>
<td>0.656</td>
<td>0.552</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>San Francisco Bay Area</td>
<td>0.849</td>
<td>0.824</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Large</td>
<td>Los Angeles</td>
<td>0.743</td>
<td>0.792</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Portland</td>
<td>0.591</td>
<td>0.447</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Washington</td>
<td>0.777</td>
<td>0.727</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Medium</td>
<td>Atlanta</td>
<td>0.673</td>
<td>0.638</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Baltimore</td>
<td>0.553</td>
<td>0.545</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Cleveland</td>
<td>0.640</td>
<td>0.474</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Dallas</td>
<td>0.768</td>
<td>0.691</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Miami</td>
<td>0.737</td>
<td>0.741</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Pittsburgh</td>
<td>0.307</td>
<td>0.274</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Sacramento</td>
<td>0.777</td>
<td>0.697</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>San Diego</td>
<td>0.759</td>
<td>0.736</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Seattle</td>
<td>0.651</td>
<td>0.541</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>St. Louis</td>
<td>0.582</td>
<td>0.432</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Small</td>
<td>Buffalo</td>
<td>0.639</td>
<td>0.396</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Denver</td>
<td>0.722</td>
<td>0.551</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Galveston</td>
<td>0.799</td>
<td>0.645</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Jacksonville</td>
<td>0.583</td>
<td>0.540</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Memphis</td>
<td>0.684</td>
<td>0.563</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>New Orleans</td>
<td>0.603</td>
<td>0.612</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Syracuse</td>
<td>0.735</td>
<td>0.321</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>System Size</td>
<td>Region</td>
<td>Total Transit Zones</td>
<td>Race Diverse Zones</td>
<td>Income Diverse Zones</td>
<td>Both Race and Income Diverse</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------</td>
<td>---------------------</td>
<td>--------------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Extensive</td>
<td>Boston</td>
<td>288</td>
<td>42</td>
<td>81</td>
<td>120</td>
</tr>
<tr>
<td>Extensive</td>
<td>Chicago</td>
<td>401</td>
<td>35</td>
<td>103</td>
<td>201</td>
</tr>
<tr>
<td>Extensive</td>
<td>New York</td>
<td>955</td>
<td>107</td>
<td>192</td>
<td>406</td>
</tr>
<tr>
<td>Extensive</td>
<td>Philadelphia</td>
<td>370</td>
<td>27</td>
<td>115</td>
<td>171</td>
</tr>
<tr>
<td>Extensive</td>
<td>San Francisco Bay Area</td>
<td>286</td>
<td>48</td>
<td>90</td>
<td>127</td>
</tr>
<tr>
<td>Large</td>
<td>Los Angeles</td>
<td>113</td>
<td>25</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>Large</td>
<td>Portland</td>
<td>108</td>
<td>40</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>Large</td>
<td>Washington</td>
<td>127</td>
<td>17</td>
<td>21</td>
<td>78</td>
</tr>
<tr>
<td>Medium</td>
<td>Atlanta</td>
<td>38</td>
<td>5</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Medium</td>
<td>Baltimore</td>
<td>61</td>
<td>13</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Medium</td>
<td>Cleveland</td>
<td>49</td>
<td>14</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Medium</td>
<td>Dallas</td>
<td>48</td>
<td>3</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Medium</td>
<td>Miami</td>
<td>60</td>
<td>22</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Medium</td>
<td>Pittsburgh</td>
<td>68</td>
<td>5</td>
<td>38</td>
<td>21</td>
</tr>
<tr>
<td>Medium</td>
<td>Sacramento</td>
<td>55</td>
<td>20</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Medium</td>
<td>San Diego</td>
<td>56</td>
<td>13</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Medium</td>
<td>Seattle</td>
<td>20</td>
<td>13</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Medium</td>
<td>St. Louis</td>
<td>28</td>
<td>6</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Small</td>
<td>Buffalo</td>
<td>16</td>
<td>10</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Small</td>
<td>Denver</td>
<td>24</td>
<td>15</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Small</td>
<td>Galveston</td>
<td>15</td>
<td>6</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Small</td>
<td>Jacksonville</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Small</td>
<td>Memphis</td>
<td>23</td>
<td>7</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Small</td>
<td>New Orleans</td>
<td>18</td>
<td>1</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Small</td>
<td>Syracuse</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
Figure 7. Combining the Benefits of Diverse Neighborhoods with Transit Orientation

Benefits of TOD
- Provides Housing and Mobility Choices
- Delivers Riders to Transit
- Helps Support Healthy Lifestyles
- Creates Lasting Value
- Opportunity to Create High Quality Urbanism

Benefits of Diverse Neighborhoods
- Provides Needed Housing
- De-concentrate Poverty
- Provides Low Income Households Access to Different Social Networks and Jobs
- Helps Workforce Stability
- Keeps Extended Families Together
- Allows Elderly to Age In Place

Benefits of Diverse Transit-Oriented Neighborhoods
- Increases Affordability and Wealth Creation Opportunities for Residents
- Builds Stable Ridership for Transit
- Supports Regional Job Market
- Provides more Sustainable Real Estate Investments
Transit Zones and Regions They Serve Generally More Racially Diverse, and As Diverse as the U.S.

To measure diversity, we used a method known as the “Entropy Index.” The Entropy Index scores diversity on a scale from 0 to 1, where a value of 0 is homogeneous (all the same) and a value of 1 is heterogeneous (completely mixed). We applied the Entropy Index region by region, which allowed us to create a unique measure of diversity for each region, rather than comparing the diversity of households near transit in each region to a national standard. (For more information on the Entropy Index, see Appendix A: Methods.)

Table 9. Comparison of Race and Income Diversity in Transit Systems, Regions and U.S.

<table>
<thead>
<tr>
<th></th>
<th>Race Entropy Index</th>
<th>Income Entropy Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Systems</td>
<td>0.850</td>
<td>0.981</td>
</tr>
<tr>
<td>Transit Regions</td>
<td>0.728</td>
<td>0.982</td>
</tr>
<tr>
<td>U.S.</td>
<td>0.613</td>
<td>0.996</td>
</tr>
</tbody>
</table>
1.05 Million HHs in 2273 Block Groups, 40.7% That Have EAI >62k Jobs/Mi2

1.69 Million HHs in 3312 Block Groups, 59.3% That Have EAI <12k-65k Jobs/Mi2
1.47 Million HHs
In 2949 Block
Groups, 52.8%
That Emit Avg of
6.5-16 Tons/Yr

1.27 Million HHs
In 2636 Block
Groups, 41.2%
That Emit Avg of
0.7-6.4 Tons/Yr

1.69 Million HHs
In 3312 Block
Groups, 59.3%
That Have EAI
<12k-65k
Jobs/Mi²

1.05 Million HHs
In 2273 Block
Groups, 40.7%
That Have EAI
>62k Jobs/Mi²
40.7% of Block Groups Have EAI >62k Jobs/Mi2

59.7% of Block Groups Have EAI <12k-64k

43.7% of Block Groups Have H+T >= 45%

56.3 of Block Groups Have H+T <45%
76.1% of Block Groups Had 2008 T-Costs 20-28% Of Income for AMI HHs

40.7% of Block Groups Have EAI >62k Jobs/Mi2

39.7% of Block Groups Have EAI <12k-64k

23.1% of Block Groups Had 2008 T-Costs 12.6-20%
71% of Block Groups
EAI >=62,000 Jobs/Square Mile

53% of Block Groups
H+T Costs <=45% for AMI
### Employment Access Index

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Neighborhoods</th>
<th>Percent of Neighborhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Data Available</td>
<td>344</td>
<td>15.5%</td>
</tr>
<tr>
<td>Less than 12000 Jobs/Sq. Mile</td>
<td>477</td>
<td>21.5%</td>
</tr>
<tr>
<td>12000 to 22000 Jobs/Sq. Mile</td>
<td>672</td>
<td>30.3%</td>
</tr>
<tr>
<td>22000 to 35000 Jobs/Sq. Mile</td>
<td>456</td>
<td>21%</td>
</tr>
<tr>
<td>35000 to 62000 Jobs/Sq. Mile</td>
<td>260</td>
<td>11.7%</td>
</tr>
<tr>
<td>62000 Jobs/Sq. Mile and Greater</td>
<td>2,218</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Housing and Transportation Costs - % Income

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Neighborhoods</th>
<th>Percent of Neighborhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Data Available</td>
<td>4</td>
<td>0.2%</td>
</tr>
<tr>
<td>Less than 45%</td>
<td>616</td>
<td>27.8%</td>
</tr>
<tr>
<td>45% and Greater</td>
<td>1,598</td>
<td>72%</td>
</tr>
<tr>
<td>Map Total</td>
<td>2,218</td>
<td>100%</td>
</tr>
</tbody>
</table>
Ten Years of Foreclosures in Metro Chicago

Recent Residential Mortgage Foreclosures
Chicago Region, 1998

Recent Residential Mortgage Foreclosures
Chicago Region, 2008

Count of Mortgage Foreclosures
By Census Block Groups, 1998
- 30 to 39
- 15 to 29
- 5 to 14
- 1 to 4
- Less than 1

Count of Mortgage Foreclosures
By Census Block Groups, 2008
- 30 to 99
- 15 to 30
- 5 to 14
- 1 to 4
- 0 to 1
Foreclosure Rates in Chicago 2000 and 2008
Highest in Areas of High T-Cost and Extensive Use of Variable Rate Financing
Can Gas Price Spikes Help Provide Early Warning of Defaults and Foreclosures?

- Foreclosures followed price spikes with 6-9 month lag...& grew 4-2 times faster in suburbs than in city by 2000.

Weekly Gas Prices 2000-2009

Weekly Foreclosures 2000-2009
The lower the TCI, the greater the number of foreclosed properties by Census Block Group

Foreclosures increase once the average annual VMT per Block Group exceeds 15,000
Can We ―Gentrify‖ That Is, Increase Incomes in Transit Zones and Still Meet the Affordability Gap?
TOD Is:

• **Location efficiency** — Dense, transit-accessible, & pedestrian-friendly

• **Rich Mix of Choices** — Wide range of mobility, housing and shopping options

• **Value Capture** — Good service & connections, local amenities support place-making, scorekeeping & attention to financial returns

• **Place-Making** — Places for people, enriches existing qualities, provides new connections, works with landscape, builds reputation

• **Resolution of Tension between TODs as “Nodes” and “Places”** — Works to support travel networks and communities

New Transit Town, Island Press 2005
TOD is not

- **Just for commuters** — Work-related trips just 18 percent of total travel
- **Auto-oriented transit** — Way too much land in Chicago devoted to park-and-ride lots
- **Just a place to sleep at night** — People need to shop, eat, visit without getting in a car
- **Only the transit property** — All successful TODs are joint developments between cities, transit operators, private investor/owners, and communities

New Transit Town, Island Press 2005
How Value Creation and Capture Work—
Results in Measured Increase of 18-167% Within Walking Distance of Stations

EG, Maine Downeaster Investment Results in $7B, 42k units, 17k Jobs $2.4B Purchasing Power, $245M HH Trans Savings, +$75M/Yr Taxes (CNT 2006)

Source: Strategic Economics.
Not All Corridors Will Support Significant Increments of New Development

Corridors Serve Different Roles Based on Defining Characteristics

- **Congestion Relief**
  - Complements existing commute flows
  - Limited emphasis on development

- **Future Growth and Development**
  - Addresses future congestion
  - High development opportunities on corridor

- **Equity**
  - Connects low-income neighborhoods to job centers
  - Provides low-cost access relative to automobiles

- **Economic Development**
  - Placed along older arterial corridors
  - Transit investment intended to spur re-development

**Value Capture Corridor**
Cleveland Health Line / Euclid Avenue BRT—Significant Development Downtown & U. Circle But Very Little In Between

$3 Billion in New Investment
Concentrated Near Public Square and University Circle

Good traffic mover
Supports expansion
Not an incentive for reinvestment
Filling In Missing Links by Adding Streetcar Circulation—
Reduced Portland VMT & Transport Carbon 67%
Part of Portland Climate Plan (From Street Smart, CTOD 2006)

STREETF CARS ARE DEVELOPMENT-ORIENTED TRANSIT

DEVELOPERS SAY THAT the permanence of the fixed guideway helps mitigate the risk, and the higher densities and lower parking ratios typically permitted in downtowns make projects more profitable. These densities would not be possible, however, if there was no streetcar. Before the alignment was selected for the Portland streetcar land in the Pearl only captured 19 percent of all development in the CBD; after it was chosen the land captured 55 percent.

<table>
<thead>
<tr>
<th></th>
<th>Start of Service</th>
<th>Initial Track Miles</th>
<th>Initial System Cost Per Mile</th>
<th>Initial System Cost</th>
<th>Development Investment</th>
<th>Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenosha</td>
<td>2000</td>
<td>2.0</td>
<td>3.10</td>
<td>6.20</td>
<td>150</td>
<td>2319.35%</td>
</tr>
<tr>
<td>Little Rock</td>
<td>2004</td>
<td>2.5</td>
<td>7.84</td>
<td>19.60</td>
<td>200</td>
<td>920.41%</td>
</tr>
<tr>
<td>Tampa</td>
<td>2003</td>
<td>2.4</td>
<td>20.13</td>
<td>48.30</td>
<td>1000</td>
<td>1970.39%</td>
</tr>
<tr>
<td>Portland (1)</td>
<td>2001</td>
<td>4.8</td>
<td>11.50</td>
<td>55.20</td>
<td>1046</td>
<td>1794.93%</td>
</tr>
<tr>
<td>Portland (Ext.)</td>
<td>2005</td>
<td>1.2</td>
<td>14.83</td>
<td>17.80</td>
<td>1353</td>
<td>7501.12%</td>
</tr>
</tbody>
</table>

Source: Reconnecting America
Other TOD and Affordable Housing Approaches

• Chicago—Waives minimum parking w/in 300 feet of rail stops
• Austin—Waives fees & accelerates review near stops
• Massachusetts—40R program uses overlay districts to reward affordability with cash
• Bay Area—BART can waive or reduce replacement parking for mixed income development
• Chicago—Guarantees 30 day permit for green building, considering similar acceleration for PUD near transit
• 28 States have some “near transit” screen for LIHTC QA Plans
• Transit agency “joint development”—San Jose’ VTA allows “condominiums” in ROW
• Benefit Assessment and Tax Increment Districts—portion devoted to public benefits agreements
• MPO grants for community planning and housing subsidy—MTC’s TLC & HIP in Bay Area
Developing Strategic TOD Plans for Deploying Underutilized Assets—Strategic Plans in Chicago, Columbus, Cinci, Cleveland

- 62% of nation’s 3400 freight yards in metro areas

![TOD Typology for Chicago’s South Suburbs](image)
Helping Justify Reduced Parking in TOD Areas—Housing For People Not Cars

- 200 sf/car, 150sf/worker
- Converting garages to homes
- Repurposing parking capital
Identifying Strong & Weak Local Retail Market Potential

- Expenditure density helps justify Mixed Use
- Increases local employment
- Reduces non-work trips too
Visualize TOD as 8 Concentric Rings In ¼ Mile Increments—Focus on the neighborhood and not just the immediate station area

Area covered by
• ¼ mi rad = 126 acres
• ½ mi rad = 503 acres
• ¾ mi rad = 1131 acres
• 1 mi rad = 2011 acres
• 1.25 mi rad = 3142
• 1.5 mi rad = 4524
• 1.75 mi rad = 6148
• 2 mile rad = 8042

Increment net of non-res
• ½ mi, 189 acres
• ¾ mi, 314 acres
• 1.0 mi, 440 acres
• 1.25 mi, 565 acres
• 1.50 mi, 691 acres
• 1.75 mi, 817 acres
• 2.0 mi, 942 acres

http://toddata.cnt.org
Some Research Questions

• Under what conditions did gentrification also include displacement
• Displacement of who and to where
• If displaced to immediate neighborhood, with what impact
• If displacement to similar neighborhoods in same city, what impact
• If displacement to less urban areas, with what impact
• Strategies to preserve current affordability
• Strategies to improve land use, repurposing
• People to jobs or jobs to people?
Emerging Federal Opportunities

• Livable Communities Act
• Transportation & Housing Affordability Transparency Act
• GSE Reform
• Infrastructure Finance
• Renewed Rental Housing Interest
• Renewed Interest in Regional Economic Development Strategy (—Reverse RFPs)
• Continued HUD and DOT Leadership through new offices
How Transportation Choices Can Improve the Metro Economic Forecast—Reconnection, Inclusion, Acceleration

• Get the goals right—accountability for local economic benefits
• Focus on reducing the cost of living and increasing value capture not just on throughput and congestion
• Improve transportation choice through transit and HSR and attract investment

• Focus on bringing jobs to people not just people to jobs
• Focus on housing for people not for cars
• Leave no investment opportunity behind—adopt a "dash program" of regional effectiveness now to attract State and Federal core investments
Thank you!

- scott@cnt.org
- www.cnt.org
- http://htaindex.org
- http://toddata.cnt.org
- www.reconnectingamerica.org/ctod