

## The Evolution of Location Efficiency: Transportation Costs and Affordability

By Jill Siegel

**I**n 1994, researchers at the Center for Neighborhood Technology (CNT) in Chicago, the Natural Resources Defense Council in San Francisco, and the Surface Transportation Policy Project in Washington, DC, began work on “location efficiency.” Their purpose was to explore the assumption that a household’s car ownership and driving decrease measurably as their daily work, housing, and leisure destinations become more convenient, especially through the use of non-automotive means. This research was based on the idea that, from a transportation perspective, a community is more or less convenient—and more or less costly—based on several key determining characteristics: residential density, location, nearby shopping, availability of public transit, and pedestrian and bicycle friendliness. The study found that neighborhoods are “location efficient” when they have convenient transportation and are near or contain jobs, services, retail, schools, and other essentials. Additionally, households within “location efficient” neighborhoods—

regardless of household size and income—own fewer vehicles and drive fewer miles. These households, therefore, enjoy lower transportation expenditures. In fact, when a typical working family reduces their car ownership by one vehicle per household, they often realize a 10 to 15 percent savings in their overall expenses.

### Location Adds Purchasing Power

This exploration led to a private market finance tool, the Location Efficient Mortgage (LEM), which allows homebuyers to capitalize on the value of their location choice when purchasing a home. This special Fannie Mae-backed mortgage product allows underwriters to give additional credit to the buyer based on a location efficiency value (LEV)—a value determined by predictable expectations of auto ownership and vehicle miles traveled of the homebuyer. Researchers were able to determine this value by considering the conditions described above (residential density, transit availability, and neighborhood walkability) and by modeling future auto use based on actual vehicle miles traveled for millions of households in California and the Chicago region.

While the LEV work led to the lending product that allows a home-

*Neighborhoods are “location efficient” when they have convenient transportation and are near or contain jobs, services, retail, schools, and other essentials.*

buyer to purchase a more expensive home in a location efficient area by committing their auto savings to repaying the mortgage and other associated costs and helped to measure the costs and benefits of alternative development patterns, it was limited to three metro areas (San Francisco, Los Angeles, Chicago). Due to a very involved calculation process, the LEV analysis was difficult to replicate and expand into other locations. The primary data set, vehicle odometer readings, was not easy to obtain.

### Affordability Index: Transportation + Housing

In light of these challenges, subsequent research developed through CNT’s partnership in the Center for Transit Oriented Development (CTOD) was targeted toward identifying new variables using census data to measure location attributes in cities across the country. Use of these variables evolved into the H+T Affordability Index which adds known housing expenses to modeled transportation costs to identify the percent of income that households spend on housing and transportation (H+T). The Index uses census-reported Selected Monthly Owner Costs and Gross Rents in its formula. While local housing costs are, and have been readily known, household trans-

*Jill Siegel is a publications and grants writer at the Center for Neighborhood Technology in Chicago.*

portation costs by neighborhood had not previously been available. This innovative tool is in contrast to the traditional measure of affordability used by planners, lenders, and most consumers that recommends that housing costs alone should be less than 30 percent of household income. By taking into account both housing and transportation costs, the Index paints a more accurate picture of affordability and can help guide policies about where to build or live,

what to build, and who benefits. As a result of this work, total transportation costs can now be mapped by area (see Monthly Transportation Savings map, below left) combined with housing costs and mapped by area, and analyzed to see how development patterns and investments in transportation choice impact household transportation costs. Given the volume and type of data available and the geography represented, the potential impacts of the Index could

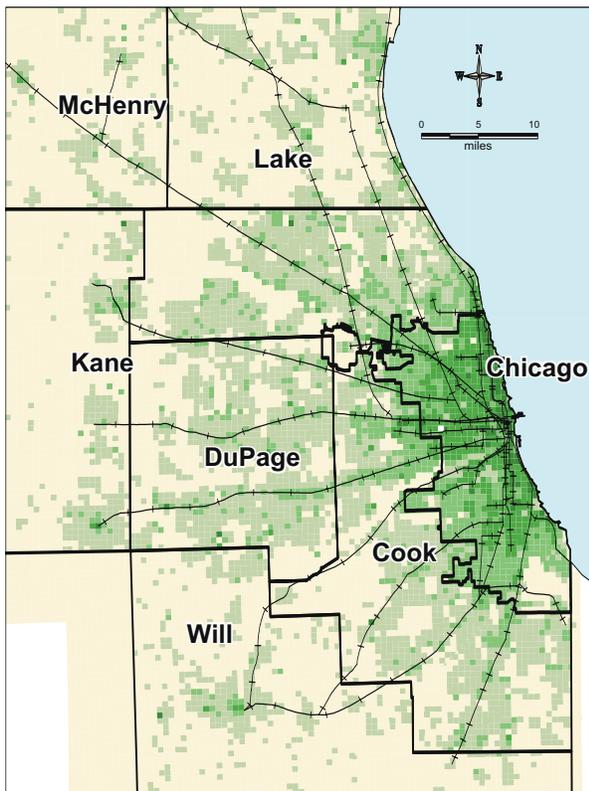
well surpass the LEM work which was limited to three cities.

### Affordability Index in Practice

The Index has received much attention from policy makers for its benefits to planners and TOD advocates and has been used for additional research looking at the household expense impacts on working families and the opportunities for transit-oriented development. To date, the

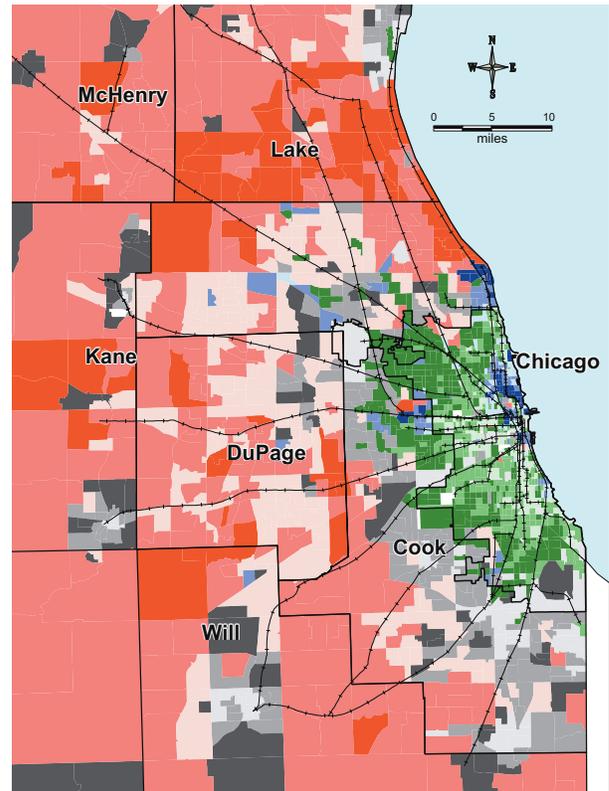
*Cont'd on page 28*

## Housing and Transportation Index Measures - Chicago Region



**Monthly Transportation Savings**  
For a Four-Person Household Making \$40,000/Year

- \$300 to \$550
- \$200 to \$300
- \$100 to \$200
- Less than \$100
- No Location Efficient Value



**Housing and Transportation Expenditures as a Percent of Income**

- |   |  |
|---|--|
| <p><b>Higher than Average Housing</b></p> <ul style="list-style-type: none"> <li>■ 50% to 78%</li> <li>■ 40% to 50%</li> <li>■ 29% to 40%</li> </ul> <p><b>Higher than Average Housing and Transportation</b></p> <ul style="list-style-type: none"> <li>■ 63% to 112%</li> <li>■ 50% to 63%</li> <li>■ 41% to 50%</li> </ul> | <p><b>Higher than Average Transportation</b></p> <ul style="list-style-type: none"> <li>■ 42% to 51%</li> <li>■ 37% to 42%</li> <li>■ 24% to 37%</li> </ul> <p><b>Lower than Average Transportation and Housing</b></p> <ul style="list-style-type: none"> <li>■ 32% to 41%</li> <li>■ 27% to 32%</li> <li>■ 13% to 27%</li> </ul> |
|---|--|

Average household income in the Chicago Metro Region in 2000 was \$50,724 and the average household size was 2.7 people.

## Bay Area Transit Funding, *continued from page 21*

boasts extensive bus service. The recently completed first phase of the transit village — dubbed Metro Walk — puts hundreds of residents a mere two-minute walk from this key transit hub. Future phases will include townhouses, bungalows and lofts for living and working. Richmond, an area that has chronically struggled with economic difficulties and a reputation for crime, now finds that developers have an active interest in constructing new housing around the station. And more than 90 percent of those who have moved into Metro Walk say that being near transit was a key factor in their decision to move to the development.

### A Promising Future

These are just a few examples of how TOD is thriving in the Bay Area. Combined with the analysis of the interim evaluation, these success stories point to a promising future in using TOD to help steer and manage growth in the Bay Area while main-



*These are just a few examples of how TOD is thriving in the Bay Area. Combined with the analysis of the interim evaluation, these success stories point to a promising future in using TOD to help steer and manage growth in the Bay Area while maintaining an efficient transportation system.*

taining an efficient transportation system.

Officials with MTC note that it was not easy to get to this point, with debates between local representatives sometimes becoming contentious as they hammered out their TOD policy. However, in the end, Corless said, the elected officials on the MTC Board

did what they had to do to make a unique transit-oriented development policy into a reality.

“Basically, they took off their local hats and put their regional hats on,” he said. □

## The Evolution of Location Efficiency, *continued from page 4*

Index, has been used to measure transportation costs in 42 metropolitan areas; work is underway to develop the H+T Affordability Index for an additional eight. The map on page 4 (bottom right), Housing and Transportation Expenditures as a Percent of Income, shows the results of the Index applied to the average household in the Chicago region, identifying those areas where house-

holds pay more or less than average on housing, more or less than average on transportation, or more or less than average on both.

### Index Useful to Families and Policy Makers

In summary, the affordability of a place is determined by housing costs and other location-specific costs, especially transportation expenses. Due to development patterns and a lack of transportation choice, transportation is the second highest expenditure after housing. Working families are one

group hit particularly hard by this fact; for households of this type, housing and transportation costs can eat up more than 50 percent of their income. While the LEM allowed homebuyers in three markets to benefit from an appealing mortgage product, the Index allows homebuyers nationwide to estimate the transportation cost that goes with a home and policy makers to help score them on how well they are minimizing costs for residents. □

*The CNT website is at [www.cnt.org](http://www.cnt.org)*