

# New York City's Green Dividend

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It's no secret that New York City's high density, extensive transit and excellent walkability are fundamental contributors to the lifestyle enjoyed by its citizens. However, as this study shows, these factors are also major contributors to their economic well-being. Because New Yorkers drive substantially less than the average American, they realize a staggering \$19 billion in savings each year — money that their counterparts in other metro areas spend on auto-related expenses. And because they spend so much less on cars and gasoline—money that quickly leaves the local economy—New Yorkers have much more purchasing power to spend locally, stimulating the city's economy. This is New York City's Green Dividend.

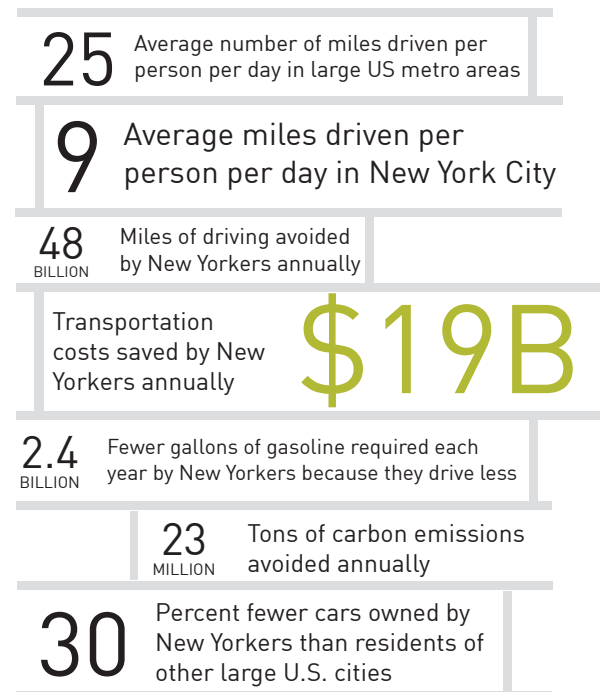
The Green Dividend is a straightforward, even conservative calculation of the benefits New Yorkers enjoy from driving less. While the average resident of New York City drives about 9 miles per day, the average urban resident in the U.S. drives about 25 miles per day. At an average cost of vehicle operation of 40 cents per mile, this works out to \$19 billion in annual savings for New York City residents.

New York City households can use these savings to help offset the city's higher cost of housing. While it may come as a surprise, the combined cost of transportation and housing is lower in the city than in surrounding suburbs.

The greener behavior of New Yorkers shows up in much lower rates of car ownership. New Yorkers own fewer than a third as many cars per capita as the average U.S. urban resident (about 23 per 100 residents compared to about 77 per 100 in most urban areas). If New Yorkers drove as much as the average American, the city would have 4.5 million more cars. Just storing the additional vehicles would require a parking lot the size of Manhattan—about 25 square miles.

Not insignificantly, less driving also produces huge environmental benefits. New Yorkers emit 23 million tons less carbon dioxide per year than they would if they drove as much as the average U.S. urban resident.

New York's higher density is the foundation of the city's Green Dividend. Higher density gives city residents more destinations close at hand. The city's extensive transit system and walkability reinforce this advantage, and New Yorkers make the most of it. Two-thirds of New York City commuters travel to work by transit or by walking, the highest fraction of any large city in the country.



## The **Greenness of Cities**

Growing concerns about global warming, the increasing price of gas and strong interest in developing alternatives to the automobile for urban transportation have triggered heightened public interest in pursuing green development policies such as improving public transportation and promoting higher densities and more mixed uses.

How cities develop has a lot to do with global warming. The biggest contributor to global warming is emissions of carbon dioxide, and nearly three-quarters of U.S. carbon dioxide emissions are from buildings and transportation (Sarzynski, Brown et al. 2008). Because residents of denser, transit-served urban neighborhoods use less land and travel less, their environmental footprint is smaller than for those who live in less dense locales (Glaeser and Kahn 2008).

Cities, by their very nature, require less energy use per capita because they enable greater efficiency by providing people with more choices of goods and services relatively nearby and more options for getting to them. Higher density, more mixed-use development and better transit reinforce the environmental advantages of cities.

Even so, there are still some skeptics who view transit, density and conservation as a kind of virtuous self-denial — well-meaning, but silly and uneconomic. Critics see the seeds of economic ruin. They believe that planning, policies and regulations that restrict use or access to resources impede growth and lower household income.

Both the skeptics and the critics are wrong. Being green does not simply mean that cities are contributing positively to the environment. Being green also means that city residents earn a “Green Dividend” because they save a bundle on cars and gas. This means local residents have more money to spend on other things they value, which, in turn, stimulates the local economy.

### **New Yorkers save \$19 billion in auto-related expenses each year.**

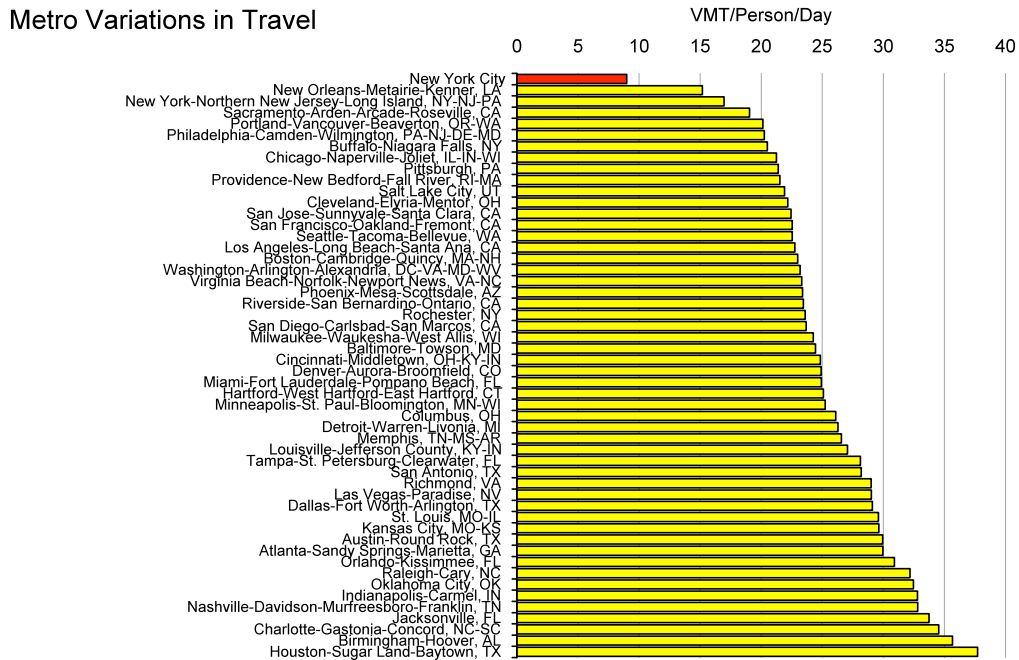
To get a sense of the potential benefits from being greener, it is useful to compare transportation patterns across U.S. metropolitan areas. A standard yardstick for comparing travel behavior is to look at Vehicle Miles Traveled (VMT), the total number of miles driven in a metropolitan area each year divided by its population. This measure reflects the combined effects of shorter trips and the use of alternative modes.

In the fifty largest U.S. metropolitan areas—all those with a population of one million or more—the median level of vehicle travel is 24.9 miles per person per day. Compared to other large metropolitan areas in the U.S., residents of the New York metropolitan area drive fewer miles every day. According to the U.S. Department of Transportation, the average resident of the tri-state New York metropolitan area travel about 17 miles per day.

Residents of New York City drive even less, on average, because the city offers a higher level of density, more destinations close at hand and a wealth of alternatives to traveling by car. We estimate that, on average, a resident of New York City drives about nine miles per person per day, more than 60 percent less than the resident of a typical large metropolitan area in the United States.

Figure 1 summarizes the differences in travel patterns across U.S. metropolitan areas. There is considerable variation among U.S. metropolitan areas in miles driven per person. New York City does far better than the U.S. average—about 9.0 miles per day—compared to a median of 24.9 miles in the typical large metro area.

Figure 1.



## Calculating the Green Dividend

Here’s how we developed these estimates. We started with official data developed by the federal government for transportation planning. The U.S. Department of Transportation only publishes an estimate for the New York portion of the New York-Northern New Jersey metropolitan statistical area (which includes NYC, Westchester, Nassau and Suffolk Counties). We calculated the number of vehicle miles traveled by New York City residents by apportioning mileage according to car ownership rates.

For the five boroughs and three counties in the New York portion of the metropolitan area, the Department of Transportation estimates that the average resident travels about 13.9 miles per day. But car ownership and use is far more prevalent in the suburban jurisdictions. If we allocate vehicle mileage proportional to vehicle ownership, we estimate that New York City residents drive about 9 miles per person per day, while residents of Westchester, Nassau and Suffolk counties average about 23 miles per person per day (close to the national average for metropolitan areas).

New York City residents also own far fewer vehicles on average than most Americans.

We estimate the total New York City passenger vehicle fleet using data from the New York Department of Motor Vehicles and from Census Bureau data. The New York Department of Motor Vehicles reports data on the number of vehicles registered in each county in the state. We combine data from Brooklyn, Bronx, New York, Queens and Richmond counties to estimate the total number of motor vehicles in New York City. In 2008, there were 1,980,000 vehicles registered in these five counties. Including the surrounding suburban counties in New York that are part of the metropolitan area (Westchester, Nassau

and Suffolk) there were a total of 4,310,000 vehicles registered in the region. New York City accounted for about 45 percent of the vehicles registered in the New York portion of the metropolitan area.

We confirmed this estimate by looking at data from the Census Bureau's American Community Survey. It shows that residents of New York City account for about 1,950,000 of the roughly 4,520,000 vehicles in the greater New York portion of the metropolitan area that includes Westchester, Nassau and Suffolk Counties. The American Community Survey comes up with slightly different totals because it is based on a sample of about one percent of households and asks whether the household has access to a motor vehicle (and the number of vehicles accessible to it), rather than about vehicle ownership. These data suggest that about 43 percent of the vehicles registered in the metropolitan area were in New York City—a total very similar to the DMV data.

New Yorkers average about 23 cars per 100 residents compared to about 78 cars per 100 residents for the rest of the country.

The difference in car ownership and driving between the typical large metropolitan area and New York City is the principal source of the Green Dividend. This analysis focuses on the five boroughs (Manhattan, Bronx, Brooklyn, Queens, Staten Island) and looks at the difference between VMT per person per day in NYC (9.0) and the average for the 50 largest U.S. metropolitan areas (24.9).

**If New Yorkers drove as much as the average American, the city would require a parking lot the size of Manhattan to store the additional cars.**



New York's lower level of driving, compared to the average for large U.S. metropolitan areas, means that New York residents drive 15 miles fewer per day than the typical urban American. Fifteen miles per day may not seem like much, but do the math. New York City has roughly 8.3 million residents. If New York residents traveled as much as the average urban American, they would drive roughly 134 million more miles per day or about 48 billion more miles per year. We estimate the average cost of operation of a motor vehicle at 40 cents per mile. This is slightly more conservative than the current Internal Revenue Service reimbursement rate of 50 cents per mile (Internal Revenue Service, 2009). For reference, it is worth keeping in mind that at \$3.00 a gallon, 15 cents per mile of this is just the cost of fuel figured at a fleet average of 20 miles per gallon — a generous number for city driving. All told, the out-of-pocket savings work out to \$19 billion per year. This amount is equal to slightly more than four percent of the \$420 billion in personal income earned by city residents in 2007.

Independent data gathered from surveys of consumer spending patterns confirm the magnitude of our Green Dividend estimates. The Department of Labor's Consumer Expenditure Survey shows that metropolitan New York residents currently spend noticeably less of their household budgets on vehicles, gasoline and repairs than the typical U.S. metropolitan resident. In the aggregate, residents of metropolitan New York spend about 2.6 percent less of their total household budgets on transportation than other urban Americans — about 13.9 percent compared to a median of about 16.5 percent for

the nation's metropolitan areas (Bureau of Labor Statistics 2009). Because the BLS estimates cover the entire metropolitan area rather than just the five boroughs, they actually overstate auto-related spending in the city. In some car-dependent metropolitan areas such as Phoenix, Dallas and Houston, the typical household devotes 19 to 20 percent of its budget to transportation expenses.

## The Power of the **Green Dividend**

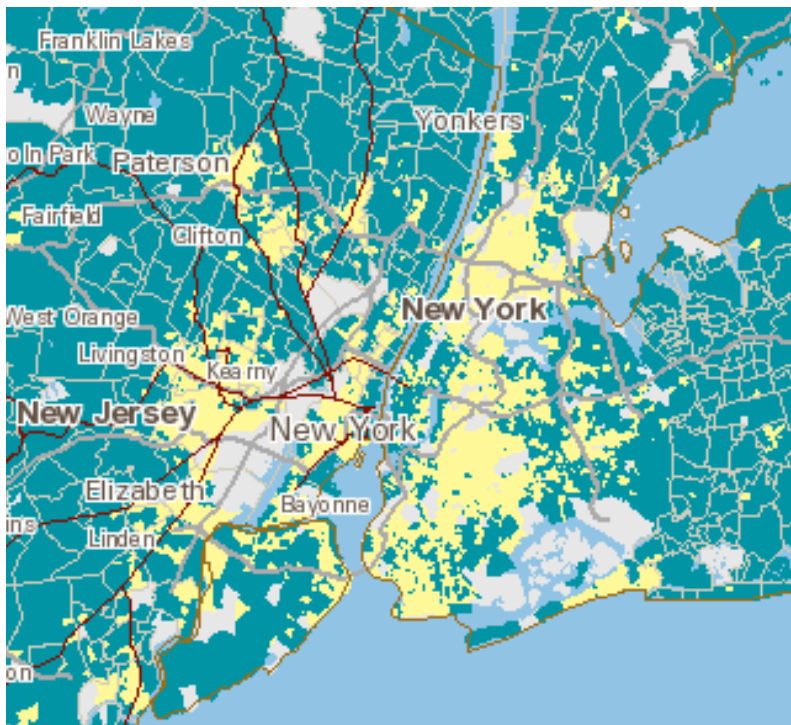
The benefits don't stop there. Because no cars or gasoline are manufactured in the city, much of what is spent on driving immediately leaves the local economy. New Yorkers who spend less on transportation have more money to spend in sectors of the economy that have much larger local multiplier effects. According to Internal Revenue Service data, about 73 percent of the retail price of gas (back when it was under \$2.00 a gallon, by the way) and 86 percent of the retail price of cars is the "cost of goods sold," which immediately leaves the local economy. The \$19 billion New Yorkers save on car travel translate into more than \$16 billion that are available to be spent in the local economy. Because this money tends to be re-spent in other sectors of the economy, it stimulates local businesses.



We also know that the savings benefit the national economy. Two-thirds of the petroleum we use is imported. A majority of the cars and trucks sold in the United States are also imported. Money spent on auto transportation not only leaves the local economy, but it also adds to the nation's trade deficit.

So where does the money saved on traveling fewer miles get spent? We don't know exactly, but we

**Figure 2. Share of Income Spent on Housing and Transportation**



Source: Center for Neighborhood Technology, 2010

get spent? We don't know exactly, but we have some clues. National data show that there is an inverse relationship between household spending on transportation and housing: households that spend more on transportation spend less on housing and vice versa (Bernstein, Makarewicz et al. 2005).

The savings in automobile costs help ameliorate the burden of housing affordability.

The combined cost of housing and transportation, as a percentage of income, is lower in close-in locations in the five boroughs. Figure 2 shows highlighted neighborhoods (chiefly in close-in urban neighborhoods) have a cost of housing plus transportation that is less than 45 percent of personal income; dark shaded neighborhoods (outer boroughs and suburbs) have housing plus

transportation costs that are more than 45 percent of typical household incomes.

There are of course huge environmental benefits of lower vehicle miles of travel. To gauge their magnitude, we use the assumption that vehicle emissions are proportional to total miles traveled. This is a reasonable assumption for greenhouse gases like carbon dioxide and a bit fuzzier for hydrocarbons, where emissions are also accentuated by starting and stopping an engine. Avoiding a single short trip will reduce much more pollution than shaving that same distance off a longer one.

Again, with a city population of roughly 8.3 million, driving 15 miles per day fewer means that New York City residents drive 133 million miles less per day than they would if they traveled as much as the average American. Each year, this works out to 48 billion fewer miles of car travel. At a fleet average of 20 miles per gallon, that means New York area residents burn 2.4 billion fewer gallons of gas per year. At 19.4 pounds of carbon dioxide emitted per gallon burned, this lower level of emissions avoids greenhouse gas emissions of 23 million tons per year.

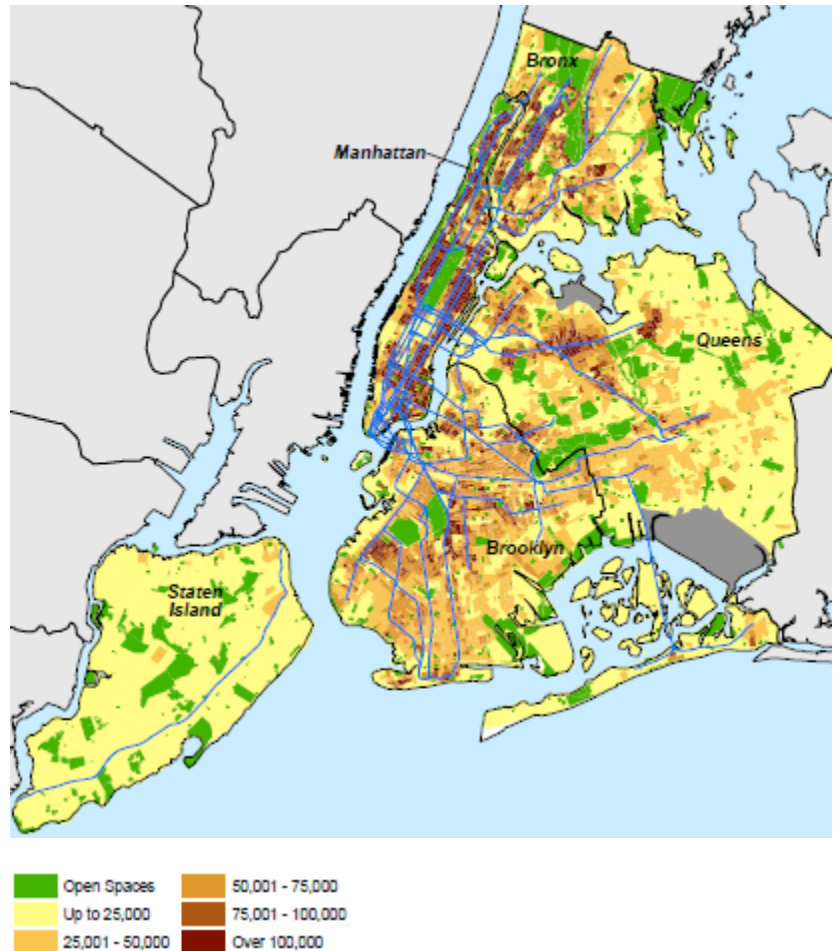
Driving less has major implications for land use. Right now, the residents of New York City own about 2 million cars. If New Yorkers drove as much as the typical American, they would need some 4.5 million additional cars. Just the parking space for these additional cars (at 150 square feet, the minimum size of a single parking space), would require an area the size of Manhattan. This estimate doesn't include any additional street capacity for driving these cars, nor does it address the fact that each car requires more than one parking space, because there has to be parking capacity at destinations.

## How New York Earns Its Green Dividend

New York's Green Dividend is attributable to the city's built environment, its transportation system and the choices of its citizens.

New York City is the nation's premier urban center with higher densities than any other city in North America. Overall, with a population density of about 27,000 persons per square mile, New York City is roughly twice as dense as the next most densely settled U.S. city. But most of the city's population lives in neighborhoods with much higher densities (see Figure 3). Typical Manhattan neighborhoods have densities of more than 100,000 persons per square mile, and some neighborhoods in Brooklyn, Queens

Figure 3. Population Density in New York City, 2000



and the Bronx have similar densities. In addition to higher densities, New York’s urban fabric weaves many disparate uses into close proximity in most neighborhoods. The combination of high density and mixed uses translates in a straightforward way to more choices close at hand. Because their most common destinations are nearby, New Yorkers are more likely to walk to them than other Americans. And even those who drive tend to drive fewer miles.

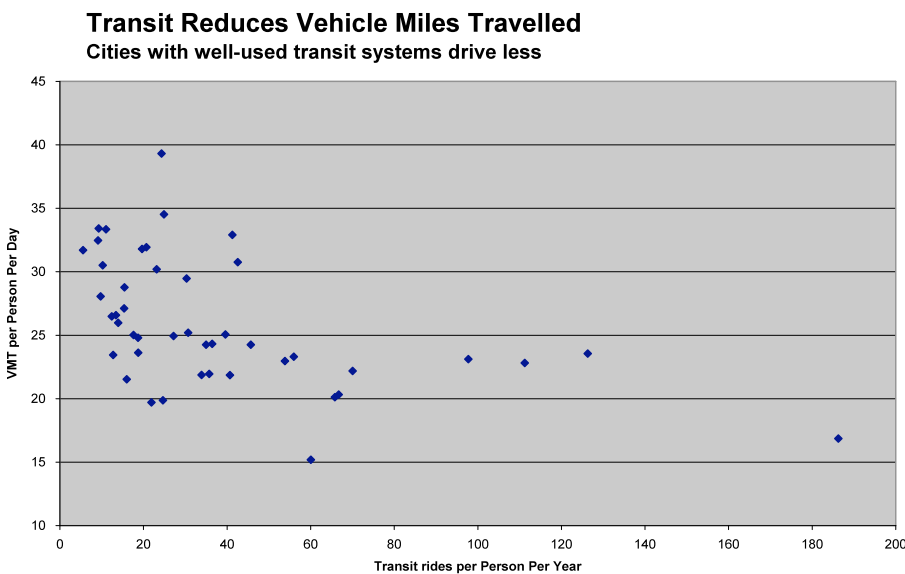
New York City Commuting Modes		2005 - 2007
Automobile/Taxi		31.7%
Transit		56.8%
Walking		10.3%
Biking/Other		1.2%

Density works, in large part, because of the city’s extensive transit system. New York has more transit service and higher transit usage than any other metropolitan area in the country. The average resident of the metropolitan area travels more than 1,200 miles per year via transit (Litman 2009). New York’s transit system plays a key role in enabling residents to travel fewer vehicle miles. Transit supports higher levels of residential density. Higher density neighborhoods have more jobs, shopping opportunities, civic and recreational activities and personal services close at hand, enabling shorter trips.

A majority of New York City’s workers take transit to work each day. According to data from the American Community Survey, almost 57 percent of the city’s residents reported commuting principally by subway, train, bus or ferry.

Across cities, the presence of a well-developed transit system is correlated with fewer vehicle miles of travel (see Figure 4). Cities with more heavily utilized transit systems have, on average, fewer vehicle miles of travel per person than cities with less heavily utilized transit systems.

**Figure 4.**



Source: Calculations from Census Bureau and Department of Transportation data

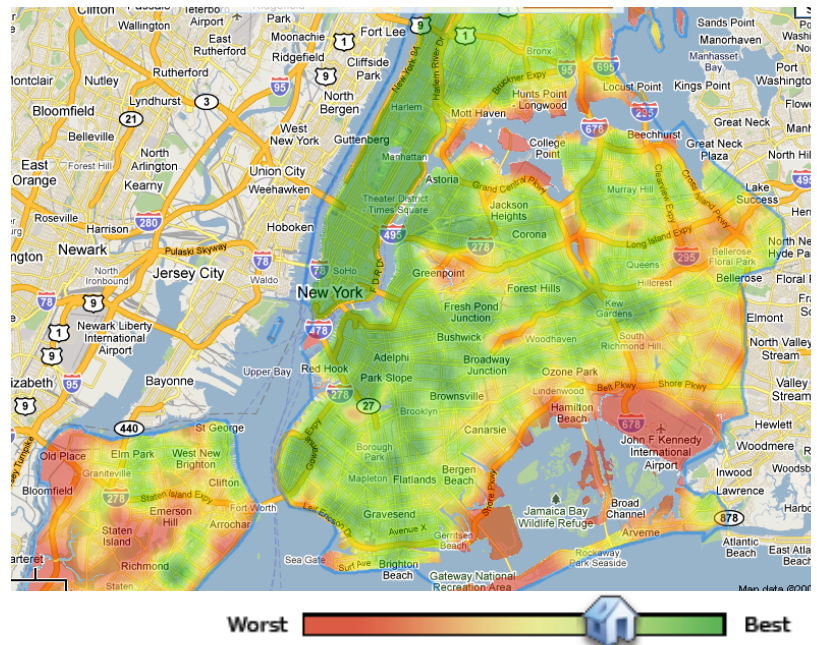
While in most places there is a strong negative relationship between income and transit use, New York ranks first among the nation’s 50 largest metropolitan areas in the percentage of the non-poor population that reports regular transit use. About 45 percent of non-poor New York metropolitan area residents used transit, compared to 10.5 percent in Atlanta, 8.7 percent in Houston and 6.7 percent in Dallas (Cortright 2006). Transit use is even higher in New York City. About 75 percent of households report using transit on at least a weekly basis.

Density and a good transit system set the plate, but individual New Yorkers choose how to get around. And compared to most urban Americans, they choose regularly to walk and cycle for a significant fraction of their trips. Unfortunately,

walking activity isn't well measured. Government data generally don't gather information on walking for non-work trips, and journey to work data for transit ignore the fact that most transit trips also involve a substantial walking component. In 2005-07, 10 percent of New York City residents walked to work and 0.6 percent rode bicycles in addition to the 57 percent who took some form of transit.

New York residents have more common destinations within easy walking distance of their homes than most Americans. According to WalkScore.com which computes the walkability of every residence in the United States, New York City scores extremely high on walkability (see Figure 5). WalkScore.com rates every property on a scale of zero to 100, with 100 being most walkable, and anything over 80 being regarded as "a walker's paradise." Eighty-six percent of New York residents have a Walk Score of 70 or above. Ninety-eight percent have a WalkScore.com of at least 50. Only 2 percent live in car-dependent neighborhoods.

**Figure 5. Ratings from WalkScore.com for New York City**



Having a wide range of choices of activities close at hand is one of the intrinsic advantages of large cities (Glaeser 2000). New York City residents have an economic advantage in consumption because of the variety of goods, services and experiences from which they can choose, the relative convenience of reaching them and their ability to discover new things (Cortright 2007)

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CEOs for Cities is a national network of urban leaders who are building and sustaining the next generation of great American cities.

CEOs for Cities has a robust portfolio of work that focuses on the positive role vibrant urban centers play in meeting critical national goals. Previous reports have highlighted the contribution that cities make to reducing fossil fuel consumption and greenhouse gas emissions, including **City Dividends**, which describes how reducing Vehicle Miles Traveled in the nation's 50 largest cities by just one mile per person per day would produce savings of \$29 billion annually. **Driven to the Brink** chronicled how high and volatile gas prices have been reflected in disproportionate declines in housing prices in outlying suburbs around the nation. And **Walking the Walk** showed how consumers attach higher values to housing that offers many nearby walkable destinations.

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