

The City Dividends

**How Cities Gain by
Making Small Improvements
in Metropolitan Performance**

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for CEOs for Cities
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Overview

Mayors and other civic leaders have grown to understand that improving their city's educational attainment, reducing vehicle miles traveled and reducing poverty are important to regional success and economic prosperity. And while these strategies contribute to the general good, the payback from investments in these areas often seems distant and uncertain. However, a close examination of actual urban performance across the nation reveals that stronger metro areas reap real, tangible and calculable economic benefits.

The objective of this report is to provide quantitative estimates of the economic gains that metropolitan areas and cities could achieve by improving their performance in talent, sustainability and opportunity, or what we call *City Dividends*. There are three components to this work:

- **The Talent Dividend:** Increasing the four-year college attainment rate in each of the nation's 51 largest metropolitan areas by one percentage point would be associated with a \$124 billion increase in aggregate annual personal income.
- **The Green Dividend:** Reducing vehicle miles traveled (VMT) per person by one mile per day in each of the 51 largest metro areas would produce an aggregate annual household savings of \$29 billion annually.
- **The Opportunity Dividend:** Reducing poverty rates in metropolitan areas by one percentage point would decrease public sector outlays for family assistance, Medicaid and food stamps by about \$13 billion annually.

In the nation's metropolitan areas, there is a critical accelerator for making progress in these areas: core vitality. Vital urban cores, defined as the central business district and the close-in neighborhoods of each metropolitan area, play a key role in realizing each of these three dividends. Metro areas with vital urban cores attract and develop talented workers, help reduce the need for car travel, and can lessen the effects of concentrated poverty.

There is already considerable variation among cities in each of these measures of well-being. The gains that are computed here are not associated with some unattainable ideal, but are the kind of results that are already being realized by many cities today. Our framework is that of a "what if" analysis. "What if my city could reach higher levels of performance in each of these three areas? What would be the consequences in terms of personal income gains, savings on transportation costs, and reductions in poverty-related public expenditures?"

Our objective in this work is to estimate the economic and fiscal stakes involved in each of these key aspects of urban revitalization. We believe this will help urban leaders make the case for public policies that will help raise incomes, encourage citizens to drive less and increase opportunities for bringing people out of poverty. We expect that *City Dividends* can be customized and applied to the situations of individual metropolitan areas and used as a tool in policy planning.

The estimates provided in this report provide an initial starting point for understanding the magnitude of the *City Dividends*. At this point, our analysis doesn't address the more difficult question of how cities achieve these gains. We expect to improve these estimates, augmenting the data included in our analysis and refining the logic models underlying the calculations with field experts.

City Dividends establishes a framework for examining the policies, actions and conditions that are needed for cities to actually realize these gains in practice.

This report is divided into four sections. The first three sections examine each *City Dividends* component, explain the connection between the dividend and metropolitan prosperity, and review the basis for computing the dividend. We also estimate the aggregate level of improvement that could be achieved nationally from getting the top 51 metros to improve their performance on each *City Dividends* component.

I. The Talent Dividend

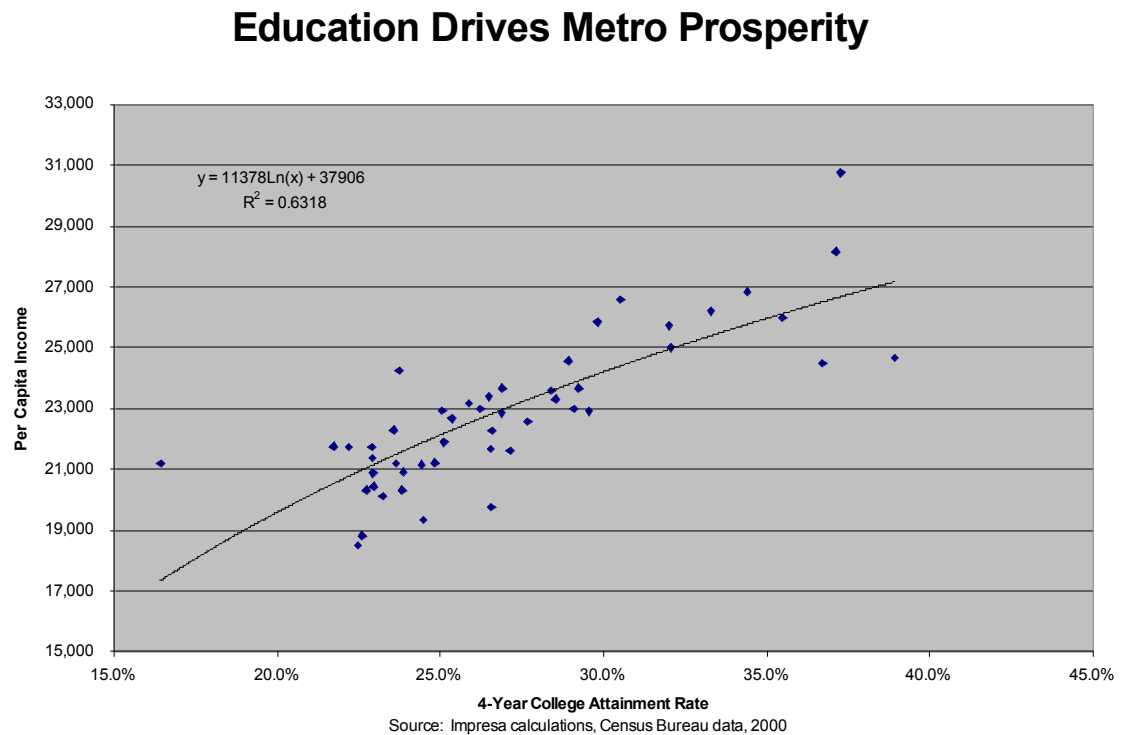
The education and skills of a city's population are critical to determining its success in the global, knowledge-driven economy. The Talent Dividend measures the gains cities can expect from improving their talent base.

The hypothesis: Improving the educational attainment of a city's population will increase the income of its residents.

The relationship: Income and educational attainment are strongly correlated. We measure talent using educational attainment data, and we measure income using per capita income. Both are useful summary measures for the overall level of skill or income for the population of a particular geographic area. For educational attainment, we use the fraction of the adult population with a four-year degree. For income we use per capita income, which is the total income of a region divided by its population.

As we think about educational attainment, we recognize that the attainment of a four-year degree is just a single point along an educational continuum. But the relative fraction of a region's population that has completed a four-year degree is a good proxy for the overall educational attainment of the population. (Places with a high four-year attainment rate generally tend to have a smaller fraction of residents with less than a high school diploma and a larger fraction of residents with some post-graduate education.) The use of this measure reflects gains across the education continuum, rather than simply moving a few more residents across any particular threshold of attainment.

Figure 1: Education Income Correlation



Supporting studies: Human capital is a key determinant of urban prosperity. Per capita incomes are strongly correlated with levels of educational attainment. Figure 1 (above) shows the correlation between the fraction of the adult population with a four-year degree or higher level of education and the per capita income of the 50 largest U.S. metropolitan areas in 2000. Cities with better-educated populations have significantly higher per capita incomes.

We use levels of education to measure the amount of human capital, recognizing that years of education are only an imprecise measure and that the choice of any particular threshold (in this case, completion of a four-year degree) is arbitrary. Human capital is much richer and more varied than can be captured in these simple measures. Scholars working in this field have identified a broad set of cross-cutting skills, ranging from the basics (reading, writing and mathematics) to what have been termed the new basic skills: problem solving, teamwork and communication (Levy and Murnane 1996). Most researchers use data on educational attainment because it is more easily and accurately measured.

The level of human capital in a city is the product of many factors. It is influenced in part by the level of education infrastructure and investment in the metropolitan area. But because Americans are very mobile, the in-migration and out-migration of the population can also raise (or lower) a city's average educational level. In addition to formal schooling, workers acquire skills and experience on the job, and cities are

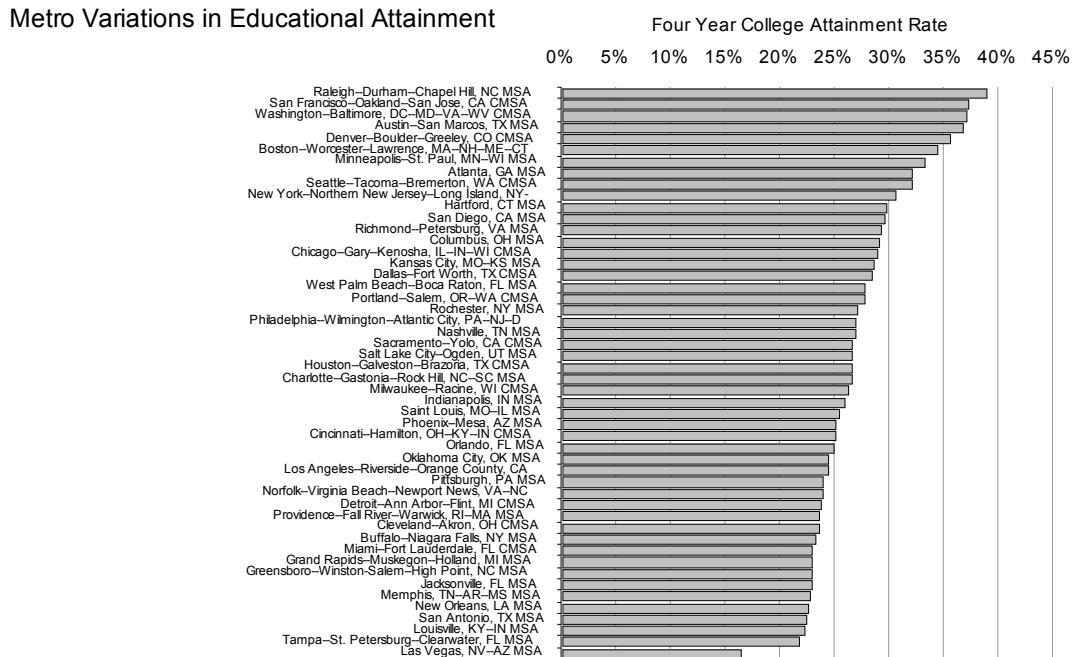
important places for such skill acquisition. It appears that workers working in cities are more productive than similarly educated workers employed in other locations (Rauch 1993). Part of the improvement in worker productivity is due to the ability of workers to use dense city labor markets to easily move from job to job, exploring different possible careers, both building their skills and ultimately settling in a job that maximizes their productivity (Wheeler 2005).

Cities with higher levels of education not only have higher incomes but faster rates of income growth (Gottlieb and Fogarty 2003). In particular, the presence of a population with college degrees rather than just high school completion was strongly correlated with income growth. For cities, each 2 percent increase in the fraction of the population with a college degree was associated with a 1 percent increase in personal income growth in the 1990s (Weissbourd 2004). The combination of better education and higher productivity not only tends to lead to faster economic growth in better educated cities, it also appears that cities with higher levels of educational attainment are better able to deal with economic shocks (Glaeser 2003). And the higher levels of growth and productivity stemming from concentrations of urban talent don't simply benefit those with more education. Economists estimate that each 10 percent increase in the fraction of a region's population with a four-year degree has the effect of increasing wages 8 percent at every education level (Glaeser 2008).

One recent study found that the gains to skill in the United States are highly concentrated in metropolitan areas. Between 1981 and 1991, the rise in the skilled wage premium occurred only in metropolitan areas and resulted in a substantial difference in that premium between metro and non-metro areas (Chung, Clark et al. 2008). This implies that the opportunities for the nation to realize economic gains from its investments in education are heavily concentrated in the nation's urban areas.

The range of experience: Across the nation's 50 largest metropolitan areas, there is a wide range of variation in educational attainment. The four-year college attainment rate of the best educated metropolitan area (Washington, D.C., 46.1 percent) is more than double that of the least well-educated metropolitan area (Las Vegas, 20.2 percent). Among these metropolitan areas, the median level of college attainment is 29.4 percent, while the top 10 percent of metropolitan areas achieves a 38.8 percent level of four-year attainment.

Figure 2: Range of MSA Educational Attainment



Source: Census Bureau

Estimated gains: To calculate the Talent Dividend, we estimate how much a metropolitan area could reasonably expect to gain in income if it increased its overall level of educational attainment by one percentage point. Our statistical analysis shows that there is a strong positive relationship between metropolitan educational attainment and per capita personal income. The cross-sectional data for the largest metropolitan areas suggest that in 2006, each additional percentage point improvement in aggregate adult four-year college attainment was associated with a \$763 increase in annual regional per capita income.

Adding up: Across metropolitan areas, improving education levels could be one of the most powerful forces for improving income and economic well-being. Collectively, the 51 largest metropolitan areas have about 33 million adults with four-year degrees or higher levels of education. Increasing the four-year college attainment rate in each of the 51 largest metropolitan areas by one percentage point, from its current median of 29.4 percent to 30.4 percent would be associated with an increase in aggregate personal income of \$124 billion per year for the nation.

This improvement in income would be the result of increased productivity—better-educated workers are more productive, and having access to a better-educated workforce makes businesses more productive. Improvements in educational attainment are a major contributor to economic growth. Economists estimate that increases in human capital have accounted for as much as 25 percent of increased output per capita since the 1950s (Hall 2000).

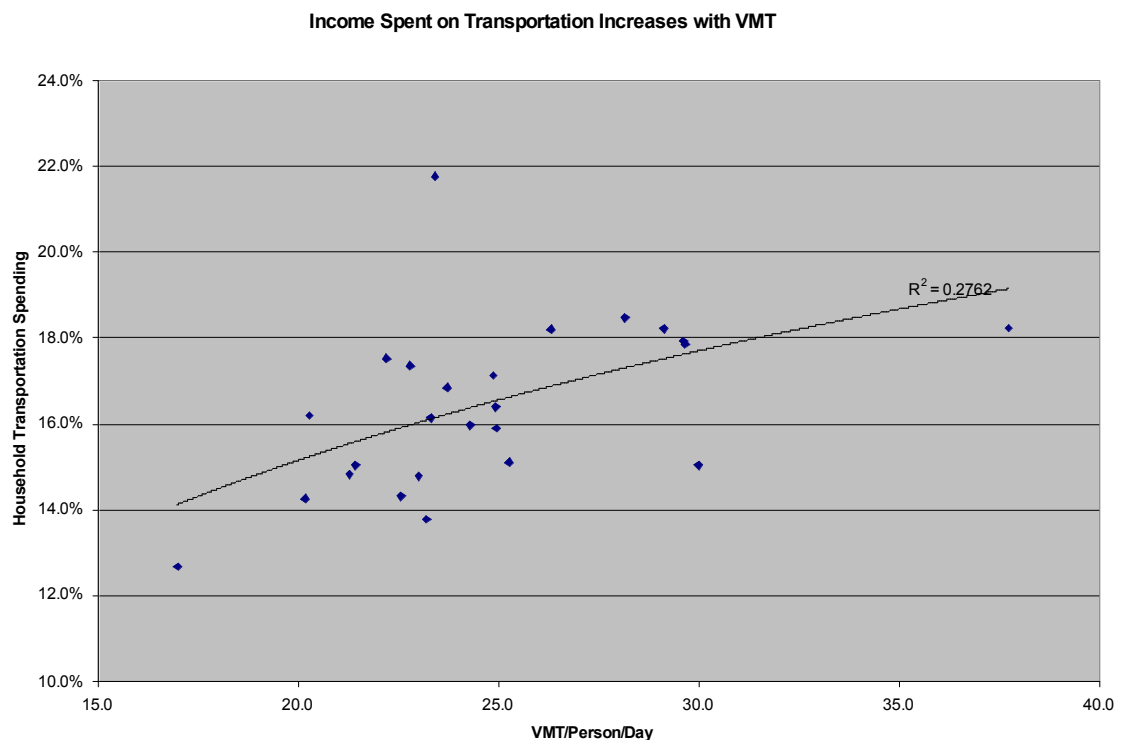
II. The Green Dividend

The hypothesis: There is much about cities that is inherently green. Cities are denser than other places, meaning people have to travel less. Cities provide the density and alternative forms of transportation (transit, walking and cycling) that enable people to drive less. This has an economic value, particularly in a time of rapidly rising energy prices.

The relationship: Transportation is a large expense for most of the nation's households, ranking only second to housing costs as a proportion of typical household expenditures. Some metropolitan areas have a combination of density, development patterns and alternative modes of transportation that enable their residents to drive less often and drive shorter distances overall. Across metropolitan areas, regions with lower levels of vehicle miles of travel spend a smaller fraction of their household incomes on transportation expenses.

Data for the 50 largest metropolitan areas show that on average, cities where the average person drives 20 miles per day spend about 15 percent of their household income on transportation, while households where the average person drives 30 miles per day spend about 18 percent of their household income on transportation.

Figure 3: Green Correlation

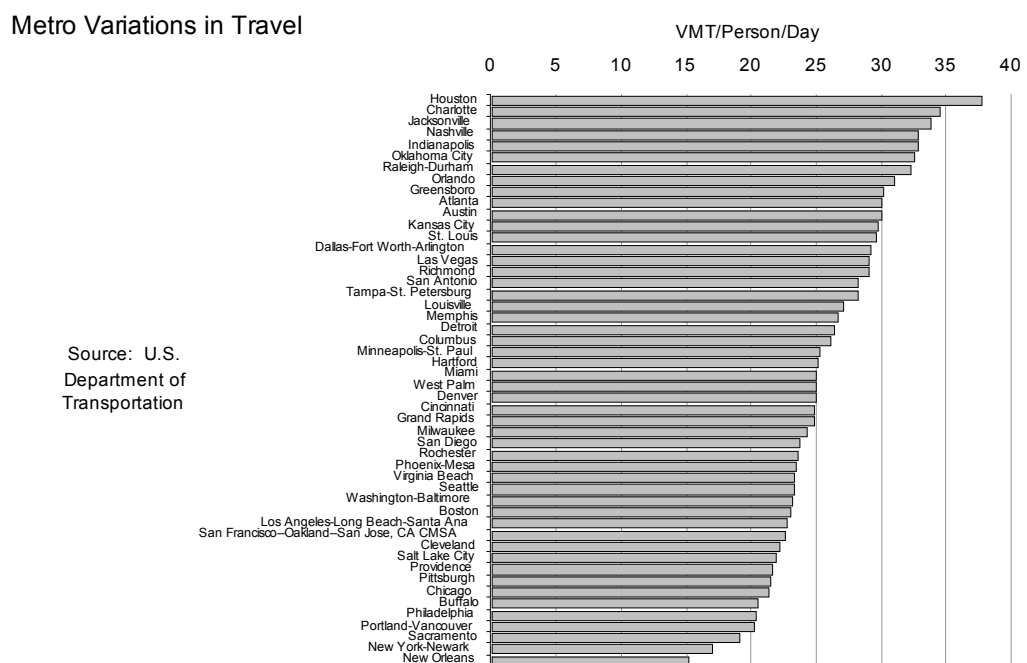


A number of studies have explored the variations in greenhouse gas emissions and energy use stemming from differences in urban form and public policy. There are wide variations in travel patterns among cities, and these contribute to differences in greenhouse gas emissions (Glaeser and Kahn 2008) (Sarzynski, Brown et al. 2008).

Studies of household spending patterns within metropolitan areas show that families in denser urban neighborhoods generally travel less and spend less of their household income on transportation than other families (Center for Neighborhood Technology 2008).

The range of experience: Among metropolitan areas there is a substantial variation in average levels of daily vehicle travel. Figure 4 shows the average number of vehicle miles traveled per person per day in the 50 largest metropolitan areas, based on data for 2005 and 2006. These data are taken from the U.S. Department of Transportation's highway statistics program (Federal Highway Administration 2008). The level of daily driving ranges from about 17 miles per person per day in the New York metropolitan area (which includes dense, transit-served Manhattan, as well as its distant suburbs), to nearly 40 miles per day in sprawling Houston. The median level of travel for these 50 large metropolitan areas is about 24.9 miles per person per day. The top 10 percent of performers—representing the level achieved by the five most efficient metropolitan areas—is 20.5 miles per person per day.

Figure 4: Range of MSA Vehicle Miles Traveled



Estimated gains: To calculate the Green Dividend, we estimate how much households in a metropolitan area could reasonably expect to save on transportation expenditures if it decreased its overall level of driving by one mile per day.

Adding up. Currently, in the 51 largest U.S. metropolitan areas, the average person drives about 24.9 miles per day. If we could reduce that by one mile per day (about 4 percent), 156 million Americans in the nation's 51 largest metropolitan areas would collectively end up driving 156 million fewer miles per day, or about 57 billion fewer miles per year. At an average vehicle fuel economy of about 20 miles per gallon, this

would save about 2.8 billion gallons of gasoline per year. At about \$3.50 per gallon, this would save about \$10 billion per year, much of which would represent a decrease in the nation's balance of payments deficit.

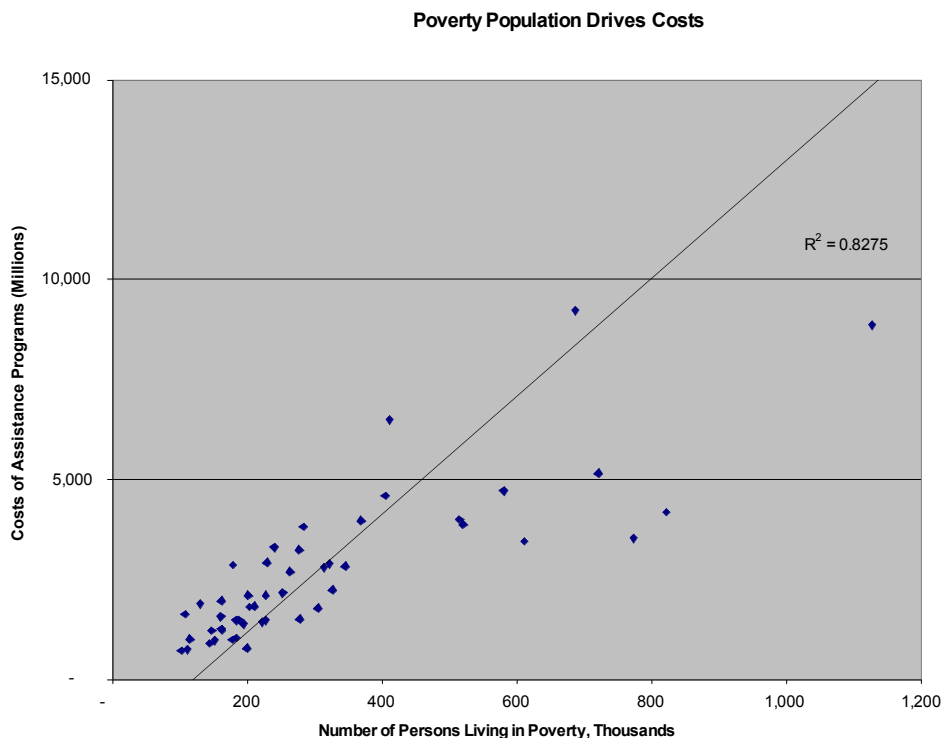
In addition to the savings on motor fuel, consumers would realize additional savings on the purchase and maintenance of motor vehicles. At an estimated overall cost of 50 cents per mile, the total savings would be in the vicinity of \$28.6 billion. In addition, this Green Dividend would also be associated with a reduction in greenhouse gases. Since each gallon of gasoline is associated with about twenty pounds of carbon dioxide, this reduction in VMT would produce a reduction in CO2 emissions of 28 million tons nationally each year.

III. The Opportunity Dividend

The hypothesis: Metro areas with lower levels of poverty have a lower cost of providing a wide range of family and social services.

The relationship: The size of the population in poverty is closely related to the cost of many key social service and income maintenance programs. In many cases, this is by design or definition: in order to be eligible for food stamps or Medicaid, for example, households have to demonstrate their low levels of income.

Figure 5: Population in Poverty and Related Fiscal Costs



The Bureau of Economic Analysis tabulates data on spending on a range of anti-poverty programs. The key means-tested programs included in its statistics on “transfer payments” include Medicaid, Food Stamps and family assistance. The final category includes the federal Temporary Assistance to Needy Families (TANF) program as well as supplemental state and local programs of general assistance for the poor. These data do not include federal expenditures for Social Security, Supplemental Security Income (SSI) or Medicare, programs that principally benefit the retired and disabled population, including poor and non-poor citizens. They also do not include housing subsidies and free and reduced lunch.

In 2006, the latest year for which data are available, BEA reports that in the 51 largest metropolitan areas, residents received \$170 billion in Medicaid benefits, \$14 billion in food stamps and \$12 billion in family assistance payments.

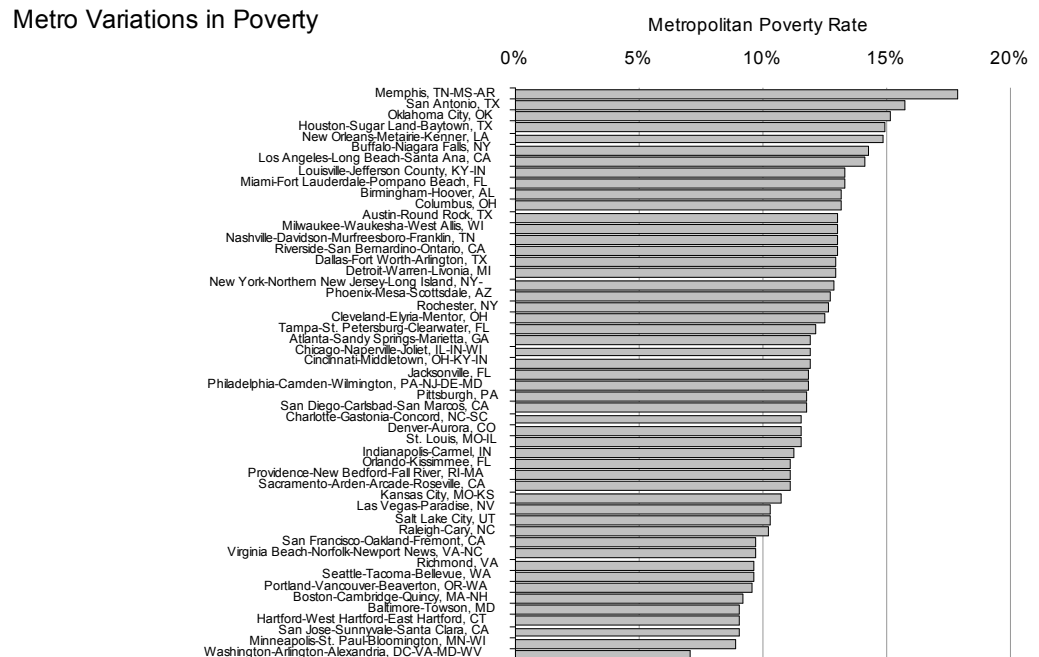
The Census Bureau has estimated the poverty rate in each of the nation’s metropolitan areas based on data gathered in the 2006 American Community Survey. The poverty rate is computed by counting the number of persons living in households with incomes below the poverty line and dividing that sum by the total population of the metropolitan area. The federal poverty line—\$20,000 for a four-person household in 2006—is an imperfect measure of economic well-being but is widely used to determine program eligibility and provides a useful benchmark of relative levels of poverty across metropolitan areas.

Not surprisingly, metropolitan areas that have a larger population of poor persons tend to spend more on programs to provide medical care, food and financial support to low-income households.

Supporting studies: It is clear that poverty imposes large economic and fiscal costs on the nation. One review of studies of the impacts of childhood poverty suggested that total economic costs associated with lost productivity, crime and lowered levels of health approach 4 percent of gross domestic product, or about \$500 billion (Holzer, Schanzenbach et al. 2007).

Range of experience: Poverty rates vary widely among the nation’s largest metropolitan areas. Poverty ranges from a high of nearly 15 percent of the population in Memphis, to a low of 7 percent in Washington, D.C. Among metropolitan areas with a population of 1 million or more, the median rate of poverty was 11.8 percent in 2006. Half of all of these large metropolitan areas have poverty rates between 10 percent and 13 percent.

Figure 6: Variations in Poverty Rates



Source: Census Bureau

Nationally, 13.3 percent of the population has incomes at or below the federal poverty level. It's worth noting that, in general, poverty rates are lower in the nation's large metropolitan areas than in the rest of the nation. Only seven of the 51 largest metropolitan areas have poverty rates that are higher than the national average.

Estimated Gains: Lowering poverty rates in metropolitan areas would have a significant impact on public expenditures. The size of the population living in poverty is the principal driver of public expenditures for welfare, food stamps and Medicaid. For example, in Memphis, the current metropolitan poverty rate is about 17.8 percent—roughly 225,000 of the region's nearly 1.2 million residents have incomes below the poverty line. If Memphis were to reduce the region's poverty rate by one percentage point—from 17.8 percent to 16.8 percent, this would lower the number of persons living in poverty by 13,000 persons. Since the average cost of public assistance payments for poor residents is about \$8,200 per person, this reduction in poverty could lower public expenditures for welfare, food stamps and Medicaid by about \$110 million annually.

In these calculations, we assume that the poverty rate is a good benchmark or reference indicator for the size of the region's low-income population and its distribution of income. The public expenditure savings from lowering the poverty rate do not come from simply moving households from just below the poverty line to just above it, but rather from a broadly based improvement in incomes that is reflected in a reduction in the benchmark poverty indicator.

Adding Up. If we could reduce poverty in metropolitan areas we would lower the costs of programs to provide medical care, food and living support for poor households.

Across the nation's 51 largest metropolitan areas, the median public expenditure on Medicaid, food stamps and assistance to families—including the TANF program and other state administered general assistance—was \$8,200 per person living in poverty in 2006. At this level, the national Opportunity Dividend is calculated at \$13.1 billion per year.

In addition to lower costs for direct public services to the poor, a reduction in poverty would also be likely to result in higher tax revenues and lower costs for crime that are often associated with poverty. We have not estimated the dollar value of these benefits.

IV. The Core Vitality Accelerator

The hypothesis: Well-functioning urban cores, with a diverse population, including middle- and upper-income households and strong central business districts, enhance the ability of metropolitan areas to realize the Talent, Green and Opportunity Dividends.

The relationship: The essential economic advantage of cities flows from their abilities to promote and encourage interactions among people. Cities work best and are most successful economically when they enable easy interaction among people. As Jane Jacobs pointed out, well-functioning cities are crucibles of innovation, (Jacobs 1969). They also provide advantages to consumers, especially in terms of the ability to conveniently discover and access a diverse array of goods, services and experiences (Cortright 2007). Part of this process of interaction flows directly from density and proximity (more people, closer together). But we also know that these interactions are influenced by urban design, social factors and demographics, just to name a few. The economic activity generated by cities is essential to reducing poverty.

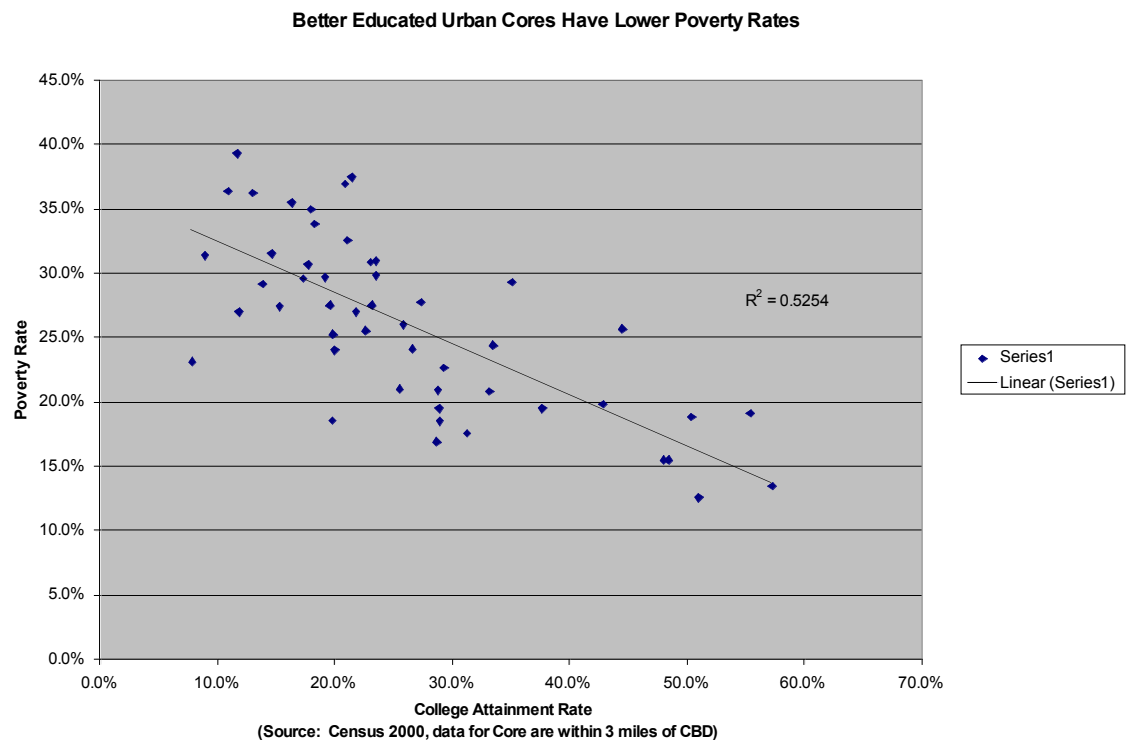
Cities with vital cores have lower rates of poverty and more robust core economies. We measure core vitality by comparing the educational attainment of the population living in a metropolitan area's close-in neighborhoods with the overall educational attainment of the metropolitan area. Our view is that the cities with the most vital urban cores have the highest level of educational attainment, relative to the region in which they are located.

This view is based on our understanding of housing markets. Households with high incomes (which we know are strongly correlated with education) are those in every metropolitan area which have the greatest choice of where to live. Their location decisions signal whether a particular neighborhood is desirable or not. Our analysis focuses on the relative health of close-in neighborhoods—those neighborhoods within 5 miles of the center of the metropolitan area. Our data are drawn from *City Vitals*, which used Geographic Information System (GIS) software to develop this

standardized view of relative core vitality for each of the nation's 50 largest metropolitan areas (Cortright 2006).

The data clearly show that cities with more vital urban cores have lower levels of poverty. In the typical large metropolitan area, about 24 percent of the adult population living in close-in neighborhoods have a four-year degree or higher level of education, while poverty rates in these close-in neighborhoods average nearly 21 percent (about 5 percent higher than the national average). In close-in neighborhoods with higher levels of education, poverty rates are considerably lower. In close-in neighborhoods with lower levels of education, poverty rates are higher.

Figure 7: Core Vitality Correlation



Supporting studies: The strength of local housing markets appears to be related to core vitality. Over the past two years, the nation has witnessed a dramatic reversal in housing markets with housing prices declining in most major metropolitan areas, and a rapid increase in mortgage foreclosures. Our analysis shows that those metropolitan areas with the highest levels of core vitality have weathered the housing downturn better than metropolitan areas with weak urban cores (Cortright 2008).

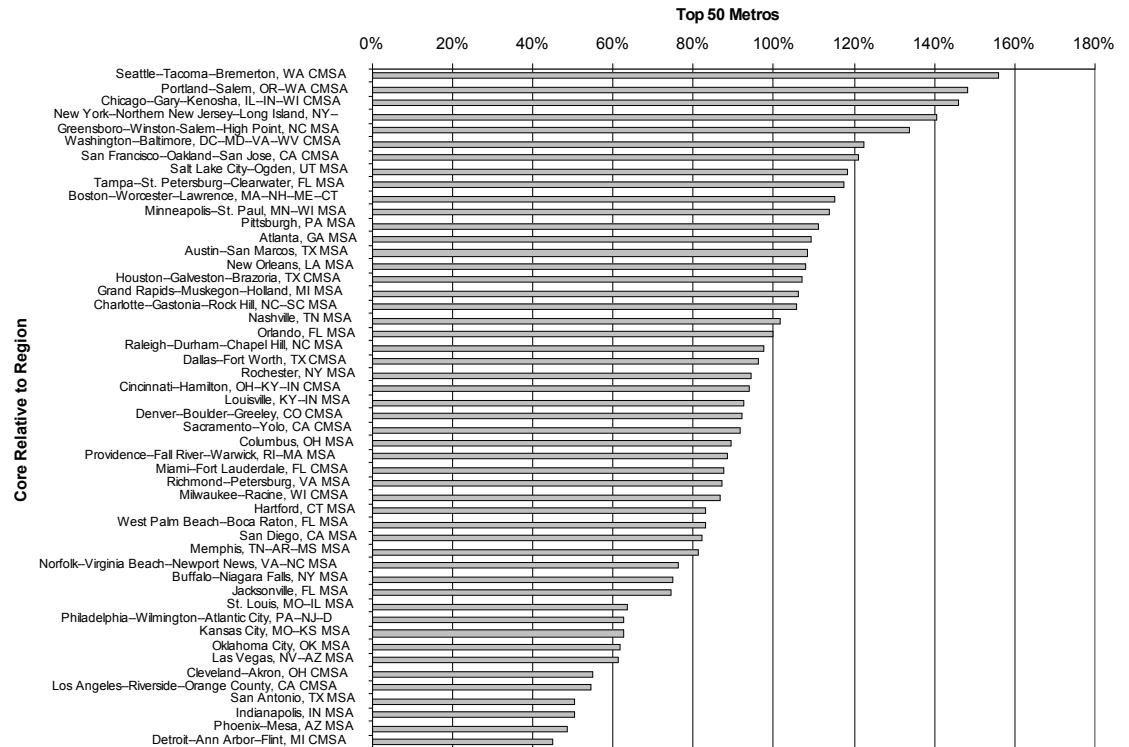
Low-income families are not evenly distributed throughout metropolitan areas. In fact, poor households are generally concentrated in certain neighborhoods in metro areas, and most often, neighborhoods in the central city. The concentration of poor households magnifies the negative effects of poverty, intensifying crime and social

problems, providing few role models and weak networks for economic advancement, and escalating the difficulty of providing educational opportunity (Jargowsky 2003). Higher levels of education are associated with greater civic participation, lower rates of crime and lesser rates of participation in welfare programs (Hall 2000). There is also evidence that concentrated poverty increases the cost of providing public services.

Studies of neighborhood change show that places that experience an improvement in educational levels, usually due to the in-migration of better-educated residents, also see income gains for current residents as well. In these changing neighborhoods, current residents with a high school education or more see income gains and are less likely to move away than in other neighborhoods, and the out-migration of minority populations is no higher than elsewhere (McKinnish, Walsh et al. 2007).

Range of experience: The health of close-in neighborhoods varies widely among the nation's 51 largest metropolitan areas. In some metropolitan areas, educational attainment levels are higher in close-in neighborhoods than in the rest of the metropolitan area. In Seattle, the share of the adult population living within 5 miles of the center having completed a four-year college degree of the region is 56 percent higher than in the rest of the region. In Detroit, the educational attainment level in the center is 45 percent lower than in the rest of the region. In general, close-in neighborhoods tend to have lower educational attainment than the rest of the metropolitan areas. In 12 metropolitan areas, the four-year college attainment rate is 10 percent or more higher than in the rest of the region. In 15 metropolitan areas, the college attainment rate is about the same as in the rest of the region (no more than 10 percent higher or lower than the rest of the region). In 33 metropolitan areas, the four-year college attainment rate is 10 percent (or more) lower than in the rest of the region.

Figure 8: Range of Core Vitality



V. Next Steps: Understanding City Dividends

This paper outlines the concept of the *City Dividends* and sketches the magnitude of the possible gains that can accrue to cities that improve their performance in each of these three areas. But it is just a first step in a more comprehensive and detailed effort to quantify these *City Dividends* and then employ them as a tool for change.

Refinement. We plan to work with subject matter experts in fields related to the three dividends to further refine our analysis and explore the relationships between key variables we've identified here. We also intend to further explore the definition of core vitality, expanding it to include an array of measures of economic activity, including employment, entrepreneurship and job accessibility. We'll also develop time-series data for metropolitan areas and neighborhoods to identify places that have made significant progress in one or more of the variables we've identified (improving educational attainment, reducing vehicle miles traveled and reducing poverty) and evaluate whether these changes have had the predicted effect on incomes and spending patterns.

Updating: Ideally, we'd like to be able to update the data used in computing the dividends annually. As a practical matter it is difficult to get data that is precise and reliable enough to detect statistically meaningful changes in these aggregate indicators on an annual basis. We know that there is considerable short-term variation in some of these measures, at least part of which reflects the measurement

error or statistical noise associated with many of the most commonly gathered data sets.

Planning: What are the promising policies and practices that are associated with significant city improvements? CEOs for Cities has developed a number of practical, policy-focused seminars to engage urban leaders from around the country in the identification of promising strategies for making progress on talent. We would propose developing similar action-oriented efforts for each of the three components of *City Dividends*.

Evaluating: We will work to develop progress indicators that show whether a city or metropolitan area is making progress in some action or activity that is positively correlated with progress on the overall indicator. For example, for the Green Dividend, we might gather data on gasoline sales or transit ridership at the metropolitan-level data that would be indicative of progress in setting the conditions for reducing vehicle miles of travel. We would anticipate that we could identify a set of “dashboard” indicators that cities could use to regularly measure incremental process in each of the three broad *City Dividends* areas.

A Note on Data

For the Talent Dividend, the Green Dividend and the Opportunity Dividend, we have compiled the most recent data for the nation’s 51 largest metropolitan areas, all those metropolitan areas with a population of one million or more according to the latest population estimates. Our Talent Dividend data comes from the 2006 American Community Survey. Our Green Dividend data reflects estimates of vehicle miles traveled in 2005 and 2006 compiled by the U.S. Department of Transportation. Our estimates of the Opportunity Dividend are based on poverty estimates from the 2006 American Community Survey, and public expenditure estimates compiled by the Bureau of Economic Analysis for 2006.

Our analysis of core vitality relies on an earlier set of data computed using a different set of metropolitan area definitions and are not directly comparable to the 2006 data. The most recent data on core vitality, computed from neighborhood level census tract data, are only available from Census 2000 and are tabulated using the boundaries and definitions for metropolitan areas in effect at the time of that Census. While the two definitions include most of the same counties nationally in the 50 largest metropolitan areas, there are some

key changes. For more information about these changes, see “Current Lists of Metropolitan and Micropolitan Statistical Areas and Definitions”

<http://www.census.gov/population/www/metroareas/metrodef.html>.

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