Economic Wellbeing in Baltimore
Results from the Genuine Progress Indicator

2012 & 2013

Prepared by
Dr. John Talberth
Michael Weisdorf

Center for Sustainable Economy
National Capital Office
1112 16th St. NW, Suite 600
Washington DC 20036
www.sustainable-economy.org
In 2010, Maryland adopted the Genuine Progress Indicator (GPI) as an overall indicator of economic wellbeing. The GPI tells us how well Maryland’s households and communities are doing in terms of indicators that matter most: household consumption of goods and services, benefits from community and environmental assets, environmental and social costs that are often hidden from view, and inequality. Read side by side with gross state product, employment, income, sales receipts and other conventional measures, the GPI helps provide an in depth look at Baltimore’s economy from the standpoint of the people that live here. This report presents the first GPI analysis for the City of Baltimore based on new methods and sources of data that have come available over the past few years and that now make reporting the GPI on the city level possible. Key findings from this initial GPI assessment for Baltimore include:

- Economic wellbeing in Baltimore is less about household consumption of goods and services and more about the economic benefits we receive from public infrastructure, unpaid labor, leisure time, high quality schools, parks, open space and other attributes of a high standard of living. While the benefits of consumption expenditures by households total roughly $14,000 per person, these other benefits total nearly $26,000 per person.

- The economic contribution of unpaid labor in the form of housework, volunteering, and caregiving is often overlooked, but featured prominently in Baltimore’s GPI – it added over $5 billion in value to Baltimore’s economy in 2013.

- Overall, the economic recovery in Baltimore was reflected in a growing GPI. On a per capita basis, Baltimore’s GPI grew by 5% between 2012 and 2013.

- Yet growth in economic wellbeing could have been better. It was hampered by a rise in the costs of inequality, crime, underemployment and commuting. In 2013, these and other social costs amounted to $17,737 per person.

- Baltimore can improve its GPI through a number of policies that help reduce these social costs and improve quality of life for all. These include encouraging more businesses to pay living wages and maintain generous leave policies, investing in green infrastructure, reducing the number of cars on the road, increasing the number of high quality schools and reducing use of fossil fuels.

What Does the GPI Measure?

The GPI is measure of economic wellbeing that takes into account the benefits of economic activity as well as the social and environmental costs it creates for households and communities. The GPI was first published in the late 1980s and has been vetted in the scientific literature since that time. The original scope of the GPI was for use at the national level, new methods and sources of information have now made it possible to calculate the GPI at the state and local level. As such, the GPI can provide a way for governors, mayors, and state and local agencies to monitor economic performance and assess the impacts of budget decisions, land use plans, infrastructure investments, and many other policy decisions.

The GPI measures economic well-being by considering three major factors. These include:

1. Economic benefits we receive from consumption of goods and services.
2. Economic benefits we receive from social and community assets like neighbors helping neighbors, public parks, and infrastructure.
3. Economic costs that are often hidden from view. These include the costs of environmental degradation social costs like homelessness, poverty and crime, and spending on items like insurance that are not actually consumed.

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1 Generous support for this project was provided by the Town Creek Foundation.
2 Daly, Herman and John Cobb Jr. 1989. For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future. Boston: Beacon Press.
### Economic Benefits Per Capita

<table>
<thead>
<tr>
<th>Major GPI Element</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household consumption spending</td>
<td>$13,233</td>
<td>$13,801</td>
</tr>
<tr>
<td>Public provision of goods and services</td>
<td>$3,318</td>
<td>$3,196</td>
</tr>
<tr>
<td>Value of transportation and water infrastructure</td>
<td>$1,227</td>
<td>$1,200</td>
</tr>
<tr>
<td>Value of household capital</td>
<td>$4,120</td>
<td>$4,080</td>
</tr>
<tr>
<td>Value of parks, open space and natural areas</td>
<td>$623</td>
<td>$624</td>
</tr>
<tr>
<td>Benefits of quality education</td>
<td>$3,359</td>
<td>$3,710</td>
</tr>
<tr>
<td>Value of leisure time</td>
<td>$4,182</td>
<td>$4,668</td>
</tr>
<tr>
<td>Value of unpaid work</td>
<td>$8,015</td>
<td>$8,141</td>
</tr>
<tr>
<td><strong>Total GPI Benefits:</strong></td>
<td><strong>$38,077</strong></td>
<td><strong>$39,420</strong></td>
</tr>
</tbody>
</table>

### Economic Costs Per Capita

<table>
<thead>
<tr>
<th>Economic Costs Per Capita</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income inequality</td>
<td>$3,685</td>
<td>$3,843</td>
</tr>
<tr>
<td>Depletion of nonrenewable resources</td>
<td>$4,737</td>
<td>$4,478</td>
</tr>
<tr>
<td>Pollution</td>
<td>$3,011</td>
<td>$2,945</td>
</tr>
<tr>
<td>Costs of homelessness</td>
<td>$276</td>
<td>$259</td>
</tr>
<tr>
<td>Costs of underemployment</td>
<td>$2,176</td>
<td>$2,320</td>
</tr>
<tr>
<td>Costs of crime</td>
<td>$1,017</td>
<td>$1,080</td>
</tr>
<tr>
<td>Costs of commuting</td>
<td>$2,095</td>
<td>$2,400</td>
</tr>
<tr>
<td>Costs of vehicle accidents</td>
<td>$411</td>
<td>$412</td>
</tr>
<tr>
<td><strong>Total GPI Costs:</strong></td>
<td><strong>$17,408</strong></td>
<td><strong>$17,737</strong></td>
</tr>
</tbody>
</table>

### GPI Per Capita

- **2012 GPI Per Capita:** $20,669
- **2013 GPI Per Capita:** $21,683

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### Baltimore GPI Benefits Per Capita

- **2012:** $38,077
- **2013:** $39,420

### Baltimore GPI Costs Per Capita

- **2012:** $17,408
- **2013:** $17,737
Most of the costs and benefits included in the GPI can be measured directly – like household spending. But others require various techniques developed by economists to quantify their value. For example, the GPI estimates the value of leisure time based on what could be earned if people chose to work instead. It measures the costs of pollution based on surveys that tell us what people are willing to pay to clean it up and live in a healthier environment.

How is the GPI Calculated?

Household spending on goods and services is the beginning point for GPI calculations because what households spend on goods and services is a relatively good proxy for the value or utility they get back. But unlike assumptions implicit in the GDP, the GPI recognizes that not all spending is desirable. A large portion of household expenditures is on items we would rather reduce in the future. Take medical care or health insurance. No one wants to be spending more for health care; we would rather be healthy. And many of Baltimore’s health problems are attributable to undesirable economic conditions – jobs with high stress, long hours, or occupational risks – and so spending on health care is rightly considered a cost of economic activity and not a benefit to households. Or take water and air filters in the home. We would rather enjoy fresh air and clean water and spend that money elsewhere. So the GPI makes a series of deductions of so-called “defensive or rehabilitative expenditures” to net out consumption of goods and services that truly add value.3

In addition to what is spent on health care, insurance, and pollution abatement, these defensive and rehabilitative expenditures include spending on food and energy waste, cigarettes, 25% of alcohol consumption, household security devices, child support and alimony. There are three primary reasons why these items are included: (1) they represent spending that is not actually contributing to greater consumption of goods and services (i.e. food and energy waste); (2) they reflect costs of economic activity or deteriorating social conditions (i.e. joblessness, alimony, child support, or legal services) or (3) spending on them causes more harm than good (i.e. cigarettes and excess alcohol). For example, spending on food and energy waste is spending on goods that we don’t actually consume; they are taken out with the trash or go up the chimney. The Natural Resources Defense Council estimates that Americans waste 19% of food consumed at home and 42% of the food eaten at restaurants.4 Baltimore’s GPI nets out this waste, which amounted to nearly $183 dollars per person in 2013.

In 2013, Baltimore households’ gross spending on goods and services was $21,636 per capita. Of this amount, deductions for defensive or rehabilitative expenditures amounted to $2,000, up almost $85 over 2012.

The second major stage in GPI accounting is to net out spending on various kinds of household investments, as well as charity. The rationale is simple: since the GPI’s goal is to measure the value of current consumption of goods and services, what we spend investing, whether it be on the home, on education, or on retirement should not be counted. Investments pay off in future time periods, when the services generated by those investments are enjoyed. So investing in a new car yields an annual flow of transportation services later on. Purchasing a new refrigerator yields an annual flow of refrigeration services for many years. The GPI values all other home improvement investments in a similar fashion. Similarly, investments in higher or vocational education eventually pay off with greater earnings potential and associated consumption. As discussed below, these are captured and valued in the GPI framework elsewhere. In the GPI accounting system, household investments tracked include consumer durables, household repairs and maintenance, home improvement, higher and

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3 For a fuller explanation of defensive and rehabilitative expenditures and why they are deducted in the GPI framework, see: Lawn, Philip. 2003. “A theoretical foundation to support the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and other related indexes.” Ecological Economics 44: 105-118.

vocational education, savings, retirement, stocks and bonds. On a per capita basis, these amounted to $5,594 in 2012 and $5,835 in 2013.

Netting out defensive and rehabilitative expenditures and then household investments leaves a residual of spending on household consumption (Chart, page 2) – a proxy for the wellbeing we receive from goods and services provided by formal markets. In 2013, this amounted to $13,801 per capita.

The second major stage of GPI accounting (Figure, page 9) is to adjust household consumption spending to account for the costs of inequality. The technique is based on economic models that show how spending by the wealthiest has less of a “bang for the buck” as spending by lower or middle-income households.\(^5\) This reality is backed up by a wealth of research on measures of happiness that conclude that past a certain point, more spending does not necessarily make us better off.\(^6\) And so the GPI applies a discount factor that weighs growth in the consumption of low and middle-income households more than that of growth in spending by the richest households.\(^7\) The difference between weighted and unweighted consumption spending can be interpreted as the costs of income inequality. As elsewhere in the U.S. and worldwide, the cost of income inequality in Baltimore is significant and growing. It rose from $3,685 per capita in 2012 to $3,843 in 2013 – an increase of over 4.2%.

The third stage of GPI accounting is to add in the household consumption benefits associated with publicly provided goods and services. These include direct benefits associated with public food, housing, and energy assistance, primary and secondary education as well as free public transit and recreation services. By providing these goods and services to the community directly, federal, state, and local governments support a higher quality of life for those least able to afford it and reduce expenses for all. The value of these publicly provided goods and services was $2,947 per person in 2012 and a bit less - $2,829 per person in 2013.

The fourth stage is to add in the wide range of benefits we receive from community and environmental assets.

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\(^5\) This is known as the theory of declining marginal utility of consumption.  
\(^7\) The discount factor is applied to households above median income, and rises with each income bracket thereafter. It is based on global research by Mayraz G. 2008. “The marginal utility of income.” Journal of Public Economics 92: 1846-57.
These assets have been described by economists as stocks of “essential” capital that yield corresponding flows of services on an annual basis. There are four forms of capital that are regarded as essential for the sustainability of a healthy economy. These include human capital, social capital, built capital, and natural capital.8 Each of these forms of capital generates annual benefits that are monetized in the GPI accounting framework. For example, leisure time is made possible by the social capital we have accumulated with others who are able to take over responsibilities at work or at home when people need time off. Open space, parks, wetlands, urban trees and other forms of natural capital provide us benefits in the form of places to recreate, clean air, clean water, and scenic views that enhance property values. The GPI tracks the value of essential capital through six aggregate indicators that measure the annual contribution of quality education, home improvements, water and transportation infrastructure, unpaid work, leisure time, parks and open spaces.

In Baltimore, the benefits from essential capital totaled $21,897 per capita in 2012, rising to $22,790 in 2013. This amount is substantially greater than the contribution of household spending, and a sign of just how important community and environmental assets are to economic wellbeing.

Stage five in the GPI accounting system is to assign costs to the loss of open space, forests, wetlands, and other natural resources and estimate the costs pollution imposes on the community, public health, and the economy. Since Baltimore is already urbanized to a high degree, the loss of open spaces and other natural areas has for all practical purposes come to a halt. So that cost is not included in the current GPI accounts. But Baltimore residents, as elsewhere in the US, do consume a significant quantity of nonrenewable resources and so this cost is monitored. Nonrenewable resources include minerals, groundwater, as well as stocks of coal, oil and gas. Of these, the most significant source of depletion in Baltimore comes from consumption of fossil fuels.

In the GPI framework, the costs of nonrenewable energy resources is estimated by asking what it would cost to replace those sources in the future – a cost that will be borne by future generations. The Baltimore GPI bases its replacement cost estimates on what it would cost to bring solar, wind, and biofuels online now to replace all of the coal, oil, and gas consumed for electricity and transportation fuels. The cost is substantial: $4,478 per capita in 2013. However that figure declined by 5.6% since 2012, indicating that the transition to renewable energy in Baltimore is gaining momentum.

With respect to pollution costs, the GPI accounts include the public health and economic costs associated with air, water, and noise pollution, greenhouse gas emissions, and solid waste. Techniques for valuing these costs vary depending on the pollutant, but are based either on (1) national or regional studies that have estimated the marginal damage associated with an additional unit of each pollutant (i.e. one more metric ton of carbon dioxide, an additional pound of nitrogen entering the Bay); (2) household’s willingness to pay to fund programs to clean up polluted water bodies, or (3) public spending on pollution clean up or solid waste management programs.

In 2012 and 2013, the costs of pollution in Baltimore were relatively constant - $2,945 per capita in 2013 and slightly higher in 2012. By far, the biggest source of pollution was noise pollution. While people pay more attention to pollution of air and water, noise pollution is more ubiquitous but in the background so fewer people recognize it or advocate for policies to reduce it. But study after study reveals how costly it is: lower property values, less time outdoors, higher levels of stress, and sleep disorders, for example.9 It tends to be a particularly significant cost for urban residents, people living near highways, pedestrians and cyclists.

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9 The negative effects of noise pollution on property values have been well documented. Effects on public health are a more recent area of inquiry, but results suggest a wide range of health disorders can be attributed to increased environmental noise. See: Berry, B.F., Flindell, I.H. (2009). Estimating Dose-Response Relationships Between Noise Exposure And Human Health Impacts In The UK. **BEL**: 2009 - 001.
Disadvantaged populations tend to be particularly exposed to this impact.  

A 1997 study by the Federal Highway Transportation Administration found that on average, each vehicle mile traveled (VMT) in an urban area generates about $0.34 in noise pollution costs (in 2012 dollars). Combined with the most recent data on VMTs in Baltimore, this suggests an annual noise pollution cost of $1,871 per capita in 2013. This is an underestimate, because it focuses mostly on lost property values, not public health costs. But either way, the economic damage associated with more and more cars on the roads and continued reliance on an automobile-dependent economy is revealed quite well in Baltimore’s GPI accounts. The second highest pollution costs is associated with air pollution, especially carbon monoxide emitted by vehicles traveling on Baltimore’s cities, streets and highways. Carbon monoxide is a public health threat. Each year, it claims thousands of lives in the US primarily because when breathed in, CO passes through the lungs and bonds with hemoglobin, displacing the oxygen that cells need to function. In Baltimore, the costs of CO and other air pollutants amounted to $453 per person in 2013.

The third highest pollution cost is the cost of greenhouse gas emissions (GHG). Globally, the costs of climate change spurred by these emissions is expected to be staggering – up to 5% of global GDP each year – and has been called “the greatest market failure the world has ever seen.” Baltimore is especially susceptible. To cope with climate change, there are proposals for sea walls and related structures strategically located along Baltimore’s 61 miles of Chesapeake Bay coastline. In New Orleans, the cost of these barriers along 131 miles of exposed waterways topped $14.5 billion.

There is a wide range of estimates of what each additional ton of carbon means in terms of costs for the economy. For the Baltimore GPI accounts, a value of $110 per ton of carbon was incorporated to stay consistent with the State’s GPI methods. Combined with emissions data for Baltimore published in the City’s Sustainability Plan annual reports, this translates into costs of over $347 per capita in 2013.

Another significant pollution cost is that associated with stormwater runoff. As with all major urban areas, stormwater runoff in Baltimore produces nitrogen, phosphorous, and sediment pollution that harms fisheries and recreation use and forces public water resource management agencies to spend tax dollars mitigating the damage. Eutrophication in the Chesapeake Bay is an especially worrisome consequence of this pollution – it has been reported that hypoxic “dead zones” in the Bay cost Maryland and Virginia more than $640 million between 1998 and 2006 alone in terms of reduced crab harvests. These and other types of economic damages can be translated into costs per pound of nitrogen and phosphorous pollution ($133/lb). The GPI incorporates this value into its calculations and then multiplies it by the amount of pollution embodied in stormwater runoff based on load estimates provided by the Maryland Department of Environment. The resulting figure is added to current expenditures on surface water treatment and water filtration programs to approximate the overall costs of water pollution - $257 per capita in 2013, an amount that will fall as the City unveils and then implements its new stormwater management plan beginning in 2015.

The good news is that except for solid waste, all pollution costs monitored by the GPI for Baltimore fell between 2012 and 2013. As the City maintains programs for cleaning up the air and water, reducing use of fossil fuels, and promoting recycling and public transit these trends should continue.

The sixth and final stage in Baltimore’s GPI accounting is to subtract a number of social costs that are largely
Economic Wellbeing in Baltimore: Results from the Genuine Progress Indicator (GPI) 2012 and 2013

GPI Benefits Per Capita 2013
$39,420

14 This is the Bureau of Labor Statistics definition of their U-6 employment measure. For a complete description visit: http://www.bls.gov/lau/stalt.htm.

The result of economic policy decisions. These include costs associated with homelessness, underemployment, crime, commuting, and vehicle accidents. Combined, these costs amounted to $5,976 in 2012 and $6,471 in 2013. Underemployment, crime, and commuting were the most significant social cost categories. Unfortunately, they all rose between 2012 and 2013. The costs of underemployment is particularly worrisome, because it is indicative of an economic recovery that has failed to reestablish a strong base of well paying, full time jobs. The costs of underemployment in the GPI framework takes into account not only those officially unemployed, but all those considered marginally attached to the labor force, plus those working less than full time for economic reasons. Baltimore’s underemployment rate rose from 17.63% to 17.91% between 2012 and 2013. Coupled with a higher median wage (which makes the costs of not working higher) this drove underemployment costs up from $2,176 to $2,319 per capita – an increase of 6.6%.

Commuting costs remained significant, but increased only slightly from $2,095 to $2,400 per person. Mean commuting time rose from 30.6 minutes to 31.63 minutes – a sign of increasing congestion. The GPI counts the value of time lost in traffic, and because time in traffic takes away from time at home with family and friends or time at work, the cost is significant. Crime costs also remained high, amounting to $1,079 per person in 2013, up nearly 6.2%. The jump in the costs of crime was driven by an increase in murders, which rose from 218 to 235. As with the Maryland GPI, the cost of crime per incident is taken from Department of Justice data. The cost of murder is by far the largest ($2.3 million per incident) and so as this violent crime incident rate increases, the costs of crime in the GPI accounts rises fast.

What Does the Baltimore GPI Tell Us?

Baltimore’s GPI accounts are rich with data on a number of social, economic, and environmental conditions and trends important to qualify of life and relevant for policy makers. An in depth analysis is beyond the scope of this summary report. Nonetheless, a few high-level insights can be gleaned. First, the Baltimore’s GPI clearly demonstrates that economic wellbeing in Baltimore is less about household consumption of goods and services and...
example, the economic contribution of unpaid labor in the form of housework, volunteering, and caregiving is ignored by conventional economic indicators, but featured prominently in Baltimore’s GPI – it added over $5 billion in value to Baltimore’s economy in 2013, over $8,000 per capita.

Secondly, the economic recovery in Baltimore was reflected in a growing GPI. On a per capita basis, Baltimore’s GPI grew by 5% between 2012 and 2013. The most significant sources of improvement were related to growth in benefits from consumer spending, high quality education, and leisure time as well as decreases in the costs associated with fossil fuel consumption.

Third, growth in economic wellbeing could have been much better. It was hampered by a rise in the costs of inequality, crime, underemployment and commuting. In 2013, these and other social costs amounted to $17,485 per person.

Finally, relying on GDP as a metric of overall economic performance is misplaced. In 2013 Baltimore’s GPI per capita ($21,934) represented just 36% of the area’s per capita GDP ($60,385). What this means is that roughly 64% of what is counted as an economic benefit in GDP accounts is being canceled out by rising social and environmental costs or spending on items like health care that represent the costs, not benefits, of economic activity.

**How Can Baltimore Improve Its GPI?**

Baltimore can improve its GPI through a number of policies that enhance the benefits households receive from consumption of goods and services and essential capital or reduce the social and environmental costs of economic activity. These include encouraging more businesses to pay living wages and maintain generous leave policies, investing in green infrastructure, reducing the number of cars on the road, increasing the number of high quality schools and reducing use of fossil fuels.

The GPI benefits of minimum wage, prevailing wage, and living wage programs are significant, and warrant continued City support and expansion. A recent analysis by CSE found that if Maryland’s Minimum Wage Act (HB 275) were fully implemented now, Maryland’s GPI would be nearly $1.7 billion higher than it is today in 2000 dollars (the baseline year for the Maryland GPI) or over $2.2 billion higher in current dollars. Benefits would include reduced costs of inequality (a benefit of $1.02 billion), increased consumption expenditures by low and middle-income families (a benefit of $625.51 million), reduced costs of underemployment ($29.67 million), reduced costs of crime ($11.49 million) and increased benefits of consumer durables (a benefit of $2.07 million). All these benefits are associated with Baltimore’s wage programs as well.

Protecting and investing in community and environmental assets is critical path to sustainable wellbeing, and one that can involve governments, businesses, and households. For example, investments in clean water infrastructure can be a cooperative undertaking involving households (green rooftops), businesses (impervious parking areas) and public utilities (wetland restoration). Each of these investments generates GPI benefits in a number of ways – creating jobs and personal income, reducing pollution costs, and generating valuable ecosystem services that are reflected in GPI accounts. For example, every acre of wetland restored to meet stormwater management goals could generate annual GPI benefits of $50,000 or more.

Fully implementing Baltimore’s Climate Action Plan can have a wide range of GPI benefits in the form of new employment, reduced costs associated with depletion of nonrenewable resources, lower greenhouse gas emission costs, and increased consumer spending as money now wasted on inefficient energy sources is replaced with clean, sustainable wellbeing, and one that can involve governments, businesses, and households. For example, investments in clean water infrastructure can be a cooperative undertaking involving households (green rooftops), businesses (impervious parking areas) and public utilities (wetland restoration). Each of these investments generates GPI benefits in a number of ways – creating jobs and personal income, reducing pollution costs, and generating valuable ecosystem services that are reflected in GPI accounts. For example, every acre of wetland restored to meet stormwater management goals could generate annual GPI benefits of $50,000 or more.

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renewable energy. The GPI benefits of meeting renewable energy targets could exceed $60 million per year.\textsuperscript{16}

In June of this year, Mayor Stephanie Rawlings-Blake launched the “Baltimore City Anchor Plan,” which she projects will provide economic growth, increase City population, and create jobs. The plan will utilize eight area institutions, which the City believes will help provide economic growth and opportunity for area residents. As the City considers ways to implement the Anchor Plan and focus the resources of key institutions, the GPI can help identify policies and programs that represent the biggest bang for the buck in terms of the economic wellbeing of Baltimore residents.