



## Analysis

## Genuine Economic Progress in the United States: A Fifty State Study and Comparative Assessment

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## A B S T R A C T

The Genuine Progress Indicator (GPI) was designed to reveal the economic, social, and environmental trade-offs associated with conventional economic growth as traditionally measured by Gross Domestic Product (GDP). Although originally designed for use at the national scale, an interest has developed in the United States in a state-level uptake of the GPI to inform and guide policy. This study presents the first fifty-state estimate for U.S. GPI in order to address questions over its design, implementation, and ultimate potential as a tool to guide state-level economic policy. Following a review of the current state of analysis and critique of GPI, we provide an overview of methodology and database development. Results are then presented, including discussion of lessons learned through a fifty-state application. The paper concludes with suggestions for further research and next steps to consolidating a consistent methodology.

## 1. Introduction

Gross domestic product (GDP) has long been the primary metric used by national and state governments to gauge standard of living and help guide economic and social policy. Prior to the development of national income accounting in the 1940s, governments had sparse and incomplete data on the size and direction of the macroeconomy, contributing to uncertainty about the role and impact of policy (BEA, 2000). Today, national income and product accounts are sacrosanct to policy-making, declared as the “achievement of the century” by the U.S. Department of Commerce (BEA, 2000). However, as an artifact of the mid-20th century, the usefulness of GDP as a metric of progress in the 21st century has been subject to much discussion, debate, and proposals for both modifications and alternatives.

In recent decades multiple environmental and social critiques of GDP as a measure of economic welfare have emerged (e.g., Ayres, 1996; Daly and Townsend, 1993; Daly, 1977, 1996; Hamilton, 2003; Jackson, 2011; Schor, 2010; Speth, 2008) including a high profile Commission on the Measurement of Economic Performance and Social Performance (2009) chaired by Nobel prize winning economists Joseph Stiglitz and Amartya Sen. Much of the criticism revolves around a lack of differentiation of costs from benefits of economic growth, including the costs of inequality, regrettable defensive expenditures, uncounted environmental externalities, depletion of natural resources, and trade-offs with

non-work uses of time. One composite indicator that addresses many of these issues is the Genuine Progress Indicator (GPI).

Developed at both the national and sub-national level, GPI provides a general assessment of the quality of economic activity through a series of 24 adjustments to personal consumption expenditures which composes a significant fraction of GDP. GPI developed as an extension of the earlier work of Daly and Cobb (1989) on the Index of Sustainable Economic Welfare. Initial studies were conducted for the U.S. at the national scale (Anielski and Rowe, 1999; Talberth et al., 2007) and have since spread to over 17 international applications (Kubiszewski et al., 2013). However, due to a lack of federal policy uptake, recent attention of both the academic and advocacy communities has turned to state-level application and adoption. In the US, following the lead of Maryland and Vermont, there are now over a dozen state estimates of GPI, and an informal network of practitioners is working towards standardizing accounting procedures and sharing policy applications (e.g., Bagstad and Shammin, 2012; Erickson et al., 2013; McGuire et al., 2012; Talberth and Weisdorf, 2017).

As GPI accounting has moved from development and advocacy to implementation and policy application, there is a growing need to reassess theoretical foundations and standardize estimation procedures. In this vein, this study provides the first estimate of GPI for each of the fifty states in the US for one year using a consistent methodology. The goal is not to provide commentary on specific states or promote a

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winners-versus-losers analysis. Rather, this paper seeks to provide insights that can arise from fifty case studies of GPI that use the same data and methodology to support a richer understanding of the “design artifact” of GPI, leading to a deeper potential for a “design intervention” (Brown and Martin, 2015).

Following a review of the current state of analysis and critique of GPI, with particular focus on U.S. state applications, we provide an overview of methodology and database development for the fifty-state study. Results of the study are then presented, including discussion of lessons learned through a fifty-state application. The paper concludes with suggestions for further research and next steps to consolidating a consistent methodology.

## 2. Genuine Progress in the States

GPI, and its pre-cursor the Index of Sustainable Economic Welfare (ISEW), were designed to reveal the trade-offs of conventional economic growth (Daly and Cobb, 1989; Neumayer, 2000). Daly (1987) refers to “uneconomic growth,” when marginal costs outweigh the marginal benefits of the next increment of growth, as a phenomenon that is now occurring in many developed nations. This is seen in numerous GPI studies at national and state levels as a widening ‘well-being gap’ between GDP and GPI with a turning point of maximum GPI achieved as early as the 1970s in nations such as the U.S. (Anielski and Rowe, 1999; Talberth et al., 2007). The strength of GPI has been this comparability with GDP, providing an avenue of inquiry on the desirability and quality of growth. Ultimately, one of the ambitions of the GPI is to gauge the interrelatedness of economic, social, environmental dimensions of economic welfare, an indicator of “weak sustainability” that admittedly allows for full substitution between monetized variables (Neumayer, 1999).

Originally designed as a national composite indicator and policy lens, in recent years GPI has been estimated and adopted at sub-national levels in the U.S. and Canada. The first U.S. state-level study was conducted for the state of Vermont (Costanza et al., 2004). The state of Maryland became the first government-sanctioned GPI effort with a 2010 executive order of Governor Martin O'Malley. In 2012, the Vermont state legislature passed “An Act Related to the Genuine Progress Indicator,” which mandates yearly updates to Vermont GPI in co-operation with the University of Vermont's Gund Institute for Environment. A loosely cohesive “GPI in the States” initiative (GPIinthestates.com) was launched by representatives from 20 states at a series of meetings convened by the Governor of Maryland in October 2012 and June 2013 with assistance from Demos, a progressive policy organization. A follow-up meeting with GPI practitioners was convened at the Gund Institute for Environment in Spring 2014. For this meeting, an initial GPI estimate for fifty states was produced by a graduate ecological economics class to be used as the springboard for innovation towards a new standard, often referred to as “GPI 2.0” (see Talberth and Weisdorf, 2017).

The GPI is a composite index of the quality of economic activity arrived at through mixed methods from environmental economics (e.g., pollution and climate change costs), natural resource economics (e.g., depletion costs), and various heterodox approaches to other social and economic adjustments. These methods are detailed in several publications, including the original ISEW proposed by Daly and Cobb (1989), national-level GPI studies (Talberth et al., 2007), and the original state-level GPI method (Costanza et al., 2004). In summary, the GPI is a linear equation in which 7 benefits and 18 costs sum to a single monetary measure of economic welfare. GPI is grounded in a Fisherian concept of income; a net “psychic income” that deducts harmful aspects of consumption from useful components (Lawn, 2003). Each of the components is reflected in monetary terms which facilitate the simplicity of the equation and the ultimate single monetary output enhancing the metric's comparability to GDP. The costs and benefits are then often grouped as six economic, nine social, and ten environmental

components.

These components of GPI were first established in national level studies, then modified for state-level estimates beginning with the decadal estimates for Vermont from 1950 through 2000 (Costanza et al., 2004). Since then many disparate GPI U.S. state-level studies have been completed using diverse methodologies often reflecting local datasets, local geographies, or to catalyze relevance for local policy. GPI estimates have been published for subnational levels for at least seven other locales, including Vermont, Chittenden County, Burlington (Costanza et al., 2004); Northern Vermont (Bagstad and Ceroni, 2007); Northeast Ohio (Bagstad and Shammin, 2012); Baltimore City, Baltimore County, and Maryland (McGuire et al., 2012; Posner and Costanza, 2011); Oregon (Kubiszewski et al., 2015); Hawaii (Ostergaard-Klem and Oleson, 2014); and Utah (Berik and Gaddis, 2011). There are also state-level GPI studies written by researchers or state employees that have not been published in peer reviewed journals, including for Minnesota (Minnesota Environmental Quality Board, 2000), Michigan (Michigan State University), Colorado (Stiffler, 2014), Missouri (Zencey, 2015), Washington (Results Washington, 2013), Massachusetts (Erickson et al., 2014; Assumption College), and Alberta (Anielski, 2002).

Each state-level study has resulted in modifications to the GPI methods, reducing comparability between studies. Initial studies followed the “Vermont/Maryland” method (e.g., Bagstad and Ceroni, 2007; Costanza et al., 2004; Erickson et al., 2013; Posner and Costanza, 2011), with some recent modifications made in the “Ohio/Utah” method (Bagstad and Shammin, 2012; Berik and Gaddis, 2011). Based on insights from this variance in state-level methods, Bagstad et al. (2014) published suggested updates for a new GPI 2.0 standard. Talberth and Weisdorf (2017) provide a full comparison between methods, including new Maryland and U.S. estimates incorporating 2.0 recommendations.

As an initial basis of state comparisons, the Vermont/Maryland methodology as summarized for the Vermont state legislature in Erickson et al. (2013) was used as the basis for this study. This method is comparable to most previously published GPI studies, requires less data than the emerging GPI 2.0 method, and avoids the need for private data sources. The year with the most complete dataset was 2011, including new state-level estimates for Personal Consumption Expenditure by the Bureau of Economic Analysis (Awuku-Budu et al., 2013). Monetary units were converted into 2011 U.S. dollars using regional Consumer Price Indices (CPI) from the U.S. Bureau of Labor Statistics for the Northeast, South, Midwest, and West. There are no comparable national estimates for U.S. GPI using the Vermont/Maryland method for 2011. However, data would have considerable differences given differences in state specific data and national aggregates. Data incorporated for each sub-indicator, including data ranging from all state-level, to partially state-level, to fully national-level scaled by state population, are summarized in Fox (2017).<sup>1</sup>

## 3. Fifty State GPI Estimate

Fig. 1 highlights the estimates of GPI per capita by state, with Alaska as the highest GPI, Wyoming the lowest, and a range of \$97,218 per capita. Seven states have negative GPIs (Arizona, Arkansas, Louisiana, Mississippi, North Dakota, West Virginia, Wyoming) suggesting that

<sup>1</sup> An initial fifty state GPI assessment was produced as part of a graduate student course supported by the Gund Institute for Environment held at the University of Vermont in the spring semester of 2014 under the supervision of Professor Jon Erickson and Daniel Clarke, a visiting scholar from the United Nations Statistical Division. The full data set, methodological descriptions, and additional analysis are available in Fox (2017) and can be downloaded from the University of Vermont at: <http://scholarworks.uvm.edu/graddis/679/>. The full excel spreadsheet of the 50-state results, including detailed descriptions of assumptions and secondary data sources, is available for download at: <http://www.uvm.edu/gund/gpi>.

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