EXECUTIVE SUMMARY

THE UTAH GENUINE PROGRESS INDICATOR (GPI), 1990 TO 2007

A REPORT TO THE PEOPLE OF UTAH

A UTAH VITAL SIGNS PROJECT

OF

THE UTAH POPULATION & ENVIRONMENT COALITION

AUTHORS & LEAD RESEARCHERS

Günseli Berik, Ph.D., *Department of Economics, University of Utah*

Erica Gaddis, Ph.D., *SWCA Environmental Consultants Inc., Salt lake City, Utah*

RESEARCH TEAM

Kenneth Bagstad, Ph.D., *Gund Institute for Ecological Economics, University of Vermont*

John Lowry, Ph.D., *formerly College of Natural Resources, Utah State University; currently at the University of the South Pacific, Fiji*

JANUARY 25, 2011

Suggested citation: Berik, G. and E. Gaddis. 2011. *The Utah Genuine Progress Indicator (GPI), 1990 to 2007: A Report to the People of Utah.* Available at: www.utahpop.org/gpi.html.

EXECUTIVE SUMMARY

A MORE USEFUL INDICATOR THAN GDP

Standard measures of economic activity for Utah, such as the GDP, indicate steady economic growth since at least 1963 in both total value and per capita terms. However, many economists and policy makers question the adequacy of the gross domestic product (GDP) as a measure of well-being in either economic or societal terms. While it is widely recognized that GDP was never intended to be a measure of well-being, it is often mistakenly viewed in that manner and therefore frequently used as such. GDP is a tally of all monetary exchanges that take place in a given year. As such, it does not differentiate between economic activities that add to our well-being and ones that undermine our quality of life. Nor does GDP take into account the contributions of nonmarket services of individuals or the environment to our well-being. Currently GDP improperly counts consumption of natural resources or economic processes that erode social cohesion as improved economic welfare. Thus the GDP approach is sometimes referred to as "positive ledger only accounting," akin to reporting only total revenues of a business in an income statement, neglecting to take into account either the expenses or the depreciation of the company equipment. Any improvement to this approach is real progress in national or state income accounting.

We propose the Genuine Progress Indicator (GPI) metric as a useful new indicator for Utah. The GPI provides an integrated and holistic framework that seeks to correct the flaws of national and state income accounting by implementing a full accounting of the welfare of society. This entails both adding those things that contribute to our well-being and deducting market transactions that do not contribute to well-being. The primary goal of the GPI study is to determine whether economic growth in Utah, as measured by traditional metrics, has led to genuine social, economic, and ecological progress in the past 20 years. GPI takes a closer look at the condition of aspects of our community that contribute to or detract from our individual well-being and quality of life. In that sense, GPI provides a broader assessment of our overall welfare.

MEASURING QUALITY OF LIFE, NOT JUST ECONOMIC TRANSACTIONS

GPI is an objective quality of life metric that assesses current net income by incorporating adjustments for economic, environmental, and social values and costs. Examples of these adjustments include the value of non-market work; the monetary costs associated with activities such as commuting, automobile accidents, pollution, and crime; and the value of services provided to society by natural capital, such as wetlands, cropland, and forests. Each of these considerations is reflected in monetary terms as a component of the GPI. Thus, GPI is a single number indicator that can also be broken down into components. As such, GPI can be tracked over time and compared to other states and nations.

While the GPI accounting framework provides a monetary measure of our quality of life, underlying the monetary value or cost represented by each of the components of GPI are also nonmonetized indicators that are known constituents of well-being. Each of these components has an account that describes the condition and trends in the component in both nonmonetary and imputed monetary terms. For example, the GPI framework evaluates changes in emissions of air pollutants as well as assessing the changes in their cost in monetary terms. This cost, in turn, is deducted from our overall GPI. Thus, compared to the GDP we are able to obtain a more compelling picture of contributors to our quality of life and how it is changing.

BETTER POLICY COMES FROM BETTER DATA

The Utah GPI study provides substantial opportunity for local policy makers to make informed policy choices that take into consideration a broad range of factors beyond the economic considerations. In addition, the GPI framework fits in well with other values-driven planning processes, such as the activities of Envision Utah or Utah's Quality Growth Commission, which seek to promote quality growth in the state. GPI accounts help decision-makers answer the question: Is Utah's economic growth leading to genuine social, economic, and ecological progress? In particular, the Utah GPI study provides a quantitative framework by which policy options could be compared and prioritized by local decision makers by taking into account social, economic, and environmental factors. For example, components of the GPI such as the cost of vehicle accidents, commuting time, air pollution, and the loss of open space could inform transportation planning. Because the results are reported in uniform monetary units, they can be used to directly assess economic tradeoffs.

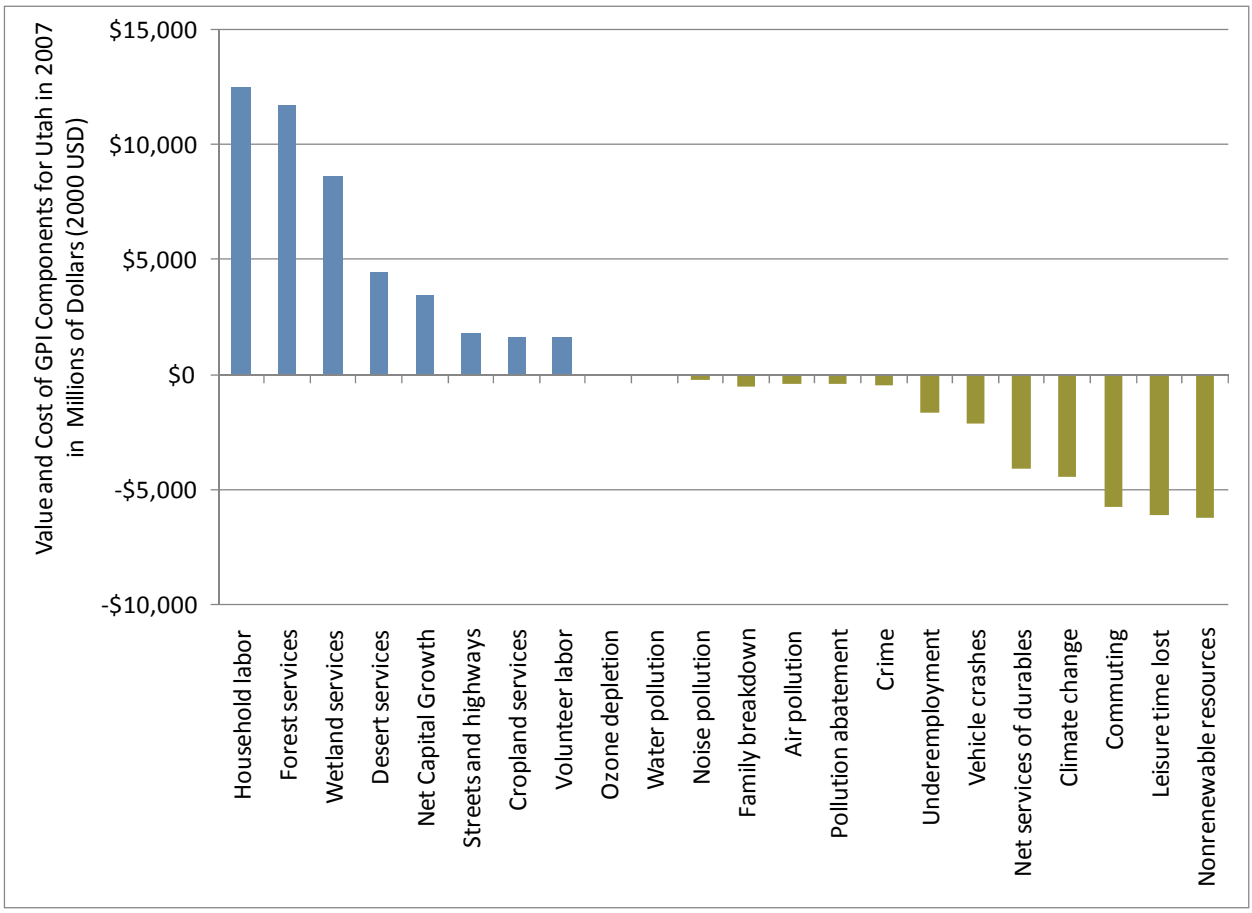
The GPI study is a contribution to the Utah Vital Signs project of the Utah Population and Environment Coalition (UPEC). The project aims "to empower Utah citizens and key decision makers to make better decisions about their future by providing clear, well-documented information about key indicators of environmental sustainability in Utah." Currently, there is no metric available to Utahns to easily compare the tradeoffs between social, economic, and environmental factors that affect Utah's communities. The GPI is consistent with the project's goal of bringing greater clarity about policy choices and their impact on the social, economic, and ecological systems that support our quality of life in Utah.

THE GPI METHODOLOGY

The GPI methodologies were initially developed for national-level assessments. However, interest is growing in applying GPI methods at local and regional scales due to the impact that local policies can have on quality of life. In spite of data availability and quality challenges associated with applying GPI at local scales, GPI studies in the US have been completed in Vermont, Ohio, Minnesota, the San Francisco Bay Area, and Maryland. In addition to Utah, there are efforts in progress in Michigan and Massachusetts to complete state-level GPI studies. To our knowledge, the Utah GPI study is the first state-level GPI study in the intermountain west.

The GPI methodology uses personal consumption as the starting point for the analysis, to which 24 different adjustments are made, which together constitute the GPI accounts. Personal consumption expenditures include all types of spending by households to enhance their material well-being. This starting point assumes that consumption represents an individual's ability to improve their own well-being. The first adjustment is for income distribution, which corrects for the overstated consumption levels (material welfare) associated with income inequality. The adjustment may also be interpreted as an estimate of the loss of potential output for society or erosion of social cohesion due to inequality.

The value of positive non-market benefits (e.g., unpaid household work, volunteer work, and services provided by ecosystems) is added to the metric. Losses associated with economic activities that undermine quality of life (e.g., cost of crime, family breakdown/divorce, loss of leisure time, and cost of unemployment and underemployment) and that entail the loss of natural capital in the state (depletion of non-renewable resources, long-term environmental damage, and cost of air pollution) are subtracted from the measure.

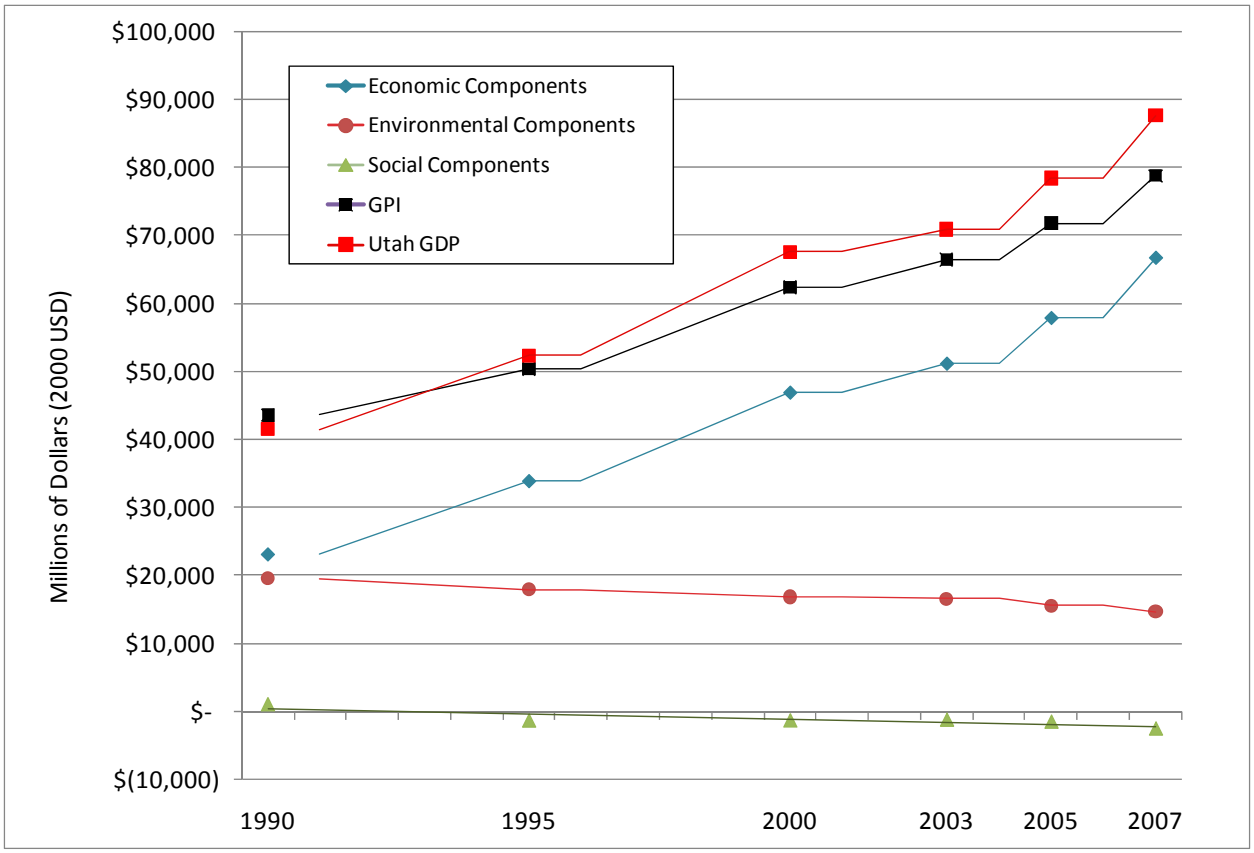


The Utah GPI study focuses on trends since 1990, which is the first year with historically reasonably good local data availability for many of the components. We have calculated the GPI at five-year intervals (1990, 1995, 2000, and 2005). We also included a GPI calculation for 2003, to match the results from the Utah Ecological Footprint study, and 2007, which represented the most recent year for data availability when we began the study in mid-2009. The Utah GPI study includes a state-level calculation as well as county-level estimates of GPI for the state's six most populous counties: Cache, Davis, Salt Lake, Utah, Washington, and Weber. The Utah GPI is reported in 2000 US dollars.

UTAH HAS MADE GENUINE PROGRESS SINCE 1990

Between 1990 and 2007, the Utah's GPI increased, albeit at a slower rate than the GDP for Utah, which suggests that the state's GDP overstates the improvement in the well-being of Utahns. The starting point of GPI is personal consumption expenditures, which also is the largest component of GDP. However, beyond this, the GPI estimation includes a number of contributors to our well-being that are unrecognized by the GDP. Top contributors among these are unpaid household labor and the services provided by forests, wetlands, and deserts. Utahns' quality of life is reduced, on the other hand, by a number of costs that are also not accounted for in the GDP. Chief among these are the cost of depletion of the state's nonrenewable resources, lost leisure time, and cost of commuting.

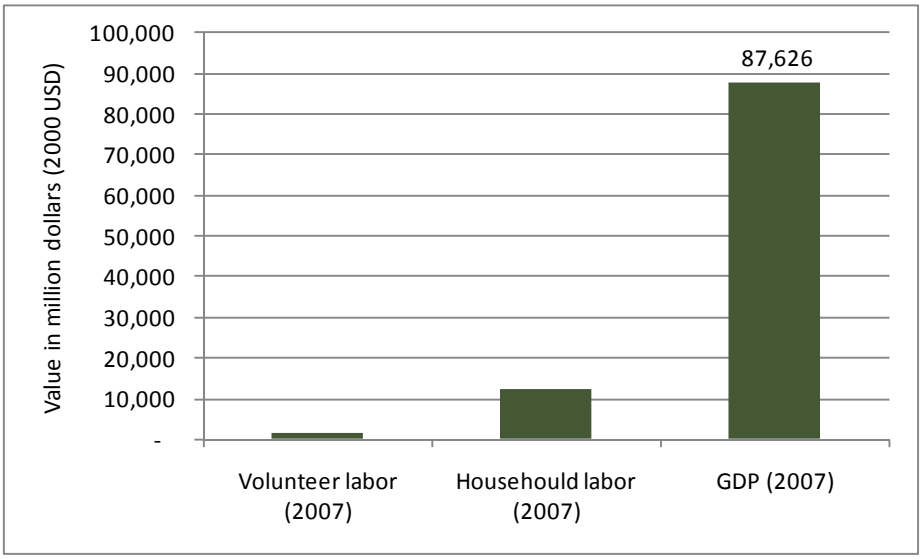
In general, the economic components of GPI—chief among them personal consumption and net capital growth—were on the rise between 1990 and 2007. However, the value of both environmental and social components of GPI declined during the same period, offsetting part of the gain in the economic components.



VOLUNTEER AND HOUSEHOLD LABOR HAVE REAL VALUE FOR UTAH

Two major contributors to Utahns' quality of life are housework and volunteer work, neither of which is counted in the GDP because the work is unpaid.

Volunteer labor is unpaid labor that is important for supplementing services provisioned through the market. Volunteer labor also builds and strengthens social ties in a community. On average, Utahns volunteered 2.3 times the national volunteer hours between 2002 and 2008. This performance ranks Utah the first in the nation in terms of volunteer work. The value of volunteer labor in Utah in 2007 was $1.6 billion dollars, more than twice the value of $690 million in the state in 1990.



In 2007, the total monetary value of household labor performed in the state totaled $12.5 billion, up from $9.5 billion in 1990. To give an indication of the relative magnitude of the total monetary value of this unpaid set of activities we note that this sum amounted to 14 percent of Utah's GDP in 2007. Thus what is unnoticed in the GDP amounts to a substantial contribution to the well-being of Utahns. Consistent with the national trends, however, the amount of time the average Utahn spent on housework and care work declined. This decline largely reflects substitution of store-bought goods and market services for the unpaid services previously provided by family members as these market substitutes become more widely available and affordable. These changes indicate a shift in the locus of work from the household to the market and thus would be reflected as increase in personal consumption expenditures. That said, in 2007, in Utah women and men who were not in the labor force or were unemployed performed approximately 10% more household hours relative to the national average.

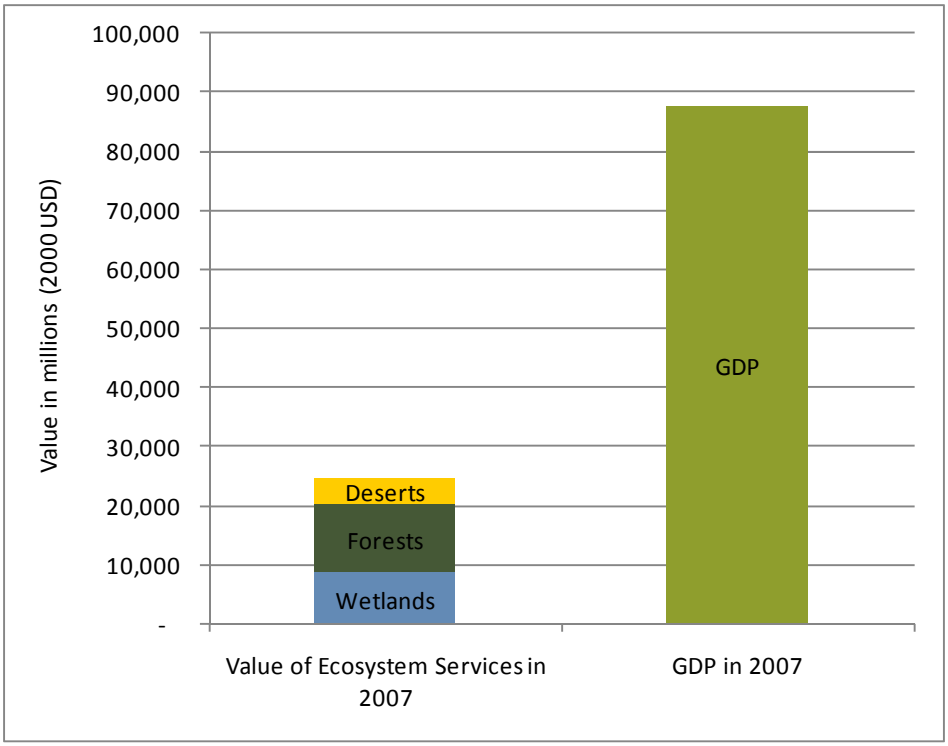
ECOSYSTEMS PROVIDED UTAHNS WITH $25 BILLION IN GOODS AND SERVICES IN 2007

Utah's wetlands, forests, and deserts provide valuable services to society, many of which are not valued in state (or national) income accounting. Ecosystem services are described in terms of provisioning services, regulating services, and cultural services. Provisioning and cultural services—also described as direct uses of ecosystems—include consumptive uses of food, timber, fiber, fuel, and medicinal products that are generally counted in the GDP. Nonconsumptive uses include cultural services such as recreation, aesthetics, heritage value, bird watching, and spiritual and social values that do not require harvesting products. Regulating services include water filtration, dust regulation (by plants that stabilize soils and reduce erosion), flood protection functions of wetlands, gas

regulation (e.g., carbon sequestration and production of oxygen), processing of nutrients, and waste absorption and detoxification by wetlands, forests, and other ecosystems. For example, a forest provides a recurring flow of timber, erosion control, biogeochemical cycling, and clean water.

Environmental degradation and the losses of wetland, forest, and arid land ecosystems in Utah result in losses of these services that have real costs in terms of damage costs (e.g., loss of protection services), replacement cost (e.g., the need to replace water filtration capacity of forest systems with more highly engineered treatment systems and chemical treatment), and direct losses of commodities (e.g., productivity of agricultural land and rangeland or supply of timber from forests or fish from fresh waters). In some cases, values of these ecosystem services can only be estimated by asking people directly what they are willing to pay to preserve an ecosystem (i.e., willingness to pay or contingent valuation methods). All of these valuation methodologies (willingness to pay, replacement costs, and direct losses of commodities) are included in the valuation of Utah's wetlands, forests, and grasslands for this GPI study.

Wetlands are relatively rare in arid Utah, making wetland acreage even more valuable. Wetlands around the Great Salt Lake make up the majority of wetland acreage in the state and provide critical habitat for migratory bird species. Marshy meadows in the mountainous areas of Utah also perform an important regulatory function for water supply and water quality. The value of services provided by wetlands to Utahns in 2007 amounted to $8.6 billion. Utah forests provide the structure for diverse ecosystems and serve as important habitat for migratory songbirds and raptors, bats, and other wildlife. In addition, forests provide soil erosion control that protects pristine mountain streams and are heavily used for recreation. They also provide some timber and range for cattle. The total value of forest ecosystem services calculated for use in the GPI was $11.7 billion in 2007. Utah's desert grasslands and scrubland provide ecosystem goods and services to Utahns primarily through soil erosion control (dust regulation), recreation (hiking, camping, off-road vehicles, etc.), commodities (range for cattle), and habitat for wildlife. Near urban areas, on public lands, and on sites culturally valued by Native Americans, aesthetic, recreational, and cultural values for deserts are also large. In addition, deserts play an important role in oxidation of atmospheric methane, an important greenhouse gas. Finally, providing habitat for pollinators may be one of the greatest services that deserts and scrublands provide. Many Utah crops rely on this pollination including orchards and alfalfa. The total value of desert grasslands and scrublands was $4.5 billion in 2007.



LOSS OF PRIME FARMLAND REPRESENTS A SIGNIFICANT COST TO UTAH'S FUTURE

Agriculture has been an integral component of the Utah landscape at least since settlement by Mormon pioneers. Prime farmland is relatively scarce in the state. Today, the most common agricultural commodities grown in Utah are dairy, cattle, hay, hogs, and greenhouse products, with the majority of farms having less than 100 acres. The majority of cultivated crops are grown in valleys fed by mountain runoff.

In 2007, Utah had 1.8 million acres of cropped farmland, a reduction of 10% since 1987. This trend is relatively consistent across the state's most populous counties with the sharpest recent decline in Davis County and an increase in Washington County. The loss is primarily due to the expansion of commercial and residential developments, and represents a semi-permanent loss of prime farmland in many of Utah's most productive valleys. Utah will thus face not only reduced income from farmlands but also loss of the security of being able to grow food locally and sustainably in the future.

In this study, option values were used to estimate the value of food security for prime farmland in Utah. Option value is the value of preserving the option to use something in the future (e.g., preserving prime farmland for future use, even if the land is not currently being actively used for food production). The option value of these lands was valued at $436 to $1,910 dollars per acre per year (in 2000 USD) over and above the value of agricultural products produced from the land. In 2007, the cropland in Utah had an estimated option value of $1.6 billion (this excludes the value of crops grown, which are captured in the personal consumption component of GPI).

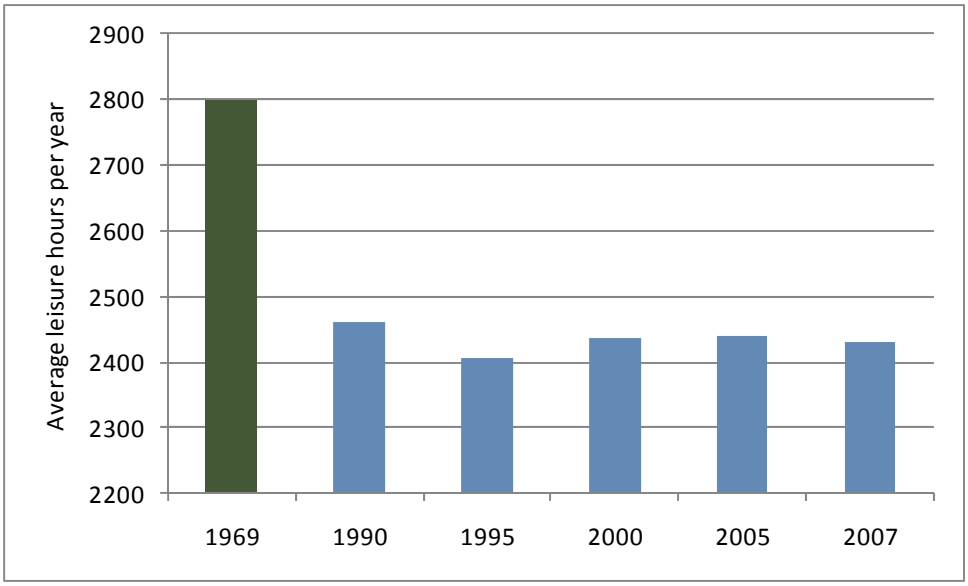
UTAHNS EXPERIENCED RISE IN BOTH OVERWORK AND UNDEREMPLOYMENT

By focusing only on market transactions GDP fails to account for the contributions of free time to our well-being. Thus the time-use patterns, such as overwork and decline in leisure, that underlie our increased personal consumption expenditures are unaccounted for in the GDP.

Overwork and underemployment increasingly coexist in the U.S., and Utah is no exception. Utah workers who were employed full-time worked a modest amount more annually in 2007 than in 1990 (2,263 hours in 1990 v. 2,297 in 2007). At the same time, there was an increase in the number of workers who are considered underemployed—those who are employed part-time but would like to work full-time.

Underemployment and long-term unemployment undermine quality of life because they contribute to social exclusion, undermine cohesion of communities, and contribute to frustrations that may lead to a variety of social problems. The period covered by the study was one of low unemployment and underemployment rates, nationally and in Utah. Utah had even lower unemployment rates than the nation as a whole. Compared to full-time, full-year workers, the underemployed workers provide far fewer hours in the labor market. These "unprovided" hours of the underemployed in Utah increased between 1990 and 2007. The cost to society of underemployment and unemployment peaked at $2.1 billion in 2003 and stood at $1.7 billion in 2007.

While the underemployed enjoy "forced" leisure, the fully-employed workers experience rise in overwork that is also captured by the loss of leisure time for this group. When hours performed in the labor market are combined with unpaid household labor hours, the fully-employed workers in Utah performed between 3,014 and 3,069 hours of work per year during the study period. Assuming a total of 5,475 hours available for work and play in a given year, this implies Utah's fully employed workers had 2,400 to 2,460 hours of leisure per year during the study period. Compared to the peak leisure hours experienced by the average fully-employed worker in the US in 1969 (2,800), the fully-employed worker in Utah had 339 hours less leisure time in 1990 and this leisure gap widened over the study period to 369 hours. The estimated cost of lost leisure hours nearly doubled from $3.2 billion to $6 billion between 1990 and 2007.



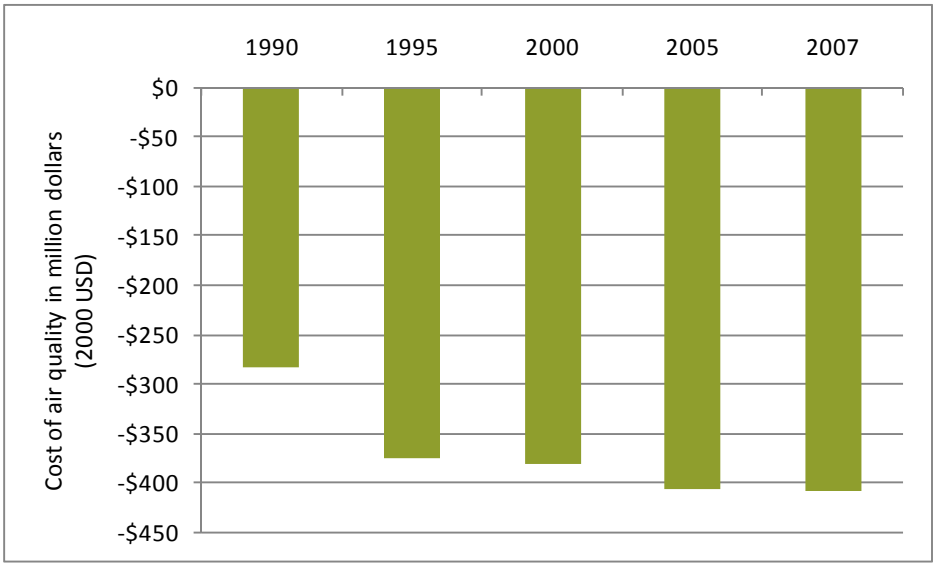
UTAH HAS MADE PROGRESS IN REDUCING POLLUTION: MORE IS NEEDED TO COMPENSATE FOR POPULATION GROWTH

Utah has made progress in reducing water pollution and air pollution, but the increasing population in Utah threatens these gains and requires renewed efforts to continue to reduce our individual, municipal, and industrial contributions to pollution. More people in our communities represent a greater potential for pollution emissions but also mean that more people are impacted by poor air and water quality. The one form of pollution that has continued to increase across the state is noise pollution, especially in urbanized areas of the state.

Clean water in Utah's streams, lakes, and rivers provides clean drinking water, healthy fisheries, safe and enjoyable recreation, aesthetics, increased property values and healthy aquatic life. Polluted water results in many costs including increased costs of treating drinking water, losses to tourism and recreation revenue, costs associated with the loss of fisheries, reduced property values and the loss of aquatic life and habitats that depend on clean water. Since 1972, the quality of fresh waters in the US and Utah has improved in large part due to the widespread implementation of secondary and tertiary wastewater treatment systems, as required under the Clean Water Act. Between 1990 and 2007 the estimated total costs associated with water quality impairments in Utah have fluctuated between $3.2 million and $4.9 million.

Air quality impacts society most directly through human health. Poor air quality has been linked to decreases in lung function, increases in heart attacks, and increases in the severity and frequency of asthma. Other costs associated with air pollution include loss of visibility associated with haze and particulate matter. Air quality in Utah is of greatest concern in valley areas that experience temperature inversions associated with topography.

During inversions, the Wasatch Front and Cache Valley often record the worst air quality in the country. Despite the challenges associated with topography, Utah has significantly cleaner air today compared to monitored concentrations in the 1980s. Reductions in emissions since then, primarily in motor vehicle and industrial emissions, have resulted in improved air quality and visibility throughout the state. Nonetheless, counties along the Wasatch Front have not been able to attain National Ambient Air Quality Standards (NAAQS) established by the EPA and regulated by the Utah Department of Environmental Quality. Total cost of damages associated with air quality in the state increased from $210 million in 1990 to $409 million in 2007. Salt Lake County accounts for nearly half of the statewide damage costs, in large part due to the topography and population affected in the area. This is a conservative estimate of the costs of air quality that only partially accounts for Utah's unique topography and does not account for any reduced economic development opportunities associated with companies choosing to relocate in other cities due to poor air quality in Utah's metropolitan areas.

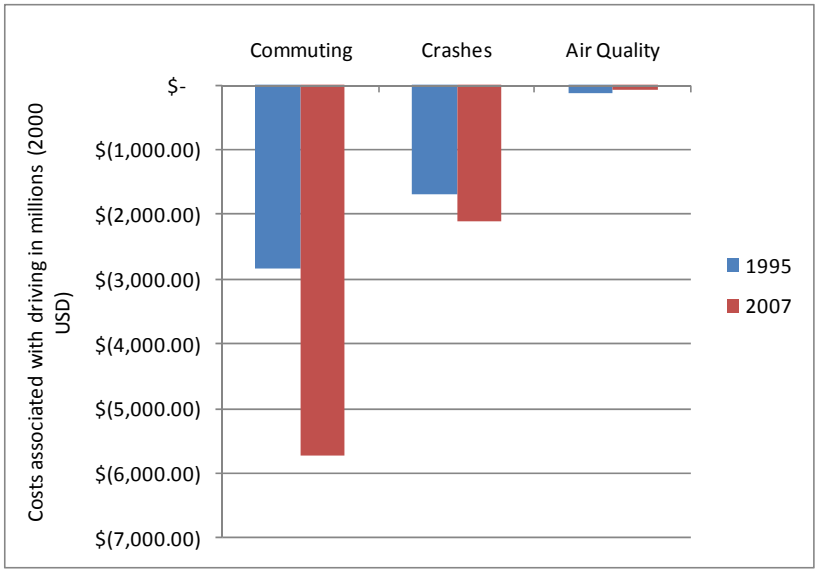


Noise pollution disrupts sleep, recreation, and general well-being. Loud and repeated noises often are the most disturbing. Not only does noise impact the enjoyment associated with our environments but also it can undermine human health. The total cost of noise pollution in Utah increased steadily from $162 million in 1990 to $209 million in 2007 as a result of the urbanization experienced around the state. The largest costs of noise pollution are found in Salt Lake County, the most urbanized county in the state.

It costs us to dispose of our waste or to reduce the pollution we create. Three costs enter the daily lives of most Utahns: We pay for automobile emissions abatement, wastewater treatment (municipal sewage and septic), and solid waste (garbage) disposal. We refer to these as household pollution abatement costs. Since 1990, the amount of municipal garbage Utahns generated has risen steadily with population growth and increased personal consumption. The amount of garbage generated per person rose in the 1990s and peaked in 2003. The total cost of household pollution abatement increased from $268 million in 1990 to $411 million in 2007. The majority of the cost is associated with wastewater treatment, followed by solid waste disposal, and auto emissions abatement.

SOCIAL AND ENVIRONMENTAL COSTS ASSOCIATED WITH DRIVING ARE SUBSTANTIAL AND RISING

Commuting costs include the expense of owning and operating a vehicle, loss of time available for other activities, and public transit expenditures. The commute time per commuter in Utah increased from 158 hours in 1990 to 178 hours in 2007. The expense and time cost of driving for Utahns was $5.8 billion in 2007, up from $2.8 billion dollars in 1990. In addition to these commuting costs, driving also carries the risk of accidents and contributes to air pollution. In 2007, vehicle crashes in Utah cost $2.1 billion in terms of property damage and healthcare expenses as well as the value of lost life and lost wages associated with injury and death. In addition, emissions of air pollutants from cars accounted for $69 million of air quality costs in Utah in 2007 (a reduction in costs associated with mobile sources since 1990). Thus the total cost of driving in Utah in terms of commuting, vehicle accidents, and reduced air quality was $7.9 billion in 2007, more than double the cost of driving in 1990 of $3.2 billion.



UTAH HAS MADE GOOD PROGRESS TOWARDS REDUCING CRIME, DIVORCE, AND AUTOMOBILE ACCIDENTS

The cost of crime is borne by potential or actual victims of crime, by government in the form of police services and by businesses through hiring of security guards. The peak year for incidents for most types of crime in Utah was 1995, after which the crime rates and the per capita cost of crime decreased. While the direct cost of crime constitutes the larger component of the total cost of crime, defensive (indirect) expenditures by households to prevent the erosion of safety rose faster than the direct cost of crime over the 1990–2007 period.

Divorce has negative costs to individuals associated with legal fees, setting up separate households, and impacts to children affected by divorce. While the total number of divorces in Utah increased until 2005, the divorce rate (divorces per 1000 people) steadily declined since 1990. Divorce cost Utahns $234 million in 2007, down from $258 million in 1990.

There has been a steady decline in crashes in Utah resulting in injury or death since 1970 due to traffic safety programs, seatbelt usage, aggressive media and enforcement programs targeting driver behavior, improved roadways, improved vehicle safety, and advancements in emergency response. Utah's traffic fatality rate has been lower than the U.S. rate since 2001. Nonetheless, total vehicle crashes in Utah reached a low of 50,389 in 2003 and increased since then to 61,245 crashes in 2007. While the total costs associated with vehicle crashes in Utah rose from $1.7 billion in 1990 to $2.1 billion in 2007, the per capita cost in Utah decreased steadily from $971 in 1995 to $782 in 2007, reflecting the reduced crash rate (crashes per 1000 people).

PERMANENT DEPLETION OF NONREWABLE RESOURCES IS A SIGNIFICANT LOSS OF WEALTH TO UTAHNS

GPI includes an estimate for the depletion of natural capital in order to assess the sustainability of income and consumption levels in the future. The depletion of nonrenewable resources in Utah such as coal, natural gas, and oil results in a net loss of wealth to Utah and is a source of income that cannot be sustained into the future. This loss of wealth is measured as the cost to replace these resources with renewable energy sources. While the present levels of resource extraction can be sustained for some time, without depletion or sharp rise in resource prices, in the replacement cost approach the actual cost of establishing a renewable resource substitute is attributed to the point in time when the depletion takes place. We included only those depletions associated with consumption by Utahns in our calculation because personal consumption is our starting point and deducing the loss of resources consumed by energy customers outside of Utah would be an overestimate of the impact on Utahns today. The permanent loss of natural resources is the largest deduction for Utah's GPI and amounted to $6.2 billion in 2007. This is a conservative estimate as it does not include the loss of minerals, metals, and other nonrenewable natural resource losses.

CONCLUSIONS AND IMPLICATIONS

The Utah GPI study shows that Utahns experienced improvements in quality of life in the 1990-2007 period. The aggregate Utah GPI increased since 1990. However, the growth rate was slower than the state's GDP, which indicates that the state GDP overstates the improvement in the well-being of Utahns. While the economic components of GPI were on the rise, driven upward by personal consumption expenditures, societal and environmental components trended downward. Underlying these trends are the increasing costs and decreasing values associated with social and environmental components that contribute to our quality of life. The study shows that social and environmental factors affecting quality of life might require attention and investment.

The study demonstrates that tools can be developed and used to provide a more useful measure of progress in a state than the GDP. Social and environmental factors can be combined with economic factors in an integrated and transparent framework to arrive at an assessment of general progress and quality of life in Utah. This framework can be used to provide a snapshot of quality of life in a given year and to track its various dimensions over time in monetary as well as physical (nonmonetary) terms. The GPI accounts can be adopted by the state government and/or other public or private institutions so as to track actual progress for Utahns at the state and county level. The state government is best suited to maintain indicators such as the GPI, given the data-intensive nature of the measure. Various government agencies, coordinated by one department, such as the Governor's Office of Planning and Budget, could best provide the information in their respective areas of expertise to undertake annual updates for inclusion in the GPI. A web-based tool similar to the one used by the State of Maryland (State of Maryland 2010) could be developed to report changes in the GPI and its components to Utahns.

In addition, this transparent and integrated framework can be used to guide budget and planning in the state and its counties, allowing decision-makers to examine the trade-offs in using resources and assessing well-being outcomes of policy. Furthermore, GPI accounts can be aligned with existing state government performance assessment tools to estimate the quality of life impacts of public policy or budgetary decisions. While many of these impacts may not be discernible for a number of years, by insisting on full accounting of the benefits and costs the GPI framework provides a suitable tool for assessing the full and long-term impacts of public policy and budget decisions.