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MARYLAND ECONOMIC DEVELOPMENT AND BUSINESS CLIMATE COMMISSION

How Maryland Measures Up

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Chapter 1: How Maryland Measures Up

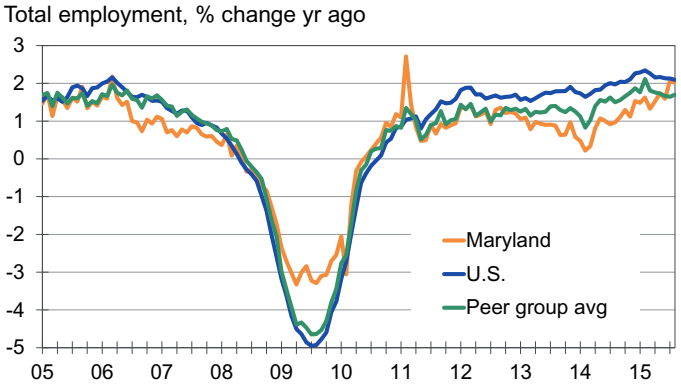
In the 20 years since major defense drawdowns sent shock waves through the economy, Maryland has performed roughly in line with national and regional averages. Over shorter time periods, the picture is more nuanced as the state, because of its large dependence on the public sector, typically sees less volatility in its business cycle. Therefore, it tends to outperform during times of economic distress and underperform during times of economic expansion. Maryland has slightly underperformed the nation over the last decade as a result. The scope of job losses during the Great Recession was less severe in Maryland than in the nation, but job gains since have predictably been slower and the state has fallen measurably behind the national average (see Chart 1).

The duration and the severity of the Great Recession were such that steady federal government hiring was not enough to completely fill the void throughout the long and slow recovery, and federal government employment has actually been slipping since 2012 (see Chart 2). So while the federal government can keep Maryland's head above water, it cannot, in the current environment of austerity, be a strong growth driver. Maryland is also blessed with a number of features that make comparison to the overall U.S. less appropriate. In short, Maryland is staying afloat, but could be performing much better as evidenced by its peer group.

This report is aimed at gauging the true performance of Maryland's economy and business climate, so as to better allow the Maryland Economic Development and Business Climate Commission to propose methods of further enhancing the state's economic performance. To do this, it was first necessary to develop a more applicable comparison benchmark than the country as a whole. A benchmark group of comparison states was established based on several attributes, including industrial structure, demographics, natural resources, and other economic and geographic features.

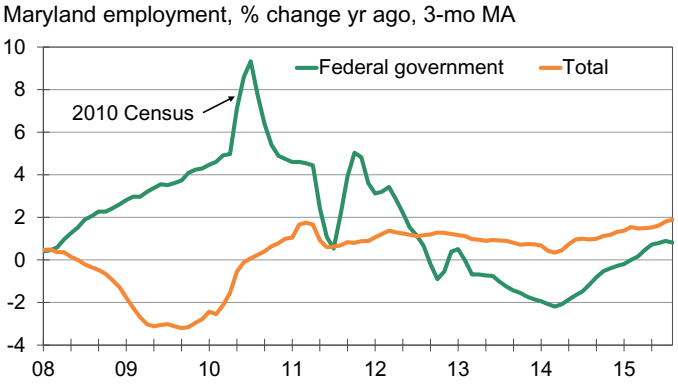
While its dependence on the federal government is nearly unmatched, Maryland's private sector has several relevant competitors on the eastern seaboard who serve as viable competitors for comparison. Based on industrial mix, population size, and the presence of a major port, five states stand out as competitive benchmarks for Maryland: Virginia, North Carolina, Massachusetts, Georgia and New Jersey. These states rank alongside Maryland for different reasons. Some match well because they have comparable populations, metro areas and business costs, while others share the same economic drivers and income levels. Pennsylvania was also added to the comparison group for this study, despite its very different and much larger economy, due to the unavoidable fact that the two neighbors will always be compared to each other in the public eye thanks to their close ties and geographical proximity. A detailed comparison of how the states

Chart 1: Measuring Up Poorly During Recoveries



Sources: BLS, Moody's Analytics

Chart 2: Slow Going in the Age of Austerity



Sources: BLS, Moody's Analytics

Table 1: How Maryland Measures Up vs. Its Peers

Rank=among 50 states & DC	Maryland	Georgia	Massachusetts	New Jersey	North Carolina	Pennsylvania	Virginia
Job growth	0.40	0.62	0.65	-0.08	0.81	0.26	0.52
Rank	31	23	21	47	14	38	25
Population growth	0.76	1.45	0.45	0.35	1.54	0.29	1.14
Rank	27	9	37	39	6	41	18
% w/ bachelor's degrees	39.6	29.2	37.3	34.9	27.9	29.4	32.7
Rank	2	21	3	9	27	20	12
Pop. density	615.7	175.6	864.8	1215.4	204.5	285.8	210.8
Rank	6	19	4	2	16	10	15
Personal income growth	3.58	3.68	3.89	3.20	4.14	3.58	3.93
Rank	35	32	28	45	21	36	26
Per capita personal income, 10-yr avg	$49,467	$35,410	$51,473	$50,902	$35,589	$41,394	$44,704
Rank	5	39	3	4	37	19	9
High-tech jobs, % of total, 10-yr avg	6.4	4.1	7.8	6.3	4.7	4.3	7
Rank	5	25	1	6	18	23	2
Low-wage jobs, % of total, 10-yr avg	32.05	36.89	29.13	30.83	38.59	35.32	33.66
Rank	8	19	4	7	24	14	11
Govt. employment, % share, 10-yr avg	19.05	17.11	13.28	16.05	17.63	13.08	18.63
Rank	12	27	48	36	22	50	17
Federal employment, % share, 10-yr avg	5.25	2.48	1.48	1.45	1.66	1.81	4.43
Rank	3	15	38	42	36	29	5
Cost of Doing Business Index, 2013, U.S.=100	102.5	99	118.5	113.3	90	100.2	101.6
Rank	18	27	2	4	44	23	19

*All non-ranking values are 10-yr avg of annualized % changes unless otherwise noted.

Sources: BEA, BLS, Census Bureau, Moody's Analytics

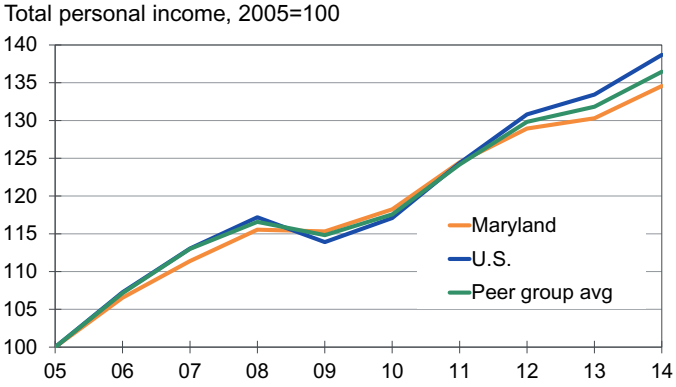
stack up to one another across various economic and demographic measures can be found in Table 1.

Within its peer group, Maryland has performed below average over the last decade in job and income gains. Over that time period, employment and income growth came in stronger than only New Jersey and Pennsylvania, the two states least similar to Maryland in its peer group (see Chart 3). This is particularly curious given the state's high concentration of high-wage positions and large tech presence. In terms of income, these attributes give Maryland a high baseline from which to grow, the fifth highest per capita income in the United States, but the state's peer group is filled with other high-income states, correlating to high shares of tech jobs. What most differentiates Maryland from its fellow high-income states is its outsize dependence on the public sector.

Massachusetts for example, compares very closely to Maryland in most of its fundamental economic characteristics, including high incomes, high educational attainment, high population density, and high concentration of tech and medical employment. However, the two states are at the total opposite end of the spectrum when it comes to government share of employment. The Bay State ranks 48th in terms of reliance on public sector payrolls versus 12th for Maryland. Similarly they rank 38th and third, respectively, for federal jobs as a share of total. As a result, Massachusetts has substantially outperformed Maryland over the past decade, a decade full of government austerity, in both job and income growth.

The same can be said in varying degrees for all of Maryland's peer competitors. While all may share similar attributes, it is Maryland's overwhelming reliance on the public sector that continually sets it apart (see Chart 4). Even Virginia regularly relies less on the public sector than Maryland, albeit just barely. This reliance comes not just from direct employment itself, but also from the demand base upon which most of the state's private sector is built. This is evident when examining the state's industrial structure in more detail.

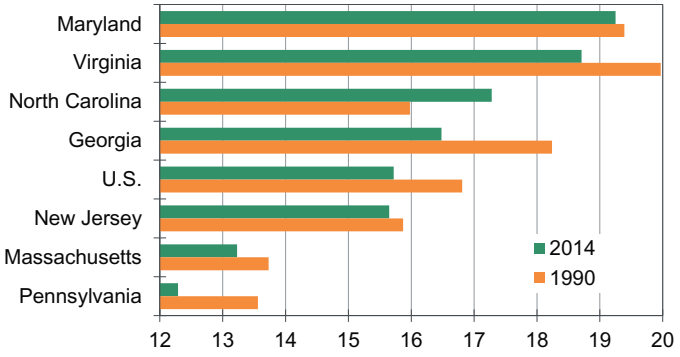
Chart 3: Incomes Slow With Federal Budget



Sources: BEA, Moody's Analytics

Chart 4: Government More Important in Maryland

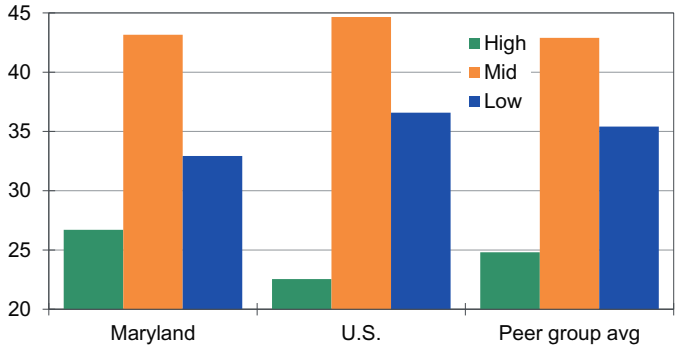
Government employment, % of total employment



Sources: BLS, Moody's Analytics

Chart 5: A Little Soft in the Middle vs. U.S.…

Wage tiers as share of total employment, %



Sources: BLS, Moody's Analytics

Industrial structure

Maryland's industrial structure is unique to the national average given its outsize dependence on the federal government. Outside neighboring Virginia, it is difficult to find another state to compare both in the amount and type of federal jobs prevalent in Maryland. Dependence on the federal government is a double-edged sword for the state, as it offers stability and limits growth. Even the private sector is tethered strongly to the federal government, through professional services working closely with the government and the composition of the consumer base. Employment growth has been lacking in recent years, and incomes, which typically track the national average closely, have also fallen off relative to the U.S. average in the last two years. This is owing to the state's above-average reliance on the federal government not only through direct employment but also because of the leading high-wage private industries' close connections to Washington through defense, research and development, and other services. The concentration of high-wage jobs is an advantage, but the other side of the coin is a below-average share of mid-wage jobs. Mid-wage earners are the largest segment of earners, and Maryland's small share of this bracket is a clear weakness compared with the U.S., a weakness shared, however, by most of its peers (see Chart 5).

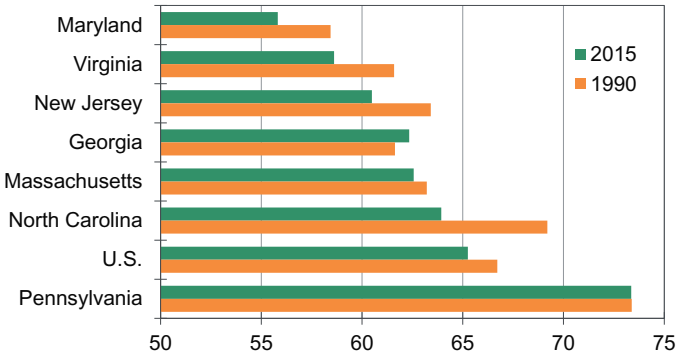
However, this weakness for Maryland is actually exacerbated by the fact that a much larger than average portion of its mid-wage jobs are on public payrolls. Nationally, a little more than one-third of mid-wage jobs come from government, but in Maryland that number is almost half, a share that has grown since the recession. At a time when the federal government and most states and local governments were freezing or shrinking spending, Maryland has actually seen its overall number of public sector jobs increase steadily. For context, the U.S. still has not regained almost 1.2 million, or 1.8%, mid-wage jobs lost during the recession, of which approximately 381,000 are from government. Maryland has yet to regain around 21,000, also about 1.8%, mid-wage jobs lost over that same time period, but government employment is actually up by almost 30,000 jobs (see Chart 6). This means that the state is even more reliant on the public sector in the wake of the Great Recession than it was going in, making the middle of the state's labor market even less dynamic than its competitors.

The private sector in Maryland is generally concentrated in two areas: professional services, most notably technical services, and healthcare. The state's largest private sector strength is its expertise in professional and technical services, which stems in large part from public sector spillover. More than half of the jobs in professional services are classified as professional/technical services, the third highest concentration in the U.S. behind the District of Columbia and Virginia. These jobs include engineering and biomedical research positions, which typically command much higher than average salaries. Despite the advantages of a highly educated workforce and large share of high-wage jobs relative to the national average, industry job growth has persistently lagged not only the national average, but also the peer group average over the past two decades (see Chart 7). Unsurprisingly though, the pace of industry growth in Maryland generally holds up better during economic downturns, again underscoring its strong ties to the public sector, but also helping to explain the less than dynamic pace at which it has expanded payrolls.

In particular, the state and its two largest metro areas, Baltimore and Silver Spring,

Chart 6: …And Much Softer in the Private Sector

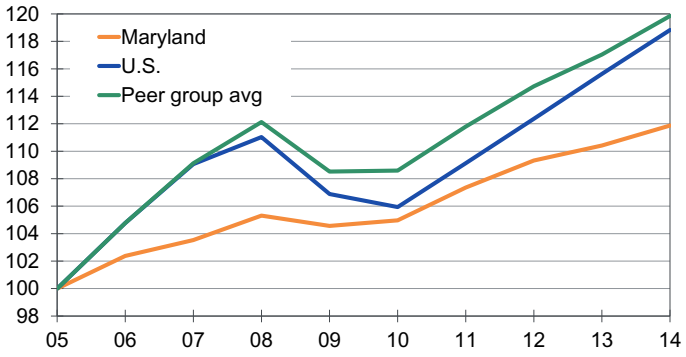
Private sector employment as a % of mid-wage employment



Sources: BLS, Moody's Analytics

Chart 7: Major Strengths Are Hiring Less

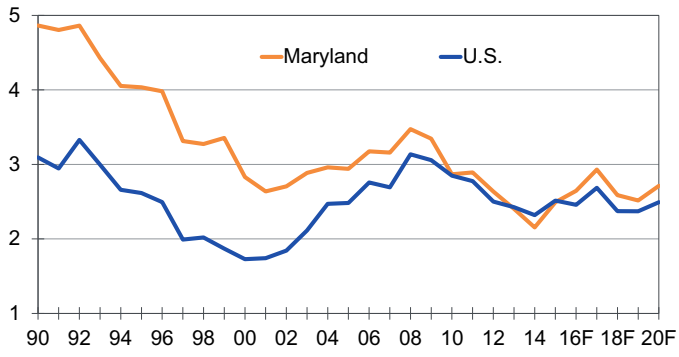
Professional and technical services employment, 2005=100



Sources: BLS, Moody's Analytics

Chart 8: Healthcare Persists as Growth Driver…

Healthcare output, 10-yr avg growth



Sources: BEA, Moody's Analytics

boast well above-average employment concentrations for computer systems design. Despite its size advantage, this pivotal Maryland industry has lagged the peer group average in recent years, and growth has similarly lagged in architectural, engineering, management, scientific and technical consulting services, as well as scientific research and development services. In short, Maryland's advantage in these industries is eroding relative to its peers because of the industry's close connection to the federal government, which has reduced the need for and at times crowded out industry reliance on the private sector. For example, the Silver Spring metro division has thrived in the past as a biomedical hotbed because of government agencies such as the National Institutes of Health. However, reduced government spending is putting more of an onus on private research institutions, which have begun focusing more on containing costs than hiring. Biomedical employment is forecast to slow relative to the historical average and lag the nation and peer states as a result. Proposals for fiscal 2016 include budget increases for the NIH, but this remains merely an upside risk given the current level of federal fiscal uncertainty. Moreover, given budget cuts of previous years and the rising costs of biomedical research, spending increases are less meaningful for job growth than they have been in the past.

Healthcare also sets Maryland apart from much of the U.S., though not its peer group. It stands apart not for the quantity of jobs but for the quality of care and research. Maryland's healthcare industry accounts for about 13% of total employment, on par with the national average. However, the pairing of one of the nation's most prestigious research universities and hospitals promotes innovation and improvements to the quality of care provided and ensures the state's long-term healthcare hub status. Johns Hopkins University has topped the nation in terms of research funding for more than 35 consecutive years, according to the National Science Foundation, and for more than two decades has been ranked as the top or one of the top overall hospitals in the country.

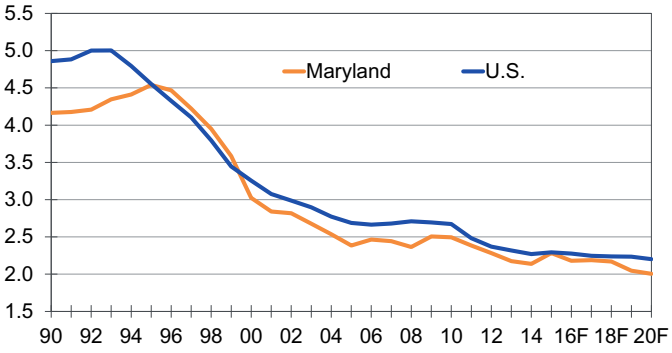
Baltimore is a true healthcare hub for the state and the region. About half of the 20 largest employers are healthcare providers, serving not only one of the most densely populated metro areas in the country—Baltimore's population density ranks in the top decile across all U.S. metro areas—but also other parts of the country. This is a clear strength for the state and the metro area, drawing research funding and patient spending to the area and creating high-quality jobs in the process. Johns Hopkins Health System is the third largest employer in Baltimore and the fourth largest employer in the state. Much of Baltimore and Maryland's strength lies in an above-average concentration of general medical/surgical hospitals, which employ a high concentration of high- and mid-wage workers and is one of the few subindustries with an upbeat near-term outlook (see Chart 8).

Maryland's healthcare employment growth will slightly lag that of the U.S., but given that the per capita concentration of healthcare workers is already above average, this is not a sign of weakness in the industry. Moreover, this is consistent with below-average total employment growth and below-average population growth. In terms of output, or gross state product, Maryland's healthcare sector clearly outperforms the U.S., both historically and throughout the forecast horizon. Healthcare will be a source of stable employment as the local industry serves the entire country, but output will be above average because of the superior quality of care and research as well as the high incomes which accompany them.

Among the peer comparison group, only New Jersey, Pennsylvania and Massachusetts have higher per capita healthcare concentrations than Maryland. This is not surprising given that hospitals in Boston, Philadelphia and Pittsburgh also rank among the nation's best healthcare providers. Although those three states have higher per capita concentrations of healthcare workers, Maryland's industry employment growth is projected to outpace all of them, even if it does not best the national average (see Chart 9). It is the southern peer states, Virginia, Georgia and North Carolina where healthcare employment growth will outpace that of Maryland in the next few years. However, that is largely explained by much faster population growth projections, as healthcare hiring will have to grow faster in the southern states to keep pace. Maryland is in the middle of the pack for healthcare employment growth and population growth, but it will still maintain

Chart 9 …Though Hiring Will Lag U.S. Average

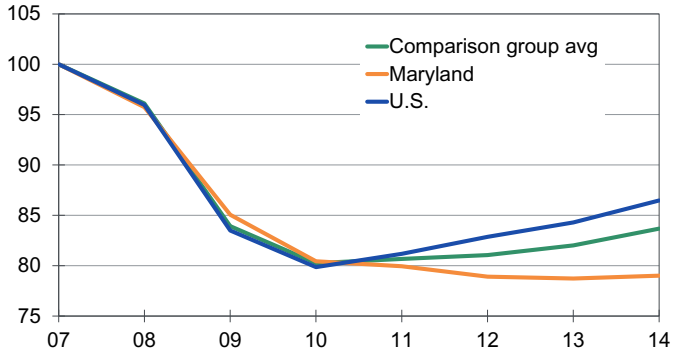
Healthcare employment, 10-yr avg growth



Sources: BEA, Moody's Analytics

Chart 10: Producers Bearing Brunt of Recession

Goods-producing employment, 2007=100



Sources: BLS, Moody's Analytics

an edge based on its long-standing advantages in quality of care and research.

However, even the large healthcare and medical research concentration in Maryland is not without its ties to the public sector. Complementing Johns Hopkins' large footprint is federally funded research at the National Institutes of Health, which has a presence in both the Baltimore and Silver Spring metro areas. The NIH is based in Silver Spring, and Baltimore is home to the NIH's National Institute on Aging and the National Institute on Drug Abuse. Federal funds insulated Baltimore during the Great Recession and recovery as procurement funding flowed to local research facilities via the NIH, which received a sizable sum of money through the American Recovery and Reinvestment Act. Dependence on federal funding has begun to turn into a headwind, however, as funding for scientific research is one of many areas facing budget woes. For example, the fiscal 2015 spending bill that was enacted by policymakers bumped the agency's budget only 0.5% from fiscal 2014, materially lower than their request and much lower than the overall spending increase. Congressional proposals for fiscal 2016 were higher, but it is unclear given the current political situation if or when either the Senate or House recommendations will actually become law. This represents another example of the risks associated with such close ties to the federal budget process.

Several of Maryland's past private sector strengths have become weaknesses, however, in line with similar trends nationally. Nowhere is this more prevalent than in the mid-wage job tier, which has shrunk particularly low in Maryland. This is because of the hollowing out of key industries like manufacturing, transportation and warehousing, and can also in many cases be said of Maryland's key competitors. The ability to bring back more mid-wage jobs and reinvigorate key private sector industries, independent of the federal government, with relatively low skill or education requirements will be key to Maryland being able to outperform in the years ahead.

This is most prevalent in manufacturing. The industry has been gradually shrinking payrolls nationally for some time, but the atrophy has been particularly marked in Maryland and is a clear weakness in the state's industrial mix. Maryland has been especially hard hit by the decline of metals production and the long-term demise of Bethlehem Steel in Baltimore. Since 1990, manufacturing employment in Maryland has fallen by about 40%, compared with a 30% decline nationally, making it the only state in its peer group in which year-over-year growth has been consistently negative since before the recession. Further, it is the only state among its peers that has yet to take part in the near-term resurgence of manufacturing (see Chart 10).

The decades-long decline of manufacturing employment statewide has slowed, but the only signs of a potential turnaround are negligible gains in Baltimore and Silver Spring. Perhaps the only manufacturing sectors with any advantage left in Maryland are those that are complemented by the state's concentration of technical services: chemicals and computer/electronics manufacturing. Although manufacturing is a smaller piece of the Baltimore economy, production is centered on higher-value-added goods such as medical, pharmaceutical and computer products. For example, biopharmaceutical company Emergent Biosolutions will double its Baltimore facility size this year and add 150 jobs over the next four years. Hagerstown and Cumberland are much more dependent on manufacturing, but employment there is still declining. Modest gains in Hagerstown's machinery production are offset by weakness in nearly every other subindustry. The national housing recovery will spur activity in Cumberland's furniture factories, but overseas competition and the industry's low labor intensity will limit job creation. However, as is often the case in Maryland, federal spending presents a chance for growth, even in Cumberland, which is generally less exposed to happenings in Washington. For example, Orbital ATK has received a $27 million contract from the military to produce the DSU-33D/B proximity sensor, used for Navy and Air Force bombs. However, though many Maryland residents will be employed, even that production will take place outside the state, at the Allegany Ballistics Laboratory on the West Virginia side of the Cumberland metro area.

Transportation and warehousing have also been two normally strong mid-wage industries that have disappointed in terms of their economic impact. This is especially

disappointing given the Port of Baltimore's potential with the ongoing improvements to the Panama Canal. The Port of Baltimore is one of only a handful of ports deep enough to handle extra-large post Panamax ships, but it lacks the land-based infrastructure to be truly competitive. Bottlenecks in unloading cargo are common. Plans for an intermodal rail facility at the Mount Clare yard in southwest Baltimore that would have allowed for double-stacking containers by enlarging the Howard Street Tunnel have been shelved. The port will be able to handle the larger ships, but with delays and more costly truck transportation that could deter shipping companies down the road. Meanwhile, ports in most of the peer states are taking steps to boost their competitive advantages.

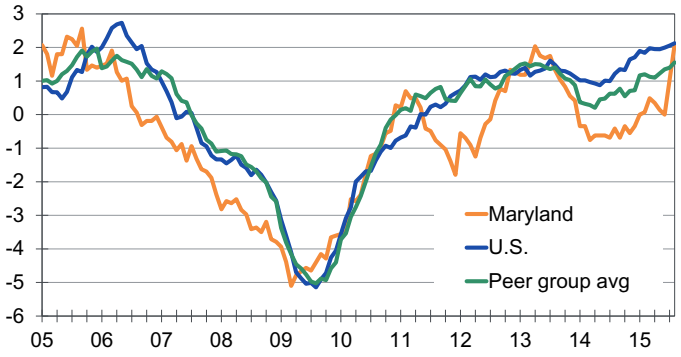
For example, the Port of Virginia is benefiting from the Norfolk Southern rail line into the Midwest and easy access into that market. Moreover, Virginia is the only port on the East Coast that has federal authorization to dredge to a depth of 55 feet. Warehousing space is a concern, but the state is taking steps to improve its capacity. In New Jersey, the Port Authority of New York and New Jersey is spending $1.3 billion to raise the Bayonne Bridge from 151 feet to 215 feet to accommodate larger ships. It also spent $2.7 billion on water-side and land-side connections and other port infrastructure improvements.

To the south, the Port of Savannah is dredging to allow for larger ships, although geological limitations—the riverbed—will only allow for a post-dredging depth of 47 feet. The project was funded by the state and the federal government. This is in range for the larger ships, but still shy of the 50-foot standard. Nonetheless, in March Savannah surpassed the Seattle/Tacoma Alliance to become the fourth largest port in North America in terms of 20-foot equivalent unit volume.

Even Pennsylvania and Massachusetts are striving to stay relevant. The Water Resources Reform and Development Act included $310 million to dredge the Boston harbor, although this does not cover the entire bill and the project will not be completed until a few years after the expected completion of the Panama Canal expansion in 2016. Dredging on the Delaware River will also help keep Philadelphia in the game, but that port is also limited to 45 feet of depth. One caveat for all East Coast port expansions, however, is that West Coast ports will retain an edge on certain time-sensitive cargo regardless of the improvements made to the Panama Canal. It takes about 10 extra days to reach the East Coast from Asia, and even though East Coast ports are often cheaper in the end, customers with higher profit margins will still opt to pay for the speed of the West Coast ports.

Chart 11: Finance Lagging Despite High Incomes

Financial services employment, % change yr ago



Sources: BLS, Moody's Analytics

Cruise ships do not face the depth and port challenges that cargo ships do, and Baltimore is favorably located in the middle of a large consumer base on the East Coast. Attracting cruise ship companies will help the port stay relevant and diversify its job base, but these jobs are not as high-paying or profitable as commercial trade.

Finally, an area that persistently sets Maryland apart from the U.S. and its peer group is finance. The state finance industry accounts for about 5.5% of total employment, markedly below the national average. Further, with the exception of a few years in the early 2000s, growth has been regularly below average since 1990. This weakness was exacerbated by the recession, and Maryland has regained only about 30% of the jobs lost peak to trough (see Chart 11). For context, the U.S. has regained nearly 70% of its finance jobs lost peak to trough.

As a result, finance jobs make up a much smaller proportion of high- wage payrolls than nationally, and the state as a whole has no decisive edge in the finance industry unlike many of its competitors. Silver Spring has historically boasted an above-average concentration of finance employment, but a long-term slide in credit-related employment is eroding this advantage. In recent years, the decline of insurance employment, Silver Spring's largest and Maryland's second-largest finance sector, has exacerbated the decline of financial employment. This is a common trend throughout the Northeast, but Maryland is poorly equipped to weather the job losses given its dependence on the public sector for middle-income employment.

The shape of the state's industrial structure is similar to those in its peer group, but several aspects, particularly its high reliance on the public sector, make it unique. Whether these idiosyncrasies are causes or symptoms of the state's economic performance can only be better understood by delving deeper into several key economic development and business climate attributes and comparing them across the peer group.

Chapter 2: Drawing Comparisons

To get a full picture of Maryland's business climate, it is necessary to examine the state's competitiveness from several different angles relative to its peers. Comparing Maryland with its peer group, as well as the national average, across these diverse categories reveals several trends that help explain some of the state's relative economic performance. For the purposes of this study, we will examine the state's standing across five major attributes:

- Fiscal policy
- Costs of living and doing business
- Infrastructure quality
- Quality of life
- Workforce quality

Fiscal

From a fiscal perspective, particularly with regard to its tax structure, Maryland stands out both nationally and in its peer group in a few distinct ways. First, tax revenue growth accelerated during the recession, as the state implemented a large tax increase during the 2007 legislative session. In 2008, higher tobacco, vehicle titling, corporate income, sales taxes, and sweeping changes to personal income tax rates went into effect. This represented a shift in the state's standing versus its peer competitors, and the state has held a higher state tax burden than the peer group average each year since the recession by a widening margin. In 2014, Maryland collected state tax revenues equal to almost two-thirds of a percentage point higher as a share of gross state product than the peer group average (see Chart 1). Within the peer group, only New Jersey collected a larger amount of state tax revenues as a share of GSP in 2014 (see Table 1). The story is similar when including local government taxes as well. Maryland has consistently collected more tax revenue as a share of the economy than the U.S. or its peer group, levying a higher tax burden on the economy than all but Pennsylvania and New Jersey in 2011, the last year for which complete data are available.[1] Corollary to this finding, these are again the two states least similar to Maryland in its peer group, and also the only two that Maryland has been able to consistently outperform in employment and income growth. All other states in the peer group, including neighboring Virginia, had combined tax burdens at or below the national average. Looking beyond the most recent data, these relationships hold true over a 10-year moving average as well.

1 Census Bureau data on state and local government tax collections only extend through 2011 before being discontinued.

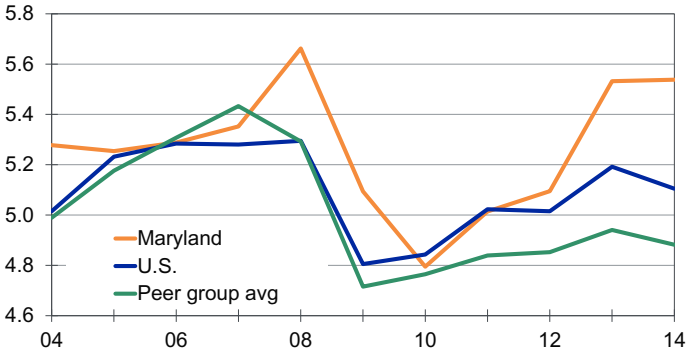
Table 1: Tax Collections as a % of GSP

	State taxes - 2014								
	MD	U.S.	PA	GA	NC	VA	MA	NJ	Peer group avg
Total	5.54%	5.11%	5.30%	3.94%	4.75%	4.24%	5.51%	5.54%	4.88%
Sales	1.23%	1.61%	1.47%	1.08%	1.32%	0.79%	1.23%	1.63%	1.25%
Personal income	2.29%	1.84%	1.67%	1.95%	2.02%	2.46%	2.95%	2.32%	2.23%
Corporate income	0.29%	0.28%	0.38%	0.20%	0.27%	0.17%	0.47%	0.42%	0.32%
Property	0.19%	0.08%	0.01%	0.17%	ND	0.01%	0.00%	0.00%	0.04%
	Combined state and local government taxes - 2011								
	MD	U.S.	PA	GA	NC	VA	MA	NJ	Peer group avg
Total	8.99%	8.68%	9.25%	7.33%	7.78%	7.44%	8.69%	10.65%	8.60%
Sales	2.28%	2.99%	2.98%	2.74%	2.83%	1.91%	1.78%	2.42%	2.49%
Personal income	3.28%	1.85%	2.31%	1.80%	2.28%	2.21%	2.81%	2.13%	2.33%
Corporate income	0.24%	0.32%	0.38%	0.16%	0.25%	0.19%	0.47%	0.44%	0.31%
Property	2.61%	2.88%	2.76%	2.44%	1.99%	2.57%	3.22%	5.11%	2.95%

Sources: Census Bureau, BEA, Moody's Analytics

Chart 1: State Tax Burdens Higher Than Average

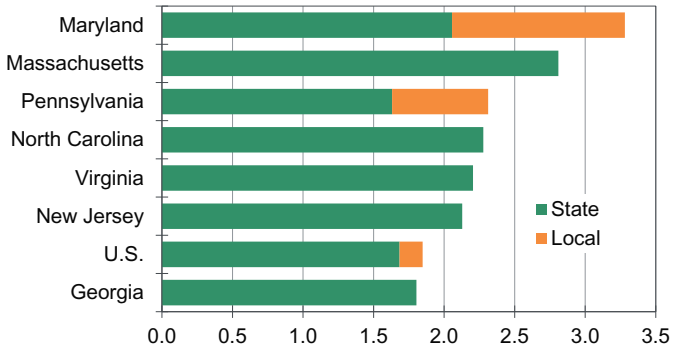
State tax revenues as a % of GSP



Sources: BEA, Census Bureau, Moody's Analytics

Chart 2: Heavy Personal Income Tax Burden

Individual income tax revenue as a % of GSP, 2011



Sources: BEA, Census Bureau, Moody's Analytics

Maryland's portfolio of tax revenue sources is generally in line with its peer group, with only one major difference (see Figure 1 and Figure 2). The state relies much more heavily on other minor forms of tax revenue than average, owing mainly to its outsize reliance on property taxes. Property taxes are generally left to local governments in most states, but not so in Maryland, where the rate is more than twice the national average. Only Georgia comes anywhere close to Maryland's state property tax levy. Combining state and local government property taxes does help even the playing field though, pulling tax collections as a share of GSP back in line with national and peer group averages.

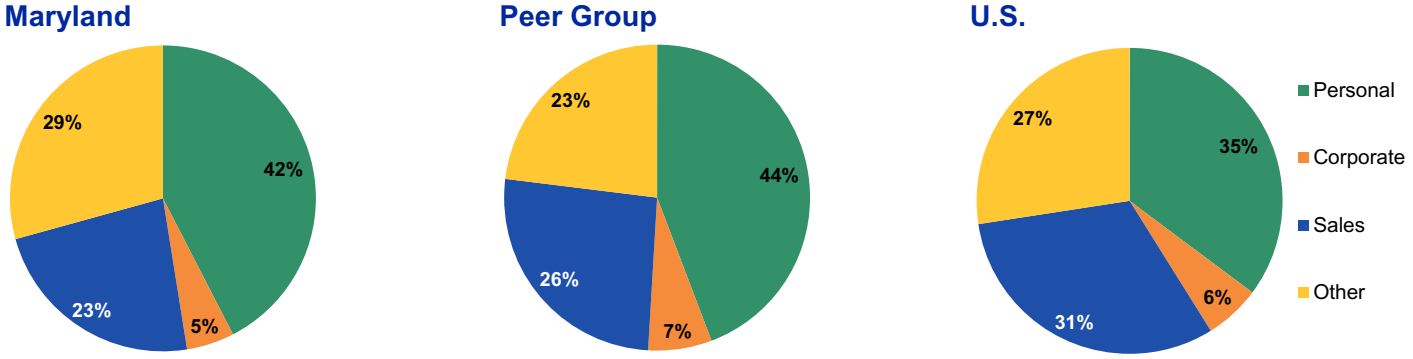
The outsize reliance of the state on property taxes masks another major difference between Maryland and its peers. Though all of the states in the peer group have a high relative reliance on personal income taxes, Maryland's levies are by far the most burdensome, and well above the national average. The makeup, however, is different than property taxes in that the local government portion is the real anomaly. The state personal income tax burden is high relative to the national average, but roughly in line with a handful of peer group states. When including local government, however, the overall personal income tax burden shoots to the highest in the peer group, and the third highest in the country behind New York and Oregon (see Chart 2). For context, about 3.5 cents of every dollar earned as personal income in Maryland is paid in personal income taxes to the state or a local government versus 2.1 cents nationally and 2.5 cents among the peer group.

Costs of living and doing business

This helps add to the well above-average cost of living, particularly among metro areas. The costs of living, as measured by the Moody's Analytics Cost of Living Index, in Maryland's largest metro areas, Baltimore and Silver Spring, are among the highest in the nation. The cost of living index for each metro area is a weighted average of cost indexes for various expenditure categories, including, food and retail expenditures, housing, utilities, transportation, vehicle insurance, and all others. It is important to point out, however, that Maryland's incomes are

Figure 1: Maryland State Tax Mix in Line With Peers

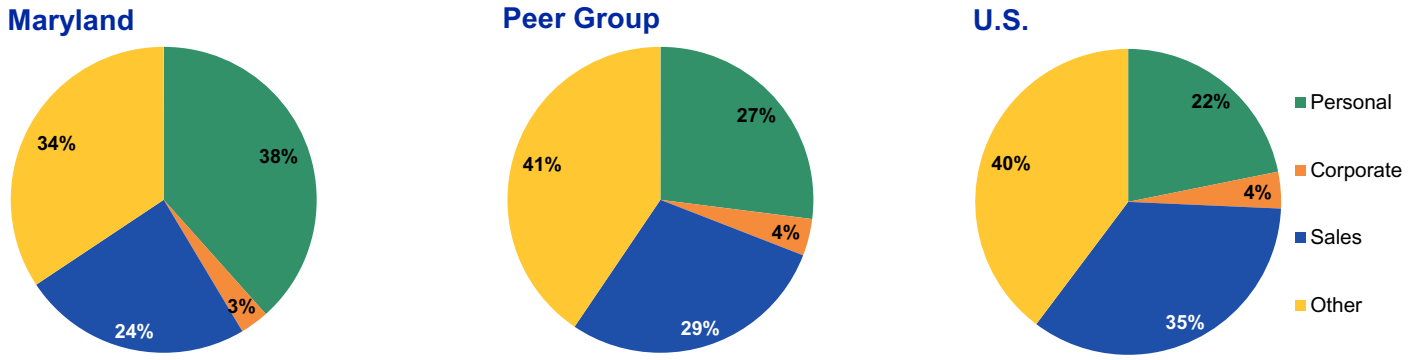
% of total tax revenues, 10-yr avg



Sources: Census Bureau, Moody's Analytics

Figure 2: Locals Much More Reliant on Personal Income Tax

% of total state and local government tax revenues, 10-yr avg



Sources: Census Bureau, Moody's Analytics

also among the highest, partially owing to the high concentration of high-wage jobs. However, the high cost of living in Maryland is an impediment to mid-wage job growth. Employers offering such positions would have to pay Marylanders more than workers in other states to remain competitive with other employers, increasing labor costs (see Chart 3).

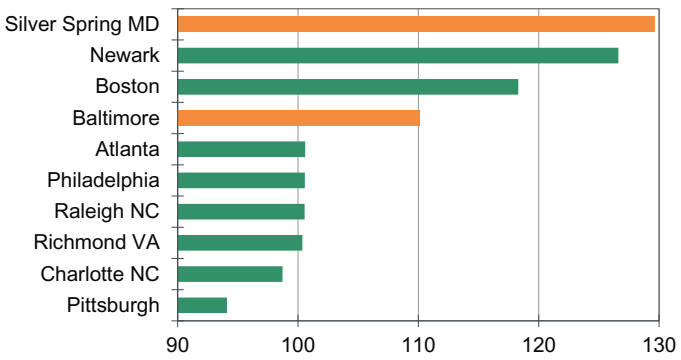
Outside of property and personal income taxes, however, Maryland's tax mix is similar to its competitors. Business taxes prove not especially onerous in Maryland relative to the peer group or the national average when looking at corporate income taxes as a share of the economy, and at the Moody's Analytics Cost of Doing Business tax subcomponent (see Chart 4). However, overall costs of doing business are higher in Maryland than in most of the peer group and are materially higher than the national average (see Chart 5). This is especially true when talking about utilities, which have at times cost Maryland businesses more than 20% more than the national average (see Chart 6 and Chart 7). High utility costs are particularly burdensome for manufacturers and have likely contributed to the industry's quicker disappearance in the state than elsewhere. Other mid-wage industries such as transportation and warehousing also use a lot of utilities, and the high prices in Maryland can prevent new businesses from relocating to or expanding within the state. Baltimore, the metro area most in need of these types of mid-wage manufacturing and transportation jobs, is particularly expensive, with costs higher than all major peer group metro areas except for Boston (see Chart 8). Only Massachusetts and New Jersey businesses pay more, while all other peer group states pay less than the national average. Neighboring Virginia pays the least in energy costs, at more than 15% below the national average.

Infrastructure

Also hampering businesses in manufacturing and trade-related industries are the state's deficiencies with regard to infrastructure. This includes both transportation and utility infrastructure. The state's infrastructure is aging along with that in much of the rest of the Northeast, and upgrades to repair and replace that infrastructure are costly, particularly in a state with as much history and as many densely populated metro ar-

Chart 3: Metro Area Costs of Living Loom Large

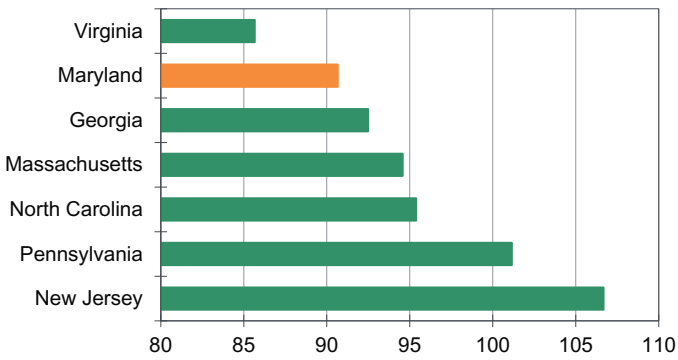
Cost of Living Index, U.S.=100, 2013



Source: Moody's Analytics

Chart 4: Business Taxes Relatively Competitive

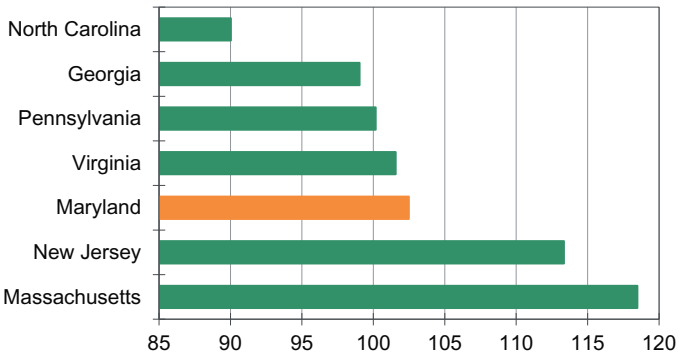
Cost of Doing Business Index, taxes, U.S.=100, 2013



Source: Moody's Analytics

Chart 5: Overall Costs Well Above Average

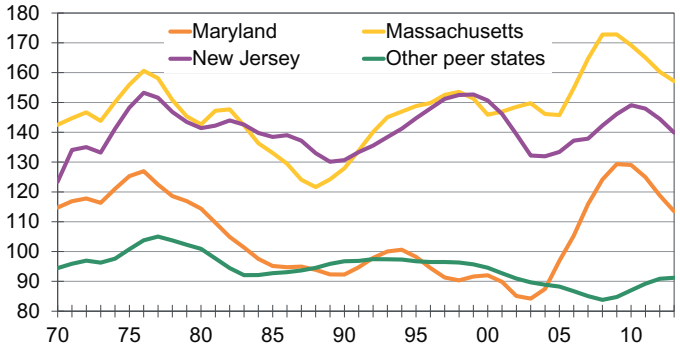
Overall Cost of Doing Business Index, U.S.=100, 2013



Source: Moody's Analytics

Chart 6: High Energy Costs Stand Out

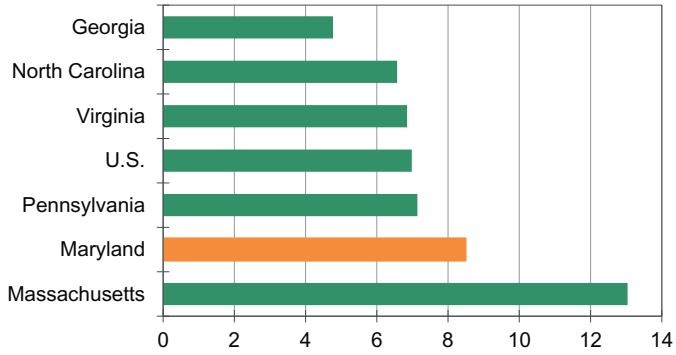
Cost of Doing Business Index, energy costs, U.S.=100



Sources: Census Bureau, BEA, Moody's Analytics

Chart 7: Electric Costs Not Competitive…

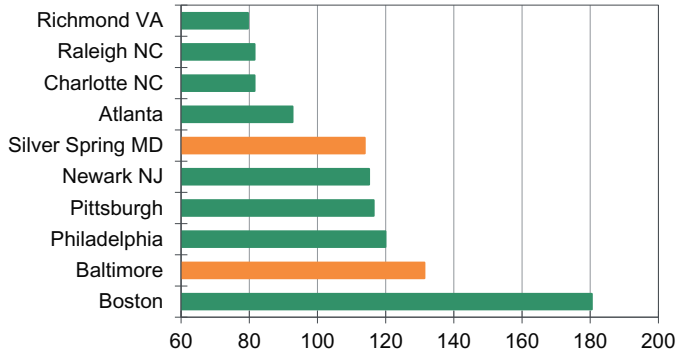
Avg retail electricity price, industrial sector, ¢/kWh, Jun 2015



Sources: EIA, Moody's Analytics

Chart 8: …Especially in Baltimore

Cost of Doing Business Index, energy costs, U.S.=100, 2013



Source: Moody's Analytics

eas as Maryland. In its most recent report card on public infrastructure, the American Society of Civil Engineers gave Maryland a C-, negligibly below the peer group average of C. However, the state scored particularly poorly on its dams, storm water, transit and road infrastructure, with insufficient funding sources continuously cited.

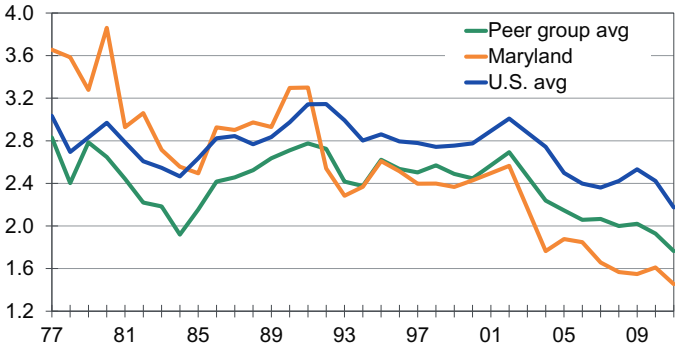
Infrastructure is the physical framework that connects businesses, communities and people, driving the economy and supporting the activities of daily life. Transport systems move people and goods efficiently and at reasonable cost by land, water and air; transmission systems deliver reliable, low-cost power from a wide range of energy sources; and water systems drive industrial processes as well as daily household functions. For Maryland to be competitive, especially in middle-wage industries, it needs a first-class infrastructure system. The burden of paying for that infrastructure is spread widely across the three levels of government, but nationally, state and local governments have been able to be much more nimble than the federal government in adjusting their revenue structures to better keep up with infrastructure needs, though funding levels have not been uniform across all regions. Some states, particularly Maryland, have fallen further behind than others for various economic and demographic reasons.

Nationally, state and local governments allocated 12% of total spending on capital expenditures for infrastructure from 2007 to 2011, the most recent year for which data are available from the Census Bureau. This is down from approximately 14% during the five-year period ending in 1982. Maryland has seen a much larger decline in its funding levels, falling from being an average performer 30 years ago to one of the lowest in the country today. Only eight states allocated a smaller share of total spending toward infrastructure than Maryland in the most recent data.

As a share of the economy, Maryland's fall has been even larger relative to its peers. In the late 1970s and early 1980s, Maryland's investment in infrastructure averaged around 3.5% of GSP, but in the five-year period ending in 2011, Maryland invested just over 1.5% of GSP, a decline of more than half (see Chart 9). For context, total U.S. investment in infrastructure fell from 2.9% to 1.5% of GDP, and the peer group average decreased from 2.6% to 2% of GSP over that time. While a decline in spending over the past 30 years is not surprising–infrastructure allocations increase in only California, New York and Pennsylvania during that time–Maryland's decline represents the second largest drop in infrastructure allocation by any state in the last 30 years. It is no coincidence that those three states, and others who have

Chart 9: Capital Suffered a Deeper Decline

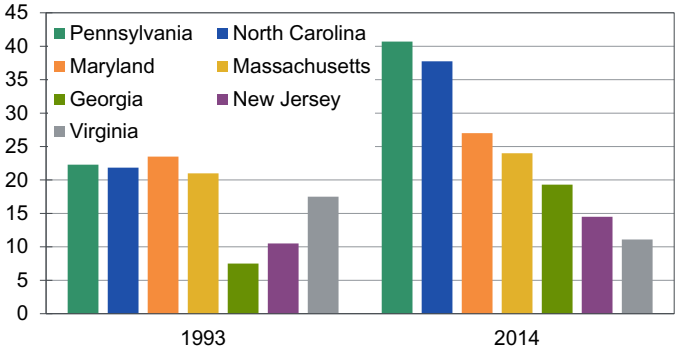
State and local capital expenditures on structures as a % of GSP



Sources: Census Bureau, BEA, Moody's Analytics

Chart 10: Not Keeping Up as Well as Others

State gas tax rate, ¢ per gallon



Sources: Tax Policy Center, Moody's Analytics

held up reasonably well, have also been the most proactive in adjusting their revenue structures to keep up with inflation and increased usage.

In 2014, Maryland's gas tax of 27 cents per gallon, though above the 2014 comparison group average of 24.9 cents, was relatively unchanged since 1993, the last time the federal gas tax was raised. Back then, its 23.5-cent tax was among the highest nationwide and well above the comparison group average. In the intervening years, however, some states have caught up to or surpassed Maryland's rate. Pennsylvania and North Carolina, for instance, had similar rates to Maryland in 1993. They have since raised their rates enough to qualify them as the second- and third-highest among the 50 states and Washington DC, and allowed them to greatly increase their ability to update aging infrastructure. On the other hand, New Jersey has remained near the bottom of the pack for the past 20 years. Virginia, the biggest laggard, is misleading because it overhauled its transportation funding system in 2013 by replacing the state's gas tax with an ad valorem sales tax (see Chart 10).

Drivers in Maryland are charged 1.8 cents per gallon more at the pump as of July 1, and a 2013 law established a new 3% sales tax on wholesale gas, which is being introduced over a three-year period. This law also automatically adjusted the flat tax on gas to account for changes in inflation. The gas tax has increased from 23.5 cents per gallon before 2013 to the current 32.1 cents per gallon. Maryland is one of seven states that passed a gas tax increase or its equivalent during the last election cycle to help pay for transportation projects, including three others in its peer group: Massachusetts, Pennsylvania and Virginia. This increased revenue creates a large opportunity for the state to update its aging infrastructure in an effort to reduce costs and attract more manufacturing and trade-related businesses that can help to bolster the state's sagging mid-wage tier. Efforts to improve infrastructure connections around the Port of Baltimore, though late relative to many of its competitors, would particularly help the state's competitiveness in this regard.

Quality of life

Costs are not the be-all and end-all of business site-selection, however, and there are several areas where Maryland stands out positively with respect to its peers. One of those areas is quality of life, which, using the Moody's Analytics Quality of Life Index, has shown strong correlation to job growth, particularly in high-value-added industries. The impetus being that if all else is equal, firms, particularly those in high-value-added industries where human capital is often the most important input, are more likely to establish businesses in places they would most like to live. The Quality of Life Index measures this objectively based on crime rates, opportunities for recreation, high school graduation rates, and childhood poverty.[2]

2 A full methodology for the Quality of Life Index can be found in Appendix B.

Table 2: Maryland Metro Area Quality of Life Indexes, U.S.=100, 2013

Metro area	Recreation	Crime	HS graduation	Poverty	QOL	Population (ths, 2013)	U.S. rank (of 342)	Peer rank (of 63)
Baltimore	89.06	58.08	103.30	134.18	96.16	2,774.05	203	40
Hagerstown	78.28	158.00	100.16	133.48	117.48	257.95	113	23
Cumberland	73.88	127.42	102.75	56.17	90.05	101.24	232	47
California-Lexington Park	45.54	166.26	103.48	163.66	119.74	109.48	105	21
Washington*	84.31	111.54	104.51	201.90	125.57	5,967.17	82	14

*2.3 million residents are Marylanders

Sources: Census Bureau, Moody's Analytics

Table 3: Baltimore Metro Area County Quality of Life Indexes, U.S.=100, 2013

	Recreation	Crime	HS graduation	Poverty	QOL	Population (ths, 2013)
Baltimore County	83.82	78.50	104.64	166.10	108.27	823.88
Baltimore City	70.38	25.96	94.49	69.91	65.19	623.40
Anne Arundel County	112.03	78.58	105.50	227.31	130.85	556.35
Howard County	110.37	179.30	109.25	253.14	163.02	304.93
Harford County	78.96	138.46	106.67	216.43	135.13	249.42
Carroll County	75.91	179.99	105.65	171.86	133.35	167.49
Queen Anne's County	ND	ND	ND	ND	ND	48.57

Sources: Census Bureau, Moody's Analytics

Table 4: Peer Group Major Metro Area Quality of Life Indexes, U.S.=100, 2013

Metro area	Recreation	Crime	HS graduation	Poverty	QOL	U.S. rank (of 342)	Peer rank (of 63)
Baltimore	89.06	58.08	103.30	134.18	96.16	203	40
Boston	121.57	105.32	105.30	170.01	125.55	83	15
Philadelphia	87.56	73.92	103.33	110.82	93.91	209	43
Virginia Beach	83.37	121.27	104.72	117.69	106.77	157	33
Atlanta	81.71	94.91	101.82	96.52	93.74	235	48
Charlotte	99.73	91.90	100.35	112.72	101.17	178	36
Washington	84.31	111.54	104.51	201.90	125.57	82	14

Sources: Census Bureau, Moody's Analytics

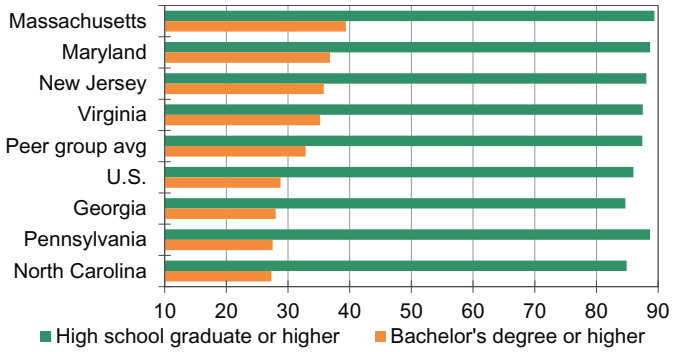
Overall, the quality of life in Maryland is high. Two Maryland metro areas, California-Lexington Park and Hagerstown, exceed the national average and rank in the top 25 among all peer state metro areas. Owing to data limitations, the index is not calculated for metro divisions, so the quality of life measure for Silver Spring is included in the Washington metro area, which ranks the highest of the peer state metro areas. This includes Washington DC, as well as Maryland and Virginia counties, but 40% of the Washington metro area is made up of Marylanders (see Table 2).

Baltimore, Maryland's largest metro area, does not stack up so well, ranking 203rd of 243 metro areas included in the measure, and 40th of 63 peer state metro areas. Large population centers do not typically rank well by this index because of the inclusion of crime rates. However, Baltimore's ranking is particularly low, owing to abysmally low data in Baltimore City (see Table 3). Staggeringly high crime rates and instances of poverty in Baltimore City bring down the index of the entire metro area. Data limitations prevent us from calculating the index for the metro area excluding Baltimore City, but five of six remaining counties have index readings of more than 100, indicating higher quality of life than the U.S. average.[3]

Baltimore, minus Baltimore City, performs well because of above-average performance of high schools and below-average instances of childhood poverty. Given the above-average incomes in most of the metro area, it is not surprising that Baltimore metro area counties would rank highly in those metrics. When comparing those counties with the peer metro areas, Maryland clearly comes out ahead (see Table 4).

Chart 11: Maryland Near the Head of the Class

Educational attainment, population age 25 and older, %, 2013



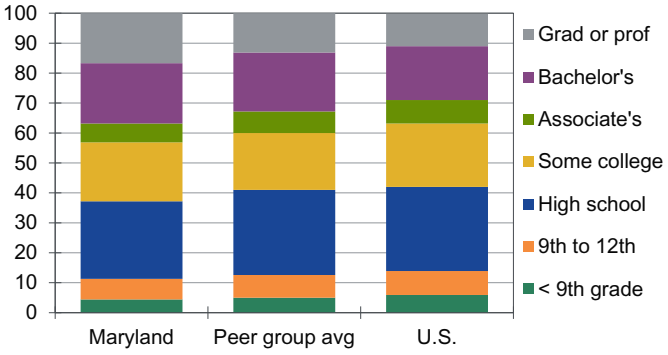
Sources: Census Bureau, Moody's Analytics

It is worth noting, however, that some of the peer metro areas also contain a major city, whose crime rates and poverty levels also drag down the total index. Nonetheless, compared with the national average, quality of life in Maryland is a clear positive. Quality of life, among other things, supports population growth, which although below average, is not wildly lagging or even at the bottom of the peer group.

3 A Quality of Life Index calculation for the sixth county, Queene Anne's County, cannot be made due to data limitations.

Chart 12: More Marylanders Earn Masters

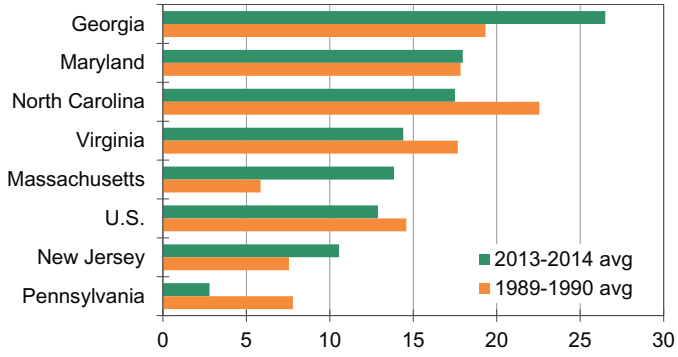
Educational attainment, population age 25 and older, %, 2013



Sources: Census Bureau, Moody's Analytics

Chart 13: Workforce Quality Hasn't Come Cheap

Higher education share of total state spending, %



Sources: NASBO, Moody's Analytics

Workforce quality

This bodes well for Maryland, because many of the firms it has the potential to attract fall into industries that generally place a high value on quality of life. These types of firms, which are generally in high-value, knowledge-based industries, generally invest more into their workforces than into hard infrastructure or durable resources. For that reason, quality of life and the quality of an area's workforce, something that Maryland also excels in, are generally on the top of the priority list.

Maryland is well above average in terms of educational attainment. Among the 50 states and DC it has the fourth-highest percentage of residents over age 25 with at least a bachelor's degree, 37.4%, and nearly 17% have a graduate or professional degree, a level surpassed by only Massachusetts and Washington DC (see Chart 11 and Chart 12). In terms of bachelor's degree attainment, Maryland's position in the ranking of the 50 states and DC has remained the same since 2001, as have many others. While the percentage of Marylanders with at least a bachelor's degree has increased by an above-average amount since that year, 4.6 percentage points, all but one state in the comparison group improved by even larger amounts.

This quality has not come without a cost, however, and is the result at least in part of continued commitment to higher education spending in the state budget. Within its peer group, only Georgia allocates more annual spending to its higher education system (see Chart 13). However, the advantage of a stellar workforce is also a symptom of the state's strong ties to the federal government. To move itself higher within its peer group in job and income growth, Maryland will need to look for more ways to leverage this expertise and university spending into private sector gains. A stronger private sector will not come overnight and will also likely add a bit more volatility to the state's business cycle, but it is the only path to a more dynamic pace of job and income growth in line with competing states.

Chapter 3: Major Findings and Opportunities for Outperformance

After looking closely at Maryland's economy and business climate from a variety of different angles, several things become clear.

- First, Maryland's economy is tied to the public sector to a greater degree than any of its competitor states, even neighboring Virginia. What is more, the relatively small contingent of private sector business the state does have is often interwoven with the federal government and this tends to crowd out private enterprise from focusing more on outside demand. This inability to build or maintain businesses that rely on demand from the private sector for growth holds back the state in times of recovery, and it is similarly this dynamic at work in hollowing out the middle of the state's labor market.

- Second, Maryland is a high-cost state in which to both live and do business. While some of this is often more perception than reality, especially in terms of business taxes, there is still a lot of truth to this and significant improvement can be made. The state's existing tax structure, when state and local government levies are taken into account, puts a much higher than average burden on individuals. Businesses, though less burdened by taxes than commonly perceived, are weighed down by a number of higher than average costs, most notably electricity and other utilities. High utility costs stand out most for manufacturers and other mid-wage employers as a major differentiating factor between Maryland and competing locations for production.

- Maryland has a lot of valuable assets at its disposal, not the least of which are its high quality of life and well-educated workforce. These two assets, when coupled with the state's access to public and nonprofit research facilities, prime the state for high-value-added spinoffs that can help expand its demand base beyond the federal budget and into the private sector. Despite these potential advantages, this type of development has been rarer than in Maryland's competitors to date. Maryland, though relatively well-off compared with the national average, lags Virginia, New Jersey, Pennsylvania and Massachusetts in terms of venture capital deals. Worse, Maryland venture capital investment has stayed relatively flat since the end of the Great Recession while competitors like Massachusetts have seen their deal volume accelerate and total investment more than double in that time period. While still in the game nationally, this clearly demonstrates that Maryland's competiveness with its peers is ebbing. Maryland is standing still while other states on the East Coast are pushing ahead.

- Maryland is also home to one of the deepest and largest ports on the eastern seaboard at a time when improvements to the Panama Canal are scheduled to boost the demand for deepwater East Coast ports. Other locations in competing states have answered the call with billions of dollars in upgrades to accommodate new business while Baltimore has done very little, particularly with its ground connections, which have the potential to be a chokepoint should any substantial increase in business come Maryland's way.

Finally, the state is blessed with proximity and access to our nation's capital and myriad federal resources. Maryland has relied heavily on this relationship in the past, but has not leveraged it into a standalone private sector strong enough to help diversify its growth portfolio based on its superior research and technical service capabilities. This factor has been a key advantage to the state, but in the private sector, where costs merit more consideration than proximity to DC or major federal research institutions, the state's cost and infrastructure disadvantages take on greater meaning. As a result, Maryland is in many cases falling into the same trap of dependency as many other areas highly dependent on public research. They benefit from the research and high-wage jobs that accompany it, but when it comes time to commercialize that research and produce technology based upon it, production is moved somewhere else more amenable to manufacturing.

A stable public platform exists upon which a more dynamic private sector can be built. To do so will require the reduction of key costs, but also a reduction in the perception of high costs and business unfriendliness that has formed around the state. This can be done through the tax code, but also through public/private cooperation in which the government encourages the private sector without allowing it to be crowded out further.

The alternative is a continuation of the status quo, in which Maryland keeps its economy tied to the public sector. This scenario will benefit the state in times of economic distress by flattening out turns in the business cycle, but it will also keep the state from growing at as dynamic a pace as its peers over the long run.

Appendix A

U.S. Cost of Doing Business: An Update

BY ERIC TANNENBAUM

Cost structure is a key source of global and regional comparative advantage and disadvantage. In the same vein that China's cheap labor costs and subsidized energy costs enable it to attract manufacturers from around the globe, varying energy, tax, labor and office cost structures often determine where businesses choose to invest in the U.S.

The integration of the global economy and improvements in information technology have better enabled firms to exploit comparative advantages in the regional business cost structure, allowing business investment to become increasingly mobile. For instance, the South's lower taxes and less expensive wages have attracted investment in less-specialized, nonproprietary professional services such as call centers and back-office operations for many years. Businesses will also often negotiate for targeted tax credits from local or state governments before making a location decision.

Additionally, consolidation in the utility sector and declining energy prices, particularly for natural gas, have allowed commercial and industrial customers to reduce their respective operating costs. This is the case nearly everywhere except in the West, where energy costs continue to rise. While the Northeast's cost structure has benefited from reduced energy costs, its unit labor costs and tax burden remain the highest in the nation, making the Northeast's overall cost of doing business the highest in the country.

Business costs appear to correlate with the pace of economic growth. For example, over the last 15 years, a 10-point increase in a state's business cost index has led to a 0.15-percentage point decline in average annual employment growth (see Chart 1). Thus, having a reliable measure for an area's cost of doing business is important not only for strategic decision-making but also as an indicator of economic prospects.

This article presents the methodology, revisions and results of the most recent update to the Moody's Analytics state and metropolitan area cost of doing business index.

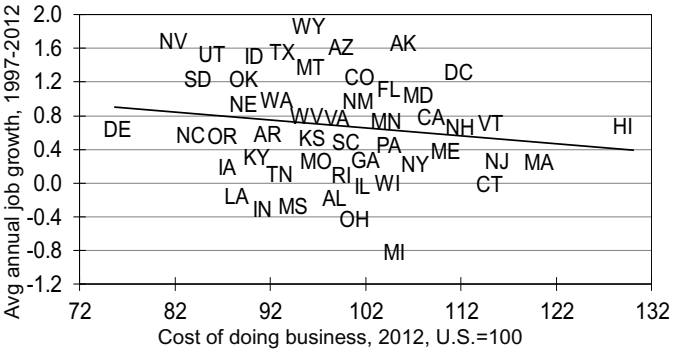
Methodology

The Moody's Analytics cost of doing business index compares a state or metropolitan area's average business cost with that of the U.S. For metro areas, the index comprises four components: unit labor cost, energy cost, state and local taxes, and office rents. Because of a lack of office rent data at the state level, only the first three categories are used for states.

Changes to the methodology of calculating the cost of doing business index this year are minor. The only change is that in previous years a three-year moving average was applied to the composite cost index but not the individual components of the index. This year, to ensure consistency between the components and the composite index, the moving averages are now applied at the component level instead, and the composite index is calculated as the weighted average of the components. Moving averages are taken to smooth out the volatility of the components; they produce more consistent and reliable estimates of the business cost components. The current relative business cost measure is the average of the period from 2010 to 2012.

In most instances, labor is a firm's greatest expense, and as such it is the most significant component of the cost of doing business index. The Moody's Analytics labor cost index calculates labor compensation per dollar of output. This ensures that workers who earn higher wages but are also more productive do not in effect drive up costs. Labor compensation is measured as wages and salaries per employee, while output is calculated as gross product per employee. The resulting unit labor cost index accounts

Chart 1: Business Costs Influence Job Growth



Sources: BLS, Moody's Analytics

Chart 2: Definition of Unit Labor Cost Index

$$ULC_k^{Geo} = \{\Sigma_k(I_k/Emp_k)/(Y_k/Emp_k)^{Geo} * (Emp_k^{US}/Emp_K^{US})\} /(I_K/Y_K)^{US}$$

Where: ULC = unit labor cost

- Y = output
- Emp = employment
- I = wage and salary disbursements
- Geo = state or metropolitan area
- US = U.S. avg
- K = total for all industries considered
- k = three-digit NAICS industry

Source: Moody's Analytics

for labor productivity and is a more accurate measure of labor costs than labor compensation alone (see Chart 2).

Unit labor costs are created for selected three-digit NAICS industry classifications; certain components of retail trade, construction, real estate, services and government are excluded from the calculation. Labor costs in these locally oriented industries usually do not influence the location decisions of other businesses as they expand their operations across regions.

Total unit labor costs are constructed by creating a weighted average of unit labor costs in each three-digit NAICS industry. The weights are equal to the national share of employment in each industry. This adjustment is necessary since unit labor costs vary across industries as a result of the occupational mix of the industry's employment and the capital structure of its operations. For example, productivity in the automotive industry is extremely high compared with that of other industries, whereas productivity may be low in the textile industry. As a result of these industry differences, a region with a high proportion of automotive manufacturing will appear to have lower unit labor costs than a region with a large textile industry. However, such a compositional bias can be avoided by using the national share of employment for each industry to weight the unit labor cost components.

A state-specific component weight system is used in lieu of a uniform fixed component weighting system. State-specific weights were generated by analyzing interindustry capital flows via IMPLAN modeling software. All metro areas within a state use the state's weight structure, which is modified to include metro area-specific office rent costs. While revisions to underlying source data result in revised historical estimates for the cost of doing business index and all of the underlying components, no historical changes can be attributed to revisions in the methodology, other than the shift of the three-year moving average to the component level of the index.

The office rent index compares the cost of renting office space in a metropolitan area with the national average. The Torto Wheaton office rent index from CBRE forms the basis of the office rent index. The index is based on the nondiscounted sum of rental payments in all rental periods for a particular rental contract. This helps to account for "deal sweeteners" such as periods with free rent, short-term discounts, or dramatic step increases that can bias the year-to-year data and result in more volatile measured rents from a single contract. Further, the index standardizes the rental measure to a 10,000-square-foot building of average age and class for five years in an average area of the market. Again, this standardization avoids compositional bias caused by differing mixes of buildings and terms of individual contracts in a given period. The index also excludes property taxes and other cost increases such as utilities that are outside of the direct scope of office space rent.

The CBRE data are available for 63 metropolitan areas and divisions. Composite office rent data are created for seven "super regions" by utilizing office rent data from the member metro areas. The seven super regions are the Northeast, Midwest, South Central, South Atlantic, West, Florida and California. All of the metro areas in these super regions share similar region-specific office market dynamics. Note that Delaware and Eastern Maryland metro areas and divisions are included in the Northeast super region, while metro areas in the Florida panhandle are included in the South Atlantic super region.

After composite office rent series are created for the seven geographical areas, the ratio of wage and salary disbursements to office-using employment is taken to derive a wage rate for each super region and each metro area in that region. A normalized wage rate is then calculated by dividing the wage rate of the metro area by the wage rate of the super region.

The office rent for a metro area in which source data are not available is estimated by setting it equal to the product of the super region's composite office rent and the metro area's normalized wage rate in the prior year. This value is then indexed to the national average of the 63 areas for which data are available.

The utilization of metro area office wage rates to estimate metro-specific office rent is supported by regression analysis. A significant correlation exists between wage rates and office rents in the 63 areas. Wage rates more accurately predicted office rents when a time lag of 12 months was applied; thus, this approach is adopted in the office rent index algorithm.

In metropolitan divisions where data are not reported by CBRE but are reported for the dominant metropolitan division within the combined statistical area office rent in the unreported division is set equal to the product of the office rent in the dominant area and the lagged normalized wage rate in the unreported division. For example, office rent in Bethesda MD was set equal to the product of Washington DC's office rent and the lagged ratio of Bethesda's wage rate to Washington's. Office rent in the Bethesda-Washington combined statistical area was set equal to the employment-weighted average of office rent in each metropolitan division. The values for the Bethesda metro division and the Washington combined statistical area are indexed to the national average in the same fashion as the

Chart 3: Definition of Energy Cost Index

$$E^{Geo} = \{(P_i^{Geo} * I)+(P_c^{Geo} * C)\}/\{(P_i^{us} * I)+(P_c^{us} * C)\}$$

Where: P = price in ¢ per kilowatt-hr

- I = industrial electricity sales as a share of total U.S. electricity sales
- C = commercial electricity sales as a share of total U.S. electricity sales
- Geo = state or metropolitan area
- us = U.S. avg
- i = industrial
- c = commercial

Source: Moody's Analytics

smaller metro areas that do not have metro division components.

In New York, data are reported for all metropolitan divisions, which is a change from the prior data source. Because of this, data specific to Long Island, Edison NJ and Newark NJ are used directly, rather than estimated based on relations to the New York City market. Because these data for office rents are not available from CBRE before 2012, fluctuations in office costs are used to estimate the office cost index prior to that year. Growth rates in rents from the previous office cost methodology are applied to the CBRE levels and the data series is grown backward.

The energy cost index compares the average commercial and industrial electricity costs, in cents per kilowatt-hour, with the national average. The data come from the Energy Information Administration, a division of the Department of Energy. The EIA reports commercial and industrial prices of all major independent and publicly owned utilities, as well as cooperatives. When available, the electricity price of the primary independently owned utility is used for each metro area. Price data from the primary cooperative or publicly owned utility are used for those few areas not served by a privately owned utility.

To avoid compositional bias, the relative importance of commercial and industrial electricity costs is derived from their importance at the national level. This is necessary since industrial rates are lower than commercial rates, and an area with a disproportionate share of one or the other would be biased accordingly. For example, an area with a particularly large portion of industrial consumption, if unadjusted for this compositional mix, would appear to have particularly low rates. However, by calculating the average industrial and commercial prices separately and then combining them into one price using their relative share of the national mix, a standardized value is created. The energy cost index for each year is calculated as the region's average compositionally weighted cost divided by the national average (see Chart 3).

The effective tax rate index is measured as the total state and local tax revenue as a percent of total personal income in the area, indexed to the national effective tax rate. This is a top-down measure that uses government revenues to represent the tax burden. This measure includes all taxes, including personal, property and corporate, less severance taxes, corporate license taxes, education, hospital, and intergovernmental transfers.

Business contributions to unemployment and workers' compensation programs also are included because they represent costs for hired labor. However, only the contributions from employers are included in calculating an area's tax burden. Interest earned on unemployment and workers' compensation funds is not included since it has no bearing on business costs. Revenue from miscellaneous insurance trusts was also included as a business cost since payrolls are taxed in some states. This revenue stream funds, among others, retraining and veteran disability benefits and is very small.

Data for state tax revenue come from the Census Bureau's Annual Survey of State Government Finances & Census of Governments, as do the data used to create the effective local tax rate for states. Revenue data for each metro area include the summation of revenues from all city and county revenues within the metro area. The aggregate local effective tax rate is equal to total relevant tax revenues divided by total personal income in each region. An effective tax rate index was created for each year by dividing each state and metropolitan area value by the national value.

Revisions to 2011 estimates

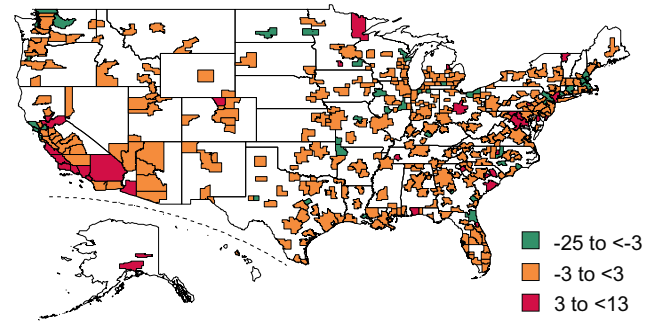
Data revisions to series used in calculating business costs often cause historical shifts in the top-line and component indexes. Annual revisions to gross product estimates for state and metropolitan areas by the BEA can lead to changes in an area's unit labor and business cost indexes. An upward revision to GSP without a corresponding one to wages and salaries will lower unit labor costs, thereby lowering the relative cost of doing business. Since unit labor costs carry the most weight in calculating an area's cost of doing business, new GSP data generally produce the largest changes in the top-line index. Employment and wages usually undergo smaller revisions from year to year. Employment revisions are generally largest for metro areas and at the three-digit NAICS level industrial detail. The index uses the Moody's Analytics detailed employment databases, which use proprietary estimates where reported data are sparse for individual metro areas at the three-digit level. Further, when the Bureau of Labor Statistics alters reporting areas or industries in its Quarterly Census of Employment and Wages, entire data series can be affected. The shift to a three-year moving average at the index component level helps to reduce the volatility of the employment trends.

Revisions to gross product for 2011 were relatively neutral on average. South Dakota and Hawaii were outliers, however; their updated 2011 GSP estimates were more than 4% higher than initial estimates. Significant upward revisions were also reported for Kansas, Alaska and Nebraska.

New office rent data from CBRE caused some shifts in the office cost indexes. As the metro area with the highest office rents in the country, the office rent index for the

Chart 4: Rent Data Revisions for 2011 Were Mild

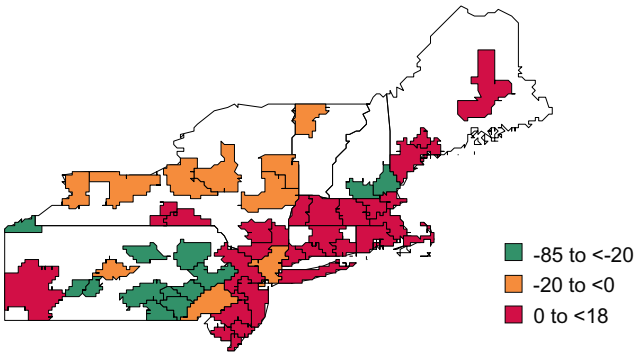
Office rents, change in 2011 re-estimated index from 2011 original



Source: Moody's Analytics

Chart 5: Energy Costs Overestimated in PA

Energy cost, change in 2011 re-estimated index from 2011 original



Source: Moody's Analytics

New York metro division underwent the biggest revision in 2011, rising 7 points from the previous estimate. This was significantly smaller than the 2010 revision, however, when New York was revised upward by 71 points. Overall, revisions to office rent indexes were very mild in 2011 following the much larger ones in 2010. The larger of the 2011 revisions occurred in metro areas whose office rents are higher than the U.S. average (see Chart 4). For the most part, the pattern of revisions was mixed across all regions.

The largest upward revisions to the tax burden indexes occurred in a mix of high- and low-tax states across the South and West. Arizona posted the greatest jump in 2011. Large upward revisions also occurred in Oregon, Montana and Minnesota. Downward revisions were strongest among moderate- to high-tax states and were mixed throughout the nation, with Iowa, Maryland, Oklahoma and Rhode Island having the greatest downward revisions.

Revisions to the energy cost indexes have tended to be minuscule, but the 2011 revisions were larger than usual because of the application of the three-year moving average to the index. The average index of the 50 states declined 1.2%. Hawaii, the state with the highest energy costs, also boasted the largest downward revision; its energy index in 2011 was 23% lower than previously stated. The largest upward revisions were in the District of Columbia and Nevada: Their 2011 energy costs were revised by 15.4% and 13.4%, respectively.

The most broad-based and marked energy cost index re-estimates at the metro area level occurred in Pennsylvania. The revised methodology of applying a three-year moving average to the energy index smoothed over large spikes in the 2011 data used in last year's update. Thus, the energy index for many of the Pennsylvania metro areas has been revised downward as a result of the reduced volatility created by the moving average (see Chart 5).

Some large shifts occurred in the metropolitan area unit labor cost indexes, primarily in smaller metro areas. For example, Laredo TX and Lake Havasu City AZ posted the greatest upward revisions to their unit labor cost indexes in 2011, changing them from moderate- to high-cost areas relative to the rest of their respective regions. Laredo TX was one of the metro areas with the lowest labor costs, but is now closer to the average. Anderson IN and Wichita Falls TX posted the next largest upward revisions. The largest downward revisions for 2011 occurred in Hickory NC, Wilmington DE and Longview WA. But the slides in the unit labor cost indexes were much less drastic than downward revisions in 2010.

For the top-line business cost index, the New York City metro division held onto its status as the highest-cost area in the country in 2011, although its upward revision was marginal. Downward revisions to unit labor costs resulted in downward revisions of the total index of more than 5% for Hickory NC and Corvallis OR.

Results for 2012

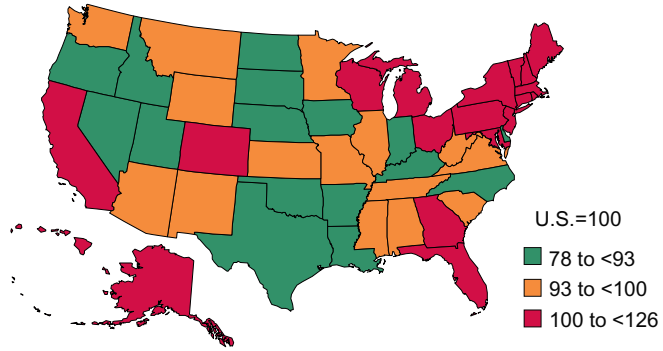
In 2012 business costs in the 50 states plus the District of Columbia were relatively higher in the Northeast and the states with the largest metro areas. The median and mean of the state energy cost indexes rose, evidence that cost structures became more disparate in 2012. Energy costs increased in West Virginia, and continue to climb in Hawaii, while they fell in the majority of Northeast states.

Despite methodological changes, which caused downward revisions to 2011 energy costs, energy costs still climbed by more in Hawaii in 2012 than in any other state. The lack of fossil fuel sources, refining capital, and cost-effective energy transport infrastructure has kept Hawaii's energy costs along with those in Alaska the highest in the nation. Hawaii and Alaska's isolation from the continental U.S. underpins this comparative disadvantage because they are forced to rely more on expensive oil to generate electricity rather than natural gas, which is almost five times cheaper than oil on a BTU-equivalent basis.

Other states with the highest costs of doing business are still largely concentrated in the Northeast (see Table 1 and Chart 6), though the top 10 states were slightly reshuffled. Hawaii and Massachusetts held on to their respective first and second place positions. New Jersey and Connecticut switched places, with Connecticut rising to third and New Jersey slipping to fourth. California ascended from the eighth to the seventh spot because of rising labor and en-

Chart 6: Eighteen States Are Above Average

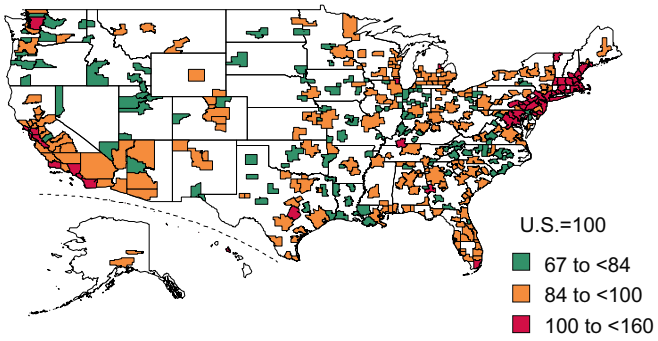
Cost of doing business, 2012



Source: Moody's Analytics

Chart 7: Northeast Corridor Is the Costliest

Cost of doing business, 2012



Source: Moody's Analytics

ergy costs. New Hampshire, New York, and the District of Columbia all held rank in the top 10. Maryland is the 10th most expensive state in which to do business even though its business costs improved slightly thanks to lower labor costs.

Delaware maintained its position as the least expensive state for businesses and Nevada moved into the second lowest place, trading spots with South Dakota. North Carolina rounds out the bottom four, and North Dakota just made the list of the 10 least expensive states in which to do business, as labor became more expensive and energy costs rose. North Dakota remains, by far, the fastest-growing state in terms of GSP and boasts the lowest unemployment rate in the U.S.

Metro area data also point to the Northeast as the region with the highest business costs followed by the West (see Table 2 and Chart 7). Seven of the 10 highest-cost metro areas for business are located in this region, with New York metro division at the top of the list. The cost of office space is estimated to be slightly higher than in previous years as a result of the new source data for office rents. According to the office cost index, rents are 2.5 times higher on average in the New York metropolitan division than they are in the U.S. The cost of doing business in New York City is nearly 60% higher than the U.S. average. Honolulu and San Jose CA round out the top three for 2012, knocking Boston and Cambridge MA down the ladder to fourth and fifth, respectively. The large energy cost burden in Honolulu pushed it up to the number two spot. San Jose's jump from the eighth spot to the third was due to rising office and labor costs in this startup haven where office space and skilled labor are in increasingly short supply. Manchester NH jumped from the 10th to the sixth slot, and Bridgeport CT took the seventh spot.

The highest unit labor costs are heavily concentrated in the Northeast, with Massachusetts in the lead, followed by the District of Columbia. However, Florida, Michigan, California, Colorado, New Mexico, Hawaii and Georgia's labor markets are within the top 15 most expensive. Connecticut and Tennessee were the states that experienced the largest increases in labor costs in 2012. Unit labor costs also rose markedly in Wyoming, California, Florida, Rhode Island, North Carolina and New York (see Chart 8).

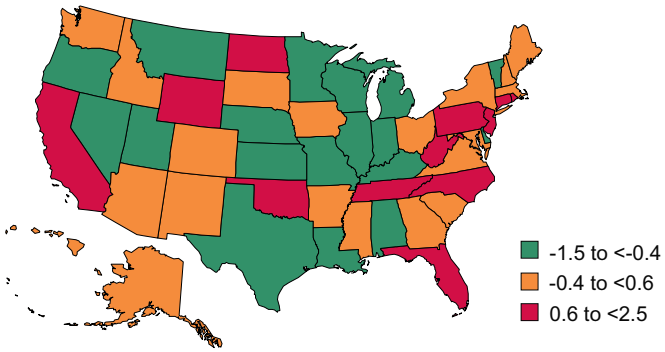
Among metro areas, unit labor costs are highest in Columbus GA and Clarksville TN, where productivity—measured as labor costs per unit of output—is well below the U.S. average. Cambridge inched up to the third most expensive area for labor costs, pushing San Jose, where wages remain high in the intensely competitive tech-producing industries, to fourth.

The unusual spikes in the EIA energy costs that overstated costs for eastern Pennsylvania metro areas in 2011 were reversed in 2012. The three-year moving average methodology, however, causes the 2012 energy cost indexes to still appear high in these areas. The Allentown PA-based electric utility PPL reduced rates for commercial and industrial customers in 2012 because of lower natural gas prices. Moreover, the state's electricity market was deregulated in 2011, allowing for greater competition among power providers. This further pressured larger utility providers in Pennsylvania such as PPL to reduce prices and stay competitive with smaller, emerging providers. Natural gas drilling operations in the Marcellus Shale spiked the supply of natural gas, further causing natural gas prices to fall. This allowed for commercial and industrial electricity price deflation statewide.

Costs declined in such areas as Williamsport PA, where drilling operations are heav-

Chart 8: Labor Costs Fall in Midwest

Unit labor cost index, 2012, change from prior yr



Source: Moody's Analytics

ily concentrated. Costs are falling in other PPL-dominated metro areas such as Lancaster, Scranton, Reading, York, Harrisburg, Allentown and Lebanon, all of which are in Pennsylvania. Overall, metro areas with the largest energy cost index declines are mixed across regions, and sometimes differ from the energy index in their respective states. The largest drops in energy costs occurred in Boston, Victoria TX, and El Centro CA.

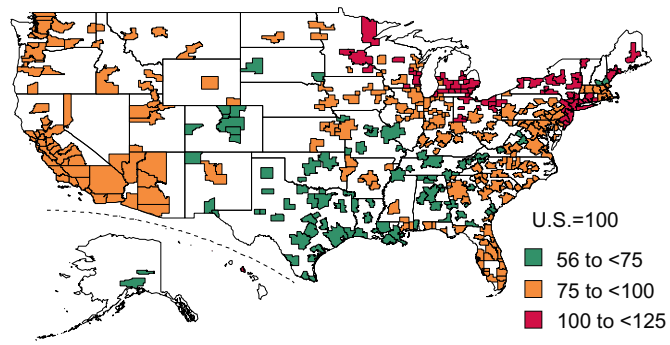
The state and local tax burden remains the highest in New York state; its tax burden is 42% higher than the U.S. average. At the metro area level, New York metro areas fill out the top 13 costliest areas in terms of the tax burden (see Chart 9). The District of Columbia, Hawaii, Wyoming, Maine, Vermont, and California rank successively behind New York as the highest tax-burden states. The District of Columbia posted the largest gain in tax costs in 2012. The metro areas in these states also have high tax burdens. Relative tax burdens fell the most in Rhode Island and South Dakota and their metro areas, with South Dakota still having the lowest tax burden in the nation.

Some of the highest office rents in the U.S. are found in New York City, Washington DC, Bethesda MD, Boston, Manchester NH, and Miami. San Francisco is no longer in the top 10, but San Jose CA continues to rise and is ranked seventh in terms of relative office rent. The disparity at the top is also quite staggering. The office rent index value for New York, the metro area with the highest office rents in the nation, is 100 points higher than that of Washington, the next costliest metro area. According to the index, the cost of renting office space in the Big Apple is 250% higher than the U.S. average.

While several metro areas at the top experienced an increase in office rents in 2012, rents held steady in most areas. The new methodology introduced a greater discrepancy between the median and mean office costs as prices rose in top-flight markets such as New York City, but office rents also fell considerably in some areas, particularly in the South including Hinesville GA, Jackson TN and Mobile AL. For the most part, the Mountain states and Midwest sport the lowest office rents in the country.

Chart 9: Tax Costs Highest in New York Areas

State and local tax burden, 2012



Source: Moody's Analytics

Table 1: 2012 State Cost of Doing Business Index

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax Burden	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Hawaii	130	1	104	11	320	1	118	3
Massachusetts	120	2	114	1	160	4	95	27
Connecticut	114	3	104	13	172	2	106	12
New Jersey	114	4	109	3	144	6	107	9
Vermont	113	5	107	5	138	9	112	6
District of Columbia	111	6	110	2	120	12	124	2
California	110	7	104	10	135	10	110	7
New Hampshire	109	8	105	8	153	5	79	50
New York	107	9	97	35	143	7	142	1
Maryland	107	10	107	4	119	13	91	37
Maine	106	11	101	23	124	11	114	5
Alaska	106	12	93	42	171	3	88	40
Michigan	105	13	105	6	102	16	106	13
Florida	104	14	105	7	107	15	95	24
Pennsylvania	103	15	103	15	102	17	101	16
Wisconsin	102	16	101	24	102	18	107	10
Colorado	101	17	105	9	94	23	90	38
Rhode Island	101	18	95	36	140	8	106	14
Ohio	101	19	102	20	94	22	109	8
Georgia	100	20	103	14	93	26	93	34
Minnesota	100	21	102	17	87	31	106	11
New Mexico	99	22	104	12	87	32	89	39
Illinois	99	23	103	16	89	29	92	35
Alabama	99	24	102	19	98	20	81	49
Arizona	99	25	101	25	94	24	94	30
South Carolina	98	26	102	18	89	27	84	44
Kansas	98	27	102	21	88	30	98	19
Virginia	97	28	100	27	85	34	86	41
Montana	96	29	100	28	84	35	94	28
Wyoming	95	30	100	26	77	46	116	4
Washington	95	31	100	29	69	50	99	18
Missouri	95	32	101	22	78	44	85	43
Tennessee	94	33	94	38	99	19	83	45
Mississippi	94	34	95	37	93	25	94	32
West Virginia	94	35	99	30	81	38	102	15
Kentucky	93	36	97	33	80	41	95	26
Arkansas	92	37	99	31	77	47	97	20
Idaho	92	38	97	34	68	51	95	23
Texas	92	39	94	40	89	28	82	47
Nebraska	91	40	94	39	82	37	96	21
North Dakota	90	41	94	41	79	43	94	29
Oregon	90	42	92	43	79	42	93	33
Oklahoma	89	43	99	32	74	48	83	46
Indiana	89	44	89	46	87	33	94	31
Iowa	88	45	92	45	78	45	95	25
Louisiana	88	46	92	44	81	40	85	42
Utah	87	47	89	47	74	49	101	17
North Carolina	85	48	84	49	84	36	95	22
South Dakota	84	49	86	48	81	39	75	51
Nevada	83	50	80	50	96	21	91	36
Delaware	76	51	66	51	116	14	82	48

Source: Moody's Analytics

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
New England										
Bangor ME	95	85	96	209	129	70	109	17	74	112
Barnstable Town MA	104	26	100	140	166	12	90	152	92	34
Boston MA	120	2	118	7	166	12	90	153	113	6
Bridgeport CT	119	5	115	9	189	6	103	19	102	15
Burlington VT	110	14	111	17	133	63	109	18	95	24
Cambridge MA	119	6	122	3	145	31	90	150	108	8
Hartford CT	102	31	102	110	167	10	102	28	78	88
Lewiston ME	92	115	95	220	129	70	110	15	66	203
Manchester NH	116	8	106	44	190	4	74	306	117	4
New Haven CT	112	11	100	136	189	6	102	33	108	9
Norwich CT	111	13	103	88	167	10	102	26	105	10
Peabody MA	100	44	107	38	145	31	90	149	72	126
Pittsfield MA	101	37	99	156	154	19	91	146	87	42
Portland ME	106	19	104	70	129	70	109	16	98	19
Providence RI	100	46	97	189	142	56	97	93	96	22
Rockingham County NH	101	39	101	122	190	4	73	313	74	113
Springfield MA	102	32	101	125	145	31	90	151	91	36
Worcester MA	107	18	103	83	145	31	90	153	103	12
Middle Atlantic										
Albany NY	90	146	89	300	149	20	122	8	62	231
Allentown PA	108	15	103	95	155	14	94	127	95	25
Altoona PA	89	167	92	265	100	168	95	117	78	79
Atlantic City NJ	105	23	98	170	147	25	102	25	103	14
Binghamton NY	82	283	83	360	93	209	123	2	68	176
Buffalo NY	89	162	80	370	149	20	121	11	79	66
Camden NJ	92	113	100	130	123	77	101	34	65	209
Edison NJ	100	45	109	23	123	77	102	27	75	103
Elmira NY	87	196	92	249	93	209	122	5	67	189
Erie PA	90	150	94	224	100	168	95	113	76	94
Glens Falls NY	85	253	77	377	149	20	121	12	66	196
Harrisburg PA	105	22	96	208	155	14	95	122	97	21
Ithaca NY	82	300	80	369	93	209	122	9	71	135
Johnstown PA	88	179	93	238	100	168	97	103	72	127
Kingston NY	87	212	82	362	133	61	122	4	70	155
Lancaster PA	101	43	93	245	155	14	96	109	85	50
Lebanon PA	100	47	100	135	146	28	94	124	76	97
Nassau NY	102	35	92	265	180	8	125	1	89	40
New York NY	160	1	109	21	224	2	118	13	251	1
Newark NJ	102	33	115	8	123	77	103	23	71	133
Ocean City NJ	90	156	87	328	147	25	101	40	71	140
Philadelphia PA	105	21	112	13	128	73	95	111	84	53
Pittsburgh PA	94	100	101	113	113	114	95	115	70	151
Poughkeepsie NY	94	101	88	315	133	61	123	3	83	56
Reading PA	104	28	97	187	146	28	95	116	93	31
Rochester NY	91	129	85	345	121	99	122	7	84	52
Scranton PA	97	62	92	247	155	14	96	109	75	105
State College PA	94	90	97	184	87	280	94	129	94	29
Syracuse NY	94	102	85	348	149	20	122	10	84	55
Trenton NJ	104	25	106	49	123	77	103	21	96	23
Utica NY	91	137	84	353	149	20	122	6	76	99
Vineland NJ	101	38	105	64	147	25	99	74	79	73
Williamsport PA	94	92	90	288	155	14	93	135	69	171
York PA	100	48	94	229	146	28	95	112	85	51

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
East North Central										
Akron OH	92	124	101	117	100	163	101	43	67	186
Anderson IN	80	323	95	213	84	287	95	120	45	377
Ann Arbor MI	94	97	105	60	103	151	101	37	66	200
Appleton WI	87	207	101	127	90	245	100	64	59	269
Battle Creek MI	86	222	86	335	115	102	100	61	65	212
Bay City MI	101	41	113	12	115	102	101	54	70	149
Bloomington IL	79	333	87	327	84	287	92	139	55	314
Bloomington IN	85	250	90	283	80	320	80	260	78	81
Canton OH	83	279	96	210	89	249	101	52	52	350
Champaign IL	85	250	96	206	80	320	80	259	69	163
Chicago IL	99	54	105	56	97	190	83	228	92	32
Cincinnati OH	95	77	106	51	126	75	97	91	59	273
Cleveland OH	97	67	103	78	110	125	101	35	77	92
Columbus IN	79	327	87	331	84	287	91	144	58	286
Columbus OH	95	78	106	52	92	235	99	76	78	83
Danville IL	74	374	85	351	80	320	80	258	52	347
Davenport IL	85	249	99	150	62	382	82	246	71	131
Dayton OH	96	74	103	93	113	112	101	48	72	129
Decatur IL	77	351	89	294	80	320	82	241	53	333
Detroit MI	95	78	111	15	103	151	103	20	60	265
Eau Claire WI	85	252	96	207	92	236	98	80	59	271
Elkhart IN	81	305	88	321	97	185	95	123	54	330
Evansville IN	82	297	87	333	97	185	91	142	58	285
Flint MI	91	131	98	173	115	102	102	29	62	241
Fond du Lac WI	90	158	102	99	107	129	101	46	56	305
Fort Wayne IN	78	343	88	311	73	359	93	131	58	291
Gary IN	82	295	87	334	97	185	93	135	59	276
Grand Rapids MI	89	174	97	193	115	102	100	59	55	310
Green Bay WI	88	191	102	111	90	245	100	67	60	252
Holland MI	88	181	98	164	115	102	100	65	51	356
Indianapolis IN	87	213	93	243	97	194	92	138	66	202
Jackson MI	91	142	103	92	115	102	101	50	51	357
Janesville WI	89	165	103	91	107	129	101	51	54	331
Kalamazoo MI	90	157	98	163	115	102	100	58	56	301
Kankakee IL	73	376	81	365	97	190	81	253	48	367
Kokomo IN	80	319	97	198	84	287	96	108	42	381
La Crosse WI	85	241	100	145	92	236	99	79	54	328
Lafayette IN	79	326	88	314	84	287	92	141	56	304
Lake County IL	104	29	119	6	97	190	87	187	86	47
Lansing MI	91	140	99	148	115	102	101	45	58	282
Lima OH	86	228	101	118	89	249	101	36	52	352
Madison WI	94	98	105	61	106	141	100	66	67	183
Mansfield OH	81	301	97	200	89	249	103	22	45	379
Michigan City IN	77	350	89	305	84	287	93	132	45	378
Milwaukee WI	99	57	111	16	112	118	101	55	70	148
Monroe MI	94	93	109	21	103	151	101	47	59	275
Muncie IN	75	364	85	350	73	359	93	133	53	340
Muskegon MI	92	117	106	50	115	102	101	48	51	358
Niles MI	88	187	102	104	91	238	101	43	57	298
Oshkosh WI	94	95	106	39	107	129	100	62	64	217
Peoria IL	88	192	101	124	80	320	80	263	71	131

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Racine WI	92	119	104	77	112	118	102	30	58	281
Rockford IL	80	316	91	271	97	190	83	231	55	318
Saginaw MI	89	170	98	178	115	102	102	31	55	313
Sandusky OH	87	197	101	112	100	163	102	32	51	360
Sheboygan WI	94	104	107	37	107	129	100	63	62	237
South Bend IN	80	314	91	272	73	359	95	118	62	235
Springfield IL	70	382	83	359	80	320	81	256	42	382
Springfield OH	83	271	97	199	100	163	101	41	44	380
Steubenville OH	85	237	106	46	89	249	99	77	42	383
Terre Haute IN	78	338	88	316	84	287	92	137	51	355
Toledo OH	86	229	97	188	100	171	101	38	53	342
Warren MI	93	108	107	31	103	151	102	24	57	296
Wausau WI	87	203	99	154	90	245	101	39	62	230
Youngstown OH	81	302	91	270	100	163	101	55	48	368
West North Central										
Ames IA	83	282	89	295	91	239	82	243	63	222
Bismarck ND	84	257	96	204	79	329	82	250	60	267
Cape Girardeau MO	76	358	90	293	72	365	71	320	58	284
Cedar Rapids IA	89	177	98	161	91	239	83	227	69	165
Columbia MO	77	345	90	287	72	365	71	324	62	228
Des Moines IA	83	263	98	178	64	381	84	222	74	111
Dubuque IA	82	287	92	246	91	239	84	219	55	307
Duluth MN	85	242	98	165	80	326	101	53	63	219
Fargo ND	81	303	91	279	80	327	86	193	58	288
Grand Forks ND	85	234	99	154	80	327	88	173	57	297
Iowa City IA	82	296	92	255	91	239	82	244	54	322
Jefferson City MO	83	274	99	149	72	365	73	312	66	194
Joplin MO	83	266	103	95	101	158	72	319	47	372
Kansas City MO	89	175	111	14	85	281	78	276	58	283
Lawrence KS	80	318	92	253	87	275	86	196	53	334
Lincoln NE	80	322	93	235	75	349	85	205	60	254
Manhattan KS	88	189	102	105	87	275	82	238	66	198
Mankato MN	77	352	83	358	89	261	99	71	58	287
Minneapolis MN	99	51	115	10	89	261	101	42	79	69
Omaha NE	89	163	106	42	77	341	85	202	71	137
Rapid City SD	76	357	86	341	93	195	62	374	56	303
Rochester MN	95	76	106	43	89	261	101	57	81	63
Sioux City IA	74	371	78	376	91	239	80	264	52	344
Sioux Falls SD	77	349	88	312	81	303	62	375	61	246
Springfield MO	80	311	91	276	101	158	72	316	55	312
St. Cloud MN	82	299	90	292	89	261	100	60	62	229
St. Joseph MO	73	377	88	308	82	302	71	322	45	376
St. Louis MO	91	129	108	26	72	365	74	305	78	80
Topeka KS	86	221	97	183	87	275	85	203	66	199
Waterloo IA	80	315	90	290	91	239	83	234	53	336
Wichita KS	87	210	100	129	87	275	86	189	63	220
South Atlantic										
Albany GA	84	262	91	281	92	221	75	300	69	170
Anderson SC	86	220	102	107	73	356	78	275	60	258
Asheville NC	79	325	78	375	89	253	88	179	75	101
Athens GA	84	259	92	258	92	221	75	297	68	177
Atlanta GA	90	154	106	54	92	221	76	284	65	210
Augusta GA	91	141	104	68	92	221	75	293	69	164

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Baltimore MD	104	27	107	33	130	69	83	235	94	27
Bethesda MD	116	9	106	47	111	122	84	225	150	3
Blacksburg VA	85	239	92	248	84	285	75	298	72	125
Brunswick GA	88	184	89	296	92	221	77	282	87	45
Burlington NC	82	284	85	349	76	342	88	177	79	72
Cape Coral FL	92	118	100	141	93	196	83	236	81	62
Charleston SC	92	114	104	72	82	300	96	104	70	161
Charleston WV	95	84	103	85	101	160	77	283	78	85
Charlotte NC	86	223	98	165	76	342	86	191	67	184
Charlottesville VA	89	171	97	197	81	311	74	304	79	75
Columbia SC	93	107	101	120	101	160	78	274	73	117
Columbus GA	107	17	129	1	92	221	73	310	85	48
Crestview FL	98	58	109	25	113	115	84	220	79	74
Cumberland MD	96	75	108	30	111	122	86	195	64	215
Dalton GA	82	289	92	264	92	221	78	277	61	242
Danville VA	83	269	99	159	81	311	76	286	52	345
Deltona FL	86	217	97	193	93	196	85	207	66	197
Dover DE	75	367	65	384	112	120	78	270	78	84
Durham NC	92	122	89	302	76	342	87	184	104	11
Fayetteville NC	83	281	88	325	89	253	86	193	71	143
Florence SC	92	121	102	108	88	271	79	267	75	106
Fort Lauderdale FL	96	72	104	75	93	196	85	209	87	44
Gainesville FL	93	106	98	172	122	82	82	244	79	70
Gainesville GA	85	240	93	244	92	221	76	287	71	141
Goldsboro NC	78	336	84	355	89	253	87	185	61	245
Greensboro NC	78	341	78	374	76	342	88	176	75	102
Greenville NC	80	311	84	354	89	253	86	190	69	167
Greenville SC	90	160	104	65	73	356	78	271	69	173
Hagerstown MD	90	147	95	218	111	122	89	158	72	130
Harrisonburg VA	74	369	80	368	81	311	75	299	60	255
Hickory NC	74	373	77	378	76	342	89	160	63	221
Hinesville GA	86	215	101	126	92	221	74	303	62	238
Huntington WV	90	161	99	158	82	300	94	128	70	162
Jacksonville FL	91	132	106	45	93	196	83	226	66	192
Jacksonville NC	79	328	79	371	89	253	84	218	74	114
Lakeland FL	87	204	95	216	122	82	81	252	64	216
Lynchburg VA	80	319	88	323	84	285	75	291	63	218
Macon GA	85	246	94	232	92	221	76	287	68	178
Miami FL	107	16	110	19	93	196	82	248	114	5
Morgantown WV	94	89	104	66	85	282	94	125	77	93
Myrtle Beach SC	83	270	93	240	88	271	79	268	58	290
Naples FL	99	55	104	69	93	196	87	186	94	26
North Port FL	92	120	100	133	93	196	85	208	78	77
Ocala FL	87	198	95	214	122	82	82	251	65	208
Orlando FL	94	94	103	84	122	82	83	230	73	122
Palm Bay FL	95	86	104	76	93	196	84	221	83	58
Palm Coast FL	81	309	95	223	93	196	80	261	53	339
Panama City FL	93	105	103	79	113	115	83	229	73	118
Parkersburg WV	91	127	102	97	85	282	98	87	63	225
Pensacola FL	92	126	101	116	113	115	82	242	71	139
Port St. Lucie FL	88	184	98	176	93	196	85	204	71	138
Punta Gorda FL	84	256	91	282	93	196	85	206	70	154
Raleigh NC	82	285	89	307	89	253	86	188	68	180

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Richmond VA	90	159	102	101	81	311	75	292	69	166
Roanoke VA	85	248	89	306	81	311	75	290	80	64
Rocky Mount NC	74	370	75	381	89	253	88	178	64	213
Rome GA	88	178	102	98	92	221	76	285	65	205
Salisbury MD	95	82	94	231	118	101	84	224	92	35
Savannah GA	87	211	100	143	92	221	74	301	65	211
Sebastian FL	89	173	98	176	93	196	87	180	73	120
Spartanburg SC	89	166	101	119	73	356	78	272	75	104
Sumter SC	90	152	102	102	88	271	78	278	67	190
Tallahassee FL	97	64	104	73	122	82	82	249	82	60
Tampa FL	95	81	105	59	113	113	82	237	76	97
Valdosta GA	82	288	94	230	92	221	73	309	59	274
Virginia Beach VA	91	134	105	58	81	311	75	294	68	175
Warner Robins GA	86	216	91	274	92	221	74	307	78	78
Washington DC	117	7	113	11	81	311	81	254	151	2
West Palm Beach FL	96	73	106	52	93	196	87	183	83	57
Wheeling WV	83	278	92	262	78	339	97	97	55	320
Wilmington DE	76	354	72	382	112	120	82	247	66	201
Wilmington NC	79	324	81	367	89	253	87	181	71	136
Winchester VA	76	359	76	380	88	270	77	280	70	153
Winston NC	81	310	82	363	76	342	88	175	78	82
East South Central										
Anniston AL	86	224	92	261	99	172	67	356	66	193
Auburn AL	81	308	92	262	99	172	65	371	45	374
Birmingham AL	94	91	103	81	99	172	66	364	78	87
Bowling Green KY	79	330	88	309	78	335	88	172	57	294
Chattanooga TN	85	247	90	286	102	155	70	327	73	121
Clarksville TN	103	30	128	2	108	127	72	318	68	174
Cleveland TN	82	293	97	190	99	180	67	350	54	326
Decatur AL	82	286	94	227	92	220	66	362	52	346
Dothan AL	85	245	92	252	99	172	66	369	62	240
Elizabethtown KY	83	265	101	121	80	318	87	182	49	365
Florence AL	90	155	102	99	108	128	66	368	54	329
Gadsden AL	89	172	106	41	99	172	66	366	48	369
Gulfport MS	87	205	98	174	89	265	92	140	61	243
Hattiesburg MS	85	238	95	222	89	265	88	167	62	235
Huntsville AL	100	50	108	28	98	182	65	372	91	37
Jackson MS	87	208	96	202	83	295	89	161	70	158
Jackson TN	85	231	97	190	97	188	68	344	66	191
Johnson City TN	83	266	93	236	110	126	68	342	60	258
Kingsport TN	82	289	91	273	81	310	70	326	71	142
Knoxville TN	87	214	94	225	101	162	68	344	73	123
Lexington KY	87	205	99	147	78	335	88	163	68	179
Louisville KY	85	231	100	146	80	318	88	166	60	264
Memphis TN	85	233	98	167	99	181	72	315	63	224
Mobile AL	89	164	98	168	99	172	66	367	67	182
Montgomery AL	92	116	103	86	99	172	66	361	70	156
Morristown TN	81	304	97	185	100	167	68	339	52	349
Nashville TN	90	143	97	196	106	140	67	357	79	68
Owensboro KY	82	292	97	195	78	335	88	171	52	348
Pascagoula MS	100	49	110	18	89	265	91	143	90	38
Tuscaloosa AL	88	194	98	180	99	172	65	370	61	244

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
West South Central										
Abilene TX	83	264	88	322	122	87	68	336	53	337
Alexandria LA	77	347	82	361	81	303	60	377	69	168
Amarillo TX	78	335	89	296	65	374	68	334	73	115
Austin TX	101	40	100	138	122	87	66	364	97	20
Baton Rouge LA	83	272	93	242	81	303	59	380	73	124
Beaumont TX	79	331	92	256	73	362	69	332	66	204
Brownsville TX	86	226	95	217	122	81	68	341	50	363
College Station TX	75	360	88	313	73	362	66	358	60	253
Corpus Christi TX	91	138	89	304	139	57	68	346	65	207
Dallas TX	94	87	99	151	122	87	68	335	74	108
El Paso TX	77	346	88	320	97	189	67	353	50	361
Fayetteville AR	91	133	105	63	70	369	85	214	85	49
Fort Smith AR	80	316	99	153	68	371	81	257	55	315
Fort Worth TX	91	136	91	278	122	87	68	337	74	110
Hot Springs AR	78	342	87	326	78	331	85	197	57	300
Houma LA	79	329	90	291	81	303	59	381	62	233
Houston TX	99	52	98	162	119	100	67	355	94	28
Jonesboro AR	83	277	98	175	78	331	85	210	57	293
Killeen TX	95	80	98	168	122	87	68	338	78	76
Lafayette LA	82	298	91	269	81	303	58	383	70	159
Lake Charles LA	78	344	89	296	81	303	60	378	57	292
Laredo TX	90	145	92	254	139	57	66	363	58	278
Lawton OK	80	321	101	115	65	379	68	343	55	317
Little Rock AR	89	168	103	94	78	331	85	200	73	115
Longview TX	74	372	88	317	65	374	66	359	61	251
Lubbock TX	83	276	85	346	122	87	68	340	55	309
McAllen TX	90	153	98	181	139	57	66	360	49	364
Midland TX	92	124	93	241	122	87	58	384	76	100
Monroe LA	75	362	86	339	81	303	59	379	54	325
New Orleans LA	86	217	94	228	87	274	60	376	78	86
Odessa TX	86	219	90	285	122	87	63	373	60	261
Oklahoma City OK	83	273	100	130	75	350	67	351	59	268
Pine Bluff AR	85	235	95	212	78	331	85	197	72	127
San Angelo TX	79	332	84	352	103	150	67	354	55	311
San Antonio TX	84	255	91	277	83	299	67	349	79	65
Sherman TX	88	188	97	192	122	87	69	330	54	324
Shreveport LA	75	361	88	319	72	364	58	382	61	248
Texarkana TX	78	334	89	299	67	372	75	295	71	134
Tulsa OK	86	227	106	40	65	379	67	347	70	147
Tyler TX	89	169	90	289	122	87	67	352	70	156
Victoria TX	87	202	87	329	139	57	67	348	55	321
Waco TX	85	244	85	347	122	87	69	333	62	231
Wichita Falls TX	87	209	96	203	122	87	70	328	52	351
Mountain										
Albuquerque NM	88	183	102	105	92	218	76	289	60	257
Billings MT	88	190	99	159	104	147	90	155	56	302
Boise City ID	78	340	95	215	65	377	95	121	55	319
Boulder CO	96	71	107	36	92	212	72	317	87	43
Carson City NV	72	381	68	383	98	183	82	240	66	194
Casper WY	87	201	103	89	76	348	97	100	63	225
Cheyenne WY	89	176	103	80	87	279	97	102	58	280
Coeur d'Alene ID	75	363	91	280	84	294	93	130	48	370

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Colorado Springs CO	90	143	108	29	85	284	71	325	70	150
Denver CO	94	99	107	32	92	212	69	331	79	67
Farmington NM	91	139	109	24	78	340	75	296	63	227
Flagstaff AZ	90	149	100	134	106	142	78	273	67	187
Fort Collins CO	88	186	102	103	92	212	71	321	69	172
Grand Junction CO	81	306	94	233	92	212	73	314	59	272
Great Falls MT	88	193	99	156	104	147	90	147	55	316
Greeley CO	83	274	97	182	92	212	70	329	60	262
Idaho Falls ID	75	368	92	260	65	376	93	134	50	362
Lake Havasu AZ	85	235	103	87	102	156	79	265	45	375
Las Cruces NM	83	280	89	301	104	146	74	302	60	263
Las Vegas NV	83	268	78	373	101	157	81	255	88	41
Lewiston ID	70	383	78	372	78	338	90	148	51	359
Logan UT	68	384	83	357	74	351	88	168	40	384
Missoula MT	88	182	100	142	104	147	91	145	56	306
Ogden UT	76	356	85	343	74	351	88	164	60	256
Phoenix AZ	93	111	101	122	106	142	79	266	74	109
Pocatello ID	73	378	89	303	65	377	94	126	49	366
Prescott AZ	82	294	91	268	106	142	80	262	53	337
Provo UT	77	348	87	331	74	351	88	169	62	234
Pueblo CO	85	242	110	20	92	212	71	323	47	371
Reno NV	78	337	77	379	98	183	83	233	70	144
Salt Lake City UT	84	261	92	259	74	351	89	158	74	107
Santa Fe NM	95	83	107	34	92	218	77	281	76	95
St. George UT	72	380	82	364	74	351	89	156	53	332
Tucson AZ	91	135	100	138	107	133	79	269	70	145
Yuma AZ	84	254	95	220	106	142	78	279	57	295
Pacific										
Anchorage AK	93	110	95	211	128	74	73	311	70	145
Bakersfield CA	94	96	94	226	143	35	95	119	73	119
Bellingham WA	86	225	94	234	106	134	84	216	61	247
Bend OR	76	355	86	342	83	296	89	156	53	335
Bremerton WA	86	230	90	284	106	134	85	199	67	188
Chico CA	87	199	88	309	143	35	98	90	60	266
Corvallis OR	78	339	85	344	83	296	88	173	61	249
El Centro CA	97	66	103	81	123	76	95	114	76	96
Eugene OR	75	365	86	337	69	370	88	169	54	327
Fairbanks AK	97	68	86	337	220	3	73	308	58	279
Fresno CA	92	122	92	257	143	35	97	98	69	169
Hanford CA	97	69	108	27	143	35	96	105	58	289
Honolulu HI	120	3	105	62	312	1	111	14	86	46
Kennewick WA	87	200	103	90	62	383	82	239	67	185
Longview WA	73	375	87	330	66	373	84	217	46	373
Los Angeles CA	105	24	102	109	130	64	98	82	100	16
Madera CA	97	63	104	74	143	35	96	107	68	181
Medford OR	75	365	83	356	83	296	88	162	52	343
Merced CA	81	307	81	366	143	35	97	95	51	354
Modesto CA	90	148	91	267	143	35	98	86	64	214
Mount Vernon WA	80	313	88	318	106	134	86	192	53	341
Napa CA	99	53	98	171	143	35	98	89	83	59
Oakland CA	106	20	105	57	143	35	97	96	93	30
Olympia WA	84	258	92	250	106	134	85	211	57	299
Oxnard CA	94	88	100	144	130	64	99	77	70	160

Table 2: 2012 U.S. Metropolitan Area Relative Business Costs (Cont.)

	Cost of Doing Business		Unit Labor Cost		Energy Cost		State & Local Tax		Office Rent	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Portland OR	91	128	93	237	88	268	85	201	90	39
Redding CA	87	195	88	324	143	35	99	72	62	239
Riverside CA	93	109	92	251	130	64	98	85	77	91
Sacramento CA	98	59	100	137	143	35	97	91	77	90
Salem OR	76	353	86	340	88	268	88	165	52	353
Salinas CA	98	61	96	205	143	35	99	70	82	60
San Diego CA	112	12	106	55	168	9	97	94	103	13
San Francisco CA	115	10	120	5	143	35	98	87	99	17
San Jose CA	119	4	121	4	143	35	97	101	111	7
San Luis Obispo CA	90	151	93	239	143	35	98	84	61	250
Santa Ana CA	102	34	101	114	130	64	99	69	92	33
Santa Barbara CA	101	42	100	128	143	35	99	75	84	54
Santa Cruz CA	97	64	97	201	143	35	99	73	79	71
Santa Rosa CA	99	56	100	132	143	35	99	68	77	89
Seattle WA	102	36	104	71	106	134	85	213	98	18
Spokane WA	82	291	91	274	90	248	85	214	59	270
Stockton CA	98	60	106	47	143	35	98	83	65	206
Tacoma WA	88	180	97	186	106	134	85	212	63	223
Vallejo CA	94	103	95	219	143	35	98	81	70	152
Visalia CA	92	112	104	67	130	64	97	98	55	308
Wenatchee WA	73	379	86	336	35	384	84	223	58	277
Yakima WA	84	260	99	152	79	330	83	232	54	322
Yuba City CA	97	70	107	35	143	35	96	105	60	260

Source: Moody's Analytics

Appendix B

U.S. Metro Area Cost of Living Index – 2013 Update

BY JACK KITCHEN

Living costs help explain a particular area's quality of life, relocation potential, and future economic vitality. While both Orlando and Fort Lauderdale are attractive and warm locales, for example, the cost of living in Orlando as measured by the Moody's Analytics Cost of Living Index is 10 points lower than it is in Fort Lauderdale.

Job growth plays a large role in determining an area's COLI, even though job growth is not a direct component of the index itself. Strong job growth attracts potential migrants through diverse employment opportunities and wages and drives up demand for the components of the cost of living such as demand for housing, more energy, scarcer food, and more crowded transportation. The COLI also helps explain current migration flows and resident retention. If costs are too high, people will be unable to move to an area, and existing residents are encouraged to relocate. Low costs attract migrants, but in many cases, they are an indictment of a regional economy's growth prospects. Some of the fastest growing metro areas in the nation are those with COLIs near the national average. The top five metro areas in job growth from 2008 to 2013—Midland TX, Cleveland TN, Odessa TX, The Villages FL, and Bismarck ND—have an average COLI that is just below the national average. Exposure to the benefits of the oil industry during this period certainly helps, but on the whole, the top 20 metro areas in terms of job growth have an average cost only 0.3 point above the national average. Conversely, the 20 worst-performing metro areas in that time frame have average costs almost 10 points lower than average. An area's COLI represents a delicate balance between migration patterns and economic performance.

This article presents the 2013 update of the Moody's Analytics metro area COLI, which features new Census Bureau metro area definitions. The article begins with a description of the methodology. It then uses the latest results to shed light on some of the broad themes in regional economics in recent years and to look forward to provide context for the metropolitan area forecasts.

Methodology

The COLI is a composite index of five components of living costs in a metro area, indexed to the national figure. The weight of each component is metro-area specific. For example, energy accounts for 8% of the total in Oklahoma City, yet only 4% in Ithaca NY. Housing costs in Hilton Head SC represent 28% of total costs, while only 12% in Mansfield OH.

For each component, annual expenditures are determined and then indexed to their respective national benchmark. The results are summed and indexed to the annual national expenditure average. The COLI does not use a moving average to reduce volatility, as unadjusted data give an unbiased look at costs for a metro area in a snapshot of time. It also helps with comparisons of a metro area over time, and hones in on factors that drive a metro area's position in the rankings. For example, New Orleans' COLI was 3 points lower than the nation's from 1999 to 2005. Then Hurricane Katrina hit at the end of 2005, causing the COLI to spike to 4 points higher than the nation's in 2006. Since then, New Orleans' COLI has been 5 points higher than it was from 1999 to 2005, showing how one event can drastically change a metro area's cost makeup.

Expenditures data come from the Bureau of Labor Statistics' annual consumer expenditure survey. Retail costs make up the largest part of the COLI. This category is broad, as food, apparel, entertainment and household furniture are all included. Costs are largely static each year and are equal to the national expenditures for these items adjusted for the difference between retail wages and salaries for employees in the metro area and the nation. If salaries per employee in the metro area are falling more quickly than they are nationally, producers can scale back price increases or hold prices steady for greater profit margins to account for lower wage costs. Conversely, producers will pass labor price increases onward to consumers when wages grow more quickly, thereby increasing the retail costs in an area. Retail's share of total costs ranges from a low of 19% in Honolulu to a high of 33% in Rochester NY.

Housing costs

Housing is the next largest component of household spending. Across all metro areas, housing costs amount to an average of 19.2% of total living costs, with San Rafael CA the highest at 50% of total costs, and Detroit the lowest at 9%. Given the large demographic implications for an area's housing market, this component has the most yearly variation for an area. Mortgage payments and rental expenditures both flow into the housing cost estimate. Moody's Analytics uses house price data from the National Association of Realtors to base each metro area's monthly mortgage payments, as the data represent actual prices paid. The house price data are subject to a five-year average to counteract particularly active home sales years, or build up particularly poor years such as those in the aftermath of the housing bust. The base house value is extended using price growth figures from the Federal Housing Finance Authority's repeat-sales house price index. The data are not subject to bias like the NAR data. Yearly homeowner expenditures are calculated assuming a 30-year mortgage with an 80% loan-to-value ratio.

Monthly rental payments from the decennial census are used to construct the rental costs component of housing. The rental payments are extended along with the growth in the FHFA house price index. New York receives its own rental estimation, using the Census Bureau's New York City housing and vacancy survey. The census data fail to fully encapsulate the entire New York rental market, so the survey is used. Homeownership rate estimates for metro areas are used to split the rental/ownership costs. The average is then compared with the nation's to construct the housing component.

Energy costs

The third component is household utility costs, which cover electricity expenditures to heating costs. Data from the Department of Energy's Energy Information Administration are used to calculate demand for a particular type of energy and the price of that fuel. This removes bias where some areas have much easier access to a type of energy or have a much different demand curve for heating or cooling during different times of the year.

State-level prices are used as a proxy for their respective metro area's heating oil and natural gas prices. The main variation in prices comes from differences in state taxes on energy. Electricity data are much more granular. The EIA publishes company-specific electricity data. From the list of electricity companies in the state, the company with the 'best fit' for a metro area, usually the most customers served with respect to geographic location, is designated as the metro area's primary energy provider. This determines the cost of electricity, by using the primary energy provider's average kilowatt hour price. This approach explains why areas may have drastic changes in their energy costs from year to year. Companies can be acquired, or a competitor can be a better fit for the metro area. Sometimes companies are locked into contracts for providing energy at a higher price. In Chicago, the energy component dropped almost 15 points from 2012 to 2013, as Commonwealth Edison, the primary provider, had contracts expire in 2013 that enabled greater competition and lower prices relative to 2012. Price data from the primary cooperative or publicly owned utility are used for the metro areas that do not have a privately owned energy representative. In 2013, household utility expenditures on average accounted for 8% of total living costs.

Auto insurance costs

Automobile insurance costs are a smaller fraction of the COLI, averaging 6% of total costs across the metro areas. Data come from the National Association of Insurance Commissioners, which uses an estimated state-based policy cost. The state estimate covers all metro areas in the state, and while this fails to capture the difference between populous cities and smaller areas, it is the most detailed data available. In areas where public transportation plays a greater role (New York and Washington DC), it is a substitute for private transportation costs.

Transportation costs

Transportation costs are the smallest component of the COLI and show the smallest variation year to year. Transportation costs are a function of metro area gasoline consumption, commuting distance, average time commuting, and gasoline prices. Gas data come from the Oil Price Information Service. Gas prices are multiplied by average number of gallons consumed per household, which comes from an estimate of total miles driven and average vehicle efficiency in each census division. Commuting times come from the decennial census.

2013 update and redefinitions

The 2013 COLI update introduces the latest year of data and a re-estimation of all metro areas based on the 2010 Census. On net, the re-definitions added 17 areas. Some areas such as Gettysburg PA and Sebring FL are new additions, while some were removed such as Palm Coast FL and Poughkeepsie NY. These changes are population-based and some metro area component counties were changed, meaning COLI comparisons between old definitions and new ones are now like comparing apples and oranges. This article will use the new COLI estimates when comparing previous years.

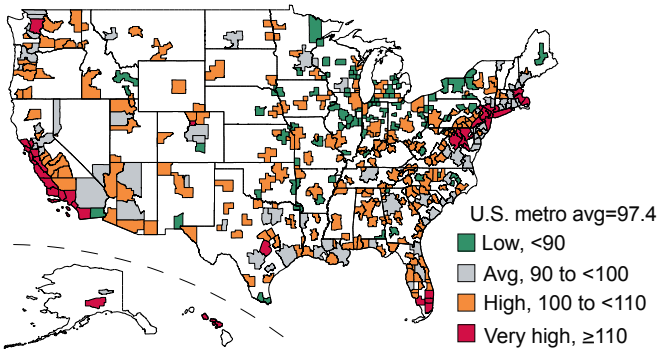
The main findings in the 2013 update are the increased pace of hiring in many labor markets that drives up costs because housing supply does not keep up with demand, the more noticeable effect of migration patterns on housing costs, the separation of the top quintile of metro areas from the rest of the pack, the increase in energy investment and how it affected the most highly exposed areas to energy-producing industries, and how regions are starting to revert to their prerecession trends.

Faster job growth

As the U.S. business cycle has matured, companies have grown less cautious in hiring and investing. Recent data indicate that the lingering effects of the recession are abating and that the economy is trending in the right direction. Job switching and household migration has become much more likely than it was during the recession, increasing the chance of larger metro areas drawing away workers from smaller lower-cost metro areas. This dynamic is a change from

Chart 1: Costs Lowest in the Midwest

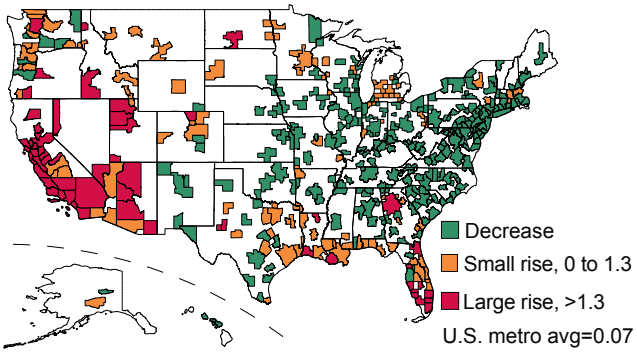
Cost of living index by metro area, 2013, U.S.=100



Source: Moody's Analytics

Chart 2: Costs on the Coast Continue to Climb

Change in cost of living index, change 2012 to 2013



Source: Moody's Analytics

as recent as two years ago, but economic growth has been far from uniform. The West and South entered expansion much earlier than the Northeast and the Midwest. For example, Houston, Austin TX, Denver, and Salt Lake City all saw their populations expand nearly four times faster than the national average in 2013. Job growth in the Northeast was mainly focused in low-wage consumer services, while poor global growth hampered the Midwest's outsize factory sector. The Northeast's shallower recession meant it had fewer jobs to make up than elsewhere, as total employment in the Northeast fell only 3.5% overall, half the decline seen in the West. This discrepancy is also reflected in each region's living costs, as house prices have grown much faster in the West, causing relative living costs to rise faster than in the Northeast.

At the opposite end of the national recovery are the lowest costing quintile of metro areas. These areas are predominantly in the Midwest and have high concentrations of government and manufacturing employment, places like Lawton OK with Fort Sill, Idaho Falls with the Idaho National Laboratory, Dalton GA with its extremely low industrial diversity and large carpet manufacturing industry, and Peoria IL with Caterpillar (see Chart 1). Danville, Carbondale and Decatur—all located in Illinois—round out the bottom of the rankings, with average living costs 20 points lower than the nation. Average costs for the bottom three fell 1 point from last year but are 0.8 point lower from 2003.

Las Vegas is an example of the West's faster economic recovery that is resulting in a rise in living costs. From 2011 to 2013, Las Vegas jumped 51 spots in COLI rankings, a good indicator for the broader rebound in consumer spending and confidence in the national recovery. Las Vegas was hit extremely hard during the recession and saw its COLI drop from a 2007 peak around 117 to a low of 98. Faster hiring is also causing the gap between the most expensive area and the nation to widen now that households are on firmer footing. In 2011 under the old metro area definitions, top-ranked Honolulu was 50 points above the national average, and in 2012 San Jose CA was 52 points above. In 2013, based on the new definitions, San Rafael's COLI is 71 points greater than the nation's.[1] As a regional comparison, El Centro CA's 2013 COLI was half that of San Rafael's. The new definitions may skew the top ranking somewhat as San Rafael was part of the old San Francisco definition, but San Jose's COLI still jumped 10 points from 2012 to 2013 as the tech boom drives up costs in Silicon Valley.

Migration

Migration patterns have also started to change compared with five years ago as consumers are further removed from the recession. Metro areas with populations larger than 1 million as of 2013 saw the highest rate of net in-migration in 2013 since 1999. As for the bottom 50% of metro areas ranked by population, their net migration has been negative every year since 2005. All else being equal, this trend would push prices—mostly house prices—up in the most populous areas and make the less dense areas less cost-intensive. Metro areas with populations of more than 1 million have seen their average COLI increase only from 106.7 to 107.7 from 2009 to 2013, however (see Chart 2). The bottom half of metro areas have seen their average COLI increase from 92.9 to 93.6 in that timeframe as well.

Poor demographics are weighing on most of the areas in the bottom quintile. Whereas the COLIs within the top quintile of metro areas vary widely from some of the highest to some among the lowest, the difference between the bottom quintile's highest and lowest ranking metro areas is only 11 points. Average costs for the bottom quintile in 2013 dropped 0.4 point from 2012. There were only four metro areas from the West in the bottom quintile: El Centro CA, Pocatello ID, Idaho Falls ID, and Pueblo CO, lowest among all regions.

In the middle quintiles, the average COLI is 5 points below the nation's and is about the same as it was in 2011 and 2012. Compared with 2003, the average COLI is 1.7 points higher. The interquartile range—the difference between the first and third quartiles—has widened the past two years, representing how the top-tier metro areas are distancing themselves from the second tier metro areas with faster economic growth.

1 San Rafael is a metro division consisting of Marin County and is a component of the San Francisco metropolitan area. Under the old definition, Marin County was included in the San Francisco metro division along with the counties of San Francisco and San Mateo.

Greater business confidence in the upper middle-tier metro areas is driving up living costs relative to slower growing areas at the bottom.

Dominance at the top

Areas with the highest housing costs top the list of highest overall living costs. Those along the coast of California and in Florida saw their housing costs expand much faster than elsewhere in 2013 (see Chart 3). The San Rafael CA metro division took over the top spot in the new definitions and has the highest COLI over the course of the index's history.

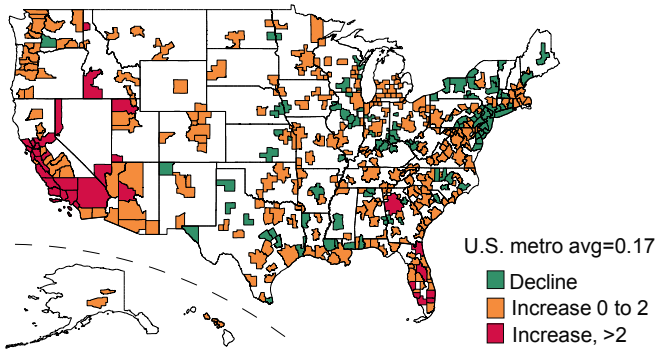
The rest of the top 10 is dominated by California. San Jose, San Francisco, Anaheim, Oakland, Santa Maria-Santa Barbara, Santa Cruz, and Oxnard are all in the top 10 and living costs are all at least 30 points higher than the nation. The only two metro areas in the top 10 not in California are Honolulu and the new Hawaiian metro area Kahului-Wailuku-Lahaina. The next five metro areas are mostly I-95 Northeast corridor metro areas: Bridgeport CT, Silver Spring MD, Newark NJ and Nassau-Suffolk NY. Of the top 20, 12 are in California, two are in Hawaii, five stretch from Washington DC to New York, and the last is Seattle.

Housing costs barely increased as a share of total costs from 2012 to 2013, but were a major reason why the top quintile continues to pull away from the other four. Overall average housing costs increased from 19% to 19.2% for the year. In the top quintile, the share of housing costs increased 0.7 point, the middle was unchanged, and the bottom quintile actually decreased marginally. Many of the gains were seen in cities popular among younger demographics.

Much like the top 20, the top quintile of the 401 metro areas and divisions are made up of areas in California, the Northeast Corridor, coastal havens, and popular tourist destinations. These areas at the top of the list are all near the top of other positive economic indicator lists. Educational attainment in these states for example, measured as a share of residents aged 25 or older with a bachelor's degree or higher, is higher than the national average, with Washington DC topping the list at 55% of the adult population. This in turn draws businesses to these areas, drives investment, and subsequently pushes up living costs. For the coastal havens and tourist destinations, available housing supply is limited and, combined with well above-average housing demand, creates the high-cost floor in these areas. For reference, the top quintile of metro areas by living costs extends from San Rafael at 71 points above the U.S. all the way down to Kingston NY at only 1.7 points above the U.S. The average COLI of the top quintile increased marginally in 2013, rising 1 point, reflecting the stronger trend of homebuying compared with previous years when the average COLI declined because of the expiration of financial housing incentives such as the first-time homebuyer credit. Notable metro areas falling out of the top quintile were Madison WI, Philadelphia, Virginia Beach and Wilmington DE.

Chart 3: Tight Supply Drives West Increase

Change in housing cost factor of COLI, 2012 to 2013



Source: Moody's Analytics

Energy's role

Energy played an outsize role contributing to faster acceleration of living costs in the South in 2013. The price of West Texas Intermediate crude oil per barrel was above $90 for the entire year and approached $110 in the middle of the year. Prices this high encouraged drillers of all sizes to enter the market. The strong production had the greatest effect in Texas, North Dakota and Oklahoma.

The top quintile in 2013 starts to show the effects that the energy boom has had on living costs in energy-producing metro areas. Although oil prices were not as high as they were in the summer of 2014 or as drastically low as they are currently in 2015, higher prices spurred investment and hiring. In 2012, Bismarck ND was outside the top quintile, with a COLI only 1 point above the U.S. In 2013 costs increased 1.3 points and its ranking jumped 17 spots. Baton Rouge LA and Midland TX also saw sizable ranking jumps from 2012 to 2013 and will likely see another once the 2014 update is completed next year.

Although the price of crude oil remained north of $90 for all of 2013, the average price was lower than previous years, helping to push down transportation costs. Transportation accounted for 5.1% of total living costs in 2013, compared with 5.3% in 2012. Unlike the increase in housing costs in the top quintile, transportation declines were uniform across all metro areas. The top quintile dropped 0.3 point from 6.8% to 6.5% of total costs, the middle fell from 5.4% to 5.2%, and the bottom dropped from 3.6% to 3.5%. These shares will likely decline further in 2014 and especially 2015, now that crude oil has remained below $50 per barrel for a considerable time.

Prerecession reversion

One of the largest differences from the recession until now is California's dominance. The state was hit much harder by the housing downturn than other parts of the country, but now that demand for housing is strong and there is an inability in the near term for supply to catch up with demand, the metro areas are retaking their positions at the top of the COLI. In 2005, the entire top 10 was comprised of California metro areas. In 2011, only five of the top 10 were from California. In 2012, six were from California, with Oxnard and Santa Maria-Santa Barbara ranked at 13 and 14, respectively. Bridgeport and Silver Spring filled out the top 10 in 2012 before getting nudged out in the

2013 update. High tech plays a role in the cost runup in these metro areas. Labor and housing shortages in Silicon Valley and surrounding areas continue to drive economic expansion, and strong demand for housing is pushing prices and rents higher.

The West emerged from the recession much faster than the other regions, and this helps to explain why western metro areas are dominating the top quintile of living costs. The range of job growth rates across the four regions was within 1 percentage point in 2011. By mid-2013, the West was growing more than double the rates seen in the Northeast and Midwest, with the South roughly a percentage point slower than the West. This trend continued into 2014 and 2015, with the West and South firmly out in front while the Northeast and Midwest stayed mired in the same growth band since 2011. The West likely experienced significant increases in the COLI again in 2014.

The South has been the region with the most stable costs since 2000, with its range of average living costs only 2.5 points from the highest-cost year to the lowest, compared with the West's range of 6.6 points. The steady influx of new residents—the South has the highest level of net in-migration of all regions by a considerable margin—has helped keep housing demand and consumer services on solid footing, all the while keeping costs on a steady upward trend rather than the larger swings seen elsewhere. However, the South is home to many of the energy-producing metro areas that saw explosive growth in 2014, yet are underperforming and at risk of recession now that oil prices are so low. Furthermore, the South is also home to some of the worst performing metro areas such as those in Alabama and Mississippi. This balance of top performers, volatile boom/bust areas, and areas with underwhelming prospects will ensure that the overall trend of slow increases in living costs stays intact in 2014 and 2015.

The COLI decreased the most in the Northeast, putting the average cost for the region almost perfectly in line with the national average. Job growth in 2012 and 2013 was the weakest among all regions. This relieved much of the pricing pressures seen in the direct aftermath of the recession, unlike the West where the opposite story is the case. The West was the only region to see an increase from a year ago in the average cost of living. The Midwest's average living costs also fell relative to the previous year, and the Midwest is also the only region to have a lower relative COLI currently than it did in 2000. The deterioration of manufacturing limits job prospects and fuels out-migration from some Midwest areas where industrial structure is not shifting. The bottom eight metro areas by COLI are all in the Midwest.

Costs of living will continue to be fueled by stronger population growth, and thus stronger housing demand, in areas with better job prospects and more attractive qualitative living traits, where the slow and complex process of residential construction permit approval can limit the ability of supply to meet current demand. California and Hawaii will continue to dominate the top 10 most expensive metro areas in the near term. Job growth will remain one of the largest determinants of an area's COLI. Areas with greater employment opportunities will always have demand for housing, greater need for energy, and longer travel times and by extension transportation costs. These areas will see overall average living costs trend steadily higher over the forecast horizon.

Table 1: 2013 Cost of Living Index

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
New England							
Bangor ME	96.6	165	91.1	270	89.6	319	-7.0
Barnstable Town MA	118.8	29	118.8	23	115.3	27	-3.5
Boston	115.8	34	118.2	24	118.3	25	2.5
Bridgeport CT	132.8	15	136.3	7	129.7	11	-3.1
Burlington VT	103.0	98	109.7	38	109.5	39	6.5
Cambridge MA	118.1	30	119.5	22	119.3	24	1.2
Hartford CT	106.8	67	111.4	33	105.9	56	-1.0
Lewiston ME	97.9	141	92.0	252	90.6	297	-7.4
Manchester NH	109.0	58	109.4	41	108.7	42	-0.3
New Haven CT	107.3	63	112.5	31	107.3	48	0.0
Norwich CT	105.9	72	107.4	49	100.6	95	-5.3
Pittsfield MA	97.0	158	99.2	117	96.8	161	-0.3
Portland ME	107.1	65	103.3	72	101.9	78	-5.3
Providence RI	102.3	105	104.0	68	102.2	76	-0.1
Rockingham County NH	109.1	56	109.3	43	109.0	40	-0.1
Springfield MA	97.6	153	99.4	115	98.4	126	0.8
Worcester MA	102.6	103	101.7	89	101.2	88	-1.4
Middle Atlantic							
Albany NY	92.2	220	101.6	90	99.5	114	7.3
Allentown PA	103.7	92	105.0	61	97.9	136	-5.7
Altoona PA	82.5	388	87.1	362	88.2	347	5.7
Atlantic City NJ	111.9	43	110.6	35	106.9	53	-5.0
Binghamton NY	81.4	395	87.8	342	87.1	367	5.7
Bloomsburg PA	87.2	321	91.9	256	92.5	250	5.4
Buffalo	80.3	399	89.9	305	89.5	321	9.2
Camden NJ	102.2	107	109.5	39	107.1	50	4.9
Chambersburg PA	89.3	272	93.6	219	93.2	241	3.9
Dutchess-Putnam NY	110.4	48	109.4	42	104.9	61	-5.5
East Stroudsburg PA	96.0	170	101.2	95	100.2	104	4.3
Elmira NY	78.0	401	86.0	374	86.1	379	8.1
Erie PA	81.9	391	87.7	348	88.4	344	6.5
Gettysburg PA	93.4	202	98.7	122	97.4	147	4.0
Glens Falls NY	87.7	312	94.0	206	93.5	235	5.8
Harrisburg PA	92.3	218	94.9	181	93.3	240	1.0
Ithaca NY	86.5	334	94.4	196	95.1	197	8.6
Johnstown PA	80.7	398	85.0	387	86.1	378	5.4
Kingston NY	105.2	76	105.0	62	101.7	80	-3.5
Lancaster PA	95.2	182	98.0	130	95.8	180	0.6
Lebanon PA	90.8	242	93.7	216	92.0	262	1.3
Montgomery-Bucks-Chester PA	111.3	46	116.4	27	112.5	29	1.2
Nassau NY	127.8	19	130.5	11	126.4	15	-1.5
New York	117.9	32	124.8	15	122.0	21	4.0
Newark NJ	127.3	20	131.4	10	126.6	14	-0.7
Ocean City NJ	110.0	50	111.7	32	108.1	45	-1.9
Philadelphia	98.1	139	102.0	83	100.6	97	2.5
Pittsburgh	87.8	308	93.7	214	94.1	221	6.3
Reading PA	96.4	167	98.2	129	96.6	167	0.2
Rochester NY	82.6	387	89.5	312	89.8	315	7.3
Scranton PA	88.6	290	91.1	269	89.7	317	1.2
State College PA	90.3	255	96.0	162	95.9	177	5.6
Syracuse NY	82.7	385	91.5	261	90.0	312	7.3
Trenton NJ	109.5	54	114.0	28	111.3	30	1.8

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
Utica NY	82.4	389	91.6	260	90.8	292	8.4
Vineland NJ	98.7	132	99.7	110	97.0	155	-1.7
Watertown NY	84.5	366	90.1	299	89.3	326	4.8
Williamsport PA	86.0	341	89.0	324	89.4	323	3.4
York PA	94.6	191	95.6	174	92.8	246	-1.7
East North Central							
Akron OH	88.9	279	89.4	314	90.1	309	1.2
Ann Arbor MI	92.9	206	96.4	158	98.4	128	5.5
Appleton WI	85.4	356	89.3	317	89.4	325	4.0
Battle Creek MI	85.1	360	86.0	372	86.7	372	1.7
Bay City MI	84.6	364	85.9	375	85.9	382	1.3
Bloomington IL	89.3	270	90.8	286	88.6	337	-0.7
Bloomington IN	85.6	351	90.7	289	91.6	279	6.0
Canton OH	85.4	355	85.6	381	88.6	338	3.2
Carbondale IL	82.8	384	82.6	400	81.7	400	-1.1
Champaign IL	87.2	320	89.7	308	87.9	352	0.7
Chicago	104.7	82	101.1	96	98.1	134	-6.6
Cincinnati	89.4	267	93.2	227	91.8	268	2.4
Cleveland	88.8	284	91.0	276	90.3	305	1.4
Columbus IN	84.1	370	89.3	319	92.0	262	7.9
Columbus OH	90.9	239	93.7	215	94.8	206	3.9
Danville IL	80.1	400	79.2	401	78.8	401	-1.3
Davenport IL	83.2	381	85.7	379	85.4	388	2.2
Dayton OH	85.8	347	88.3	335	88.2	346	2.5
Decatur IL	83.0	382	83.7	392	81.9	399	-1.1
Detroit	85.8	346	84.1	389	86.3	376	0.5
Eau Claire WI	88.0	304	87.7	349	89.1	331	1.1
Elgin IL	103.1	95	98.8	120	95.8	181	-7.3
Elkhart IN	88.3	298	89.5	313	89.6	318	1.3
Evansville IN	85.3	358	87.8	341	91.0	285	5.7
Flint MI	86.1	340	85.8	377	86.7	371	0.7
Fond du Lac WI	85.2	359	87.8	343	87.3	360	2.1
Fort Wayne IN	84.2	368	86.4	366	87.2	362	2.9
Gary IN	91.7	228	94.7	184	94.3	215	2.7
Grand Rapids MI	90.8	243	91.6	258	94.5	211	3.7
Green Bay WI	86.8	332	90.8	287	90.3	304	3.5
Indianapolis	88.3	297	91.8	257	92.4	255	4.1
Jackson MI	86.2	338	87.7	349	88.0	350	1.8
Janesville WI	88.6	291	90.4	292	87.3	361	-1.3
Kalamazoo MI	88.9	280	90.2	296	91.0	284	2.1
Kankakee IL	87.2	323	88.3	336	85.9	385	-1.3
Kokomo IN	81.1	396	82.9	397	83.8	395	2.8
La Crosse WI	87.5	316	87.0	363	87.8	353	0.3
Lafayette IN	83.5	379	87.5	355	88.5	341	5.0
Lake County IL	114.4	40	106.7	53	104.7	62	-9.7
Lansing MI	88.2	300	87.7	346	88.7	334	0.6
Lima OH	81.5	394	84.1	390	86.7	373	5.2
Madison WI	96.8	161	102.9	76	101.4	81	4.7
Mansfield OH	82.0	390	83.2	394	83.6	397	1.6
Michigan City IN	84.6	365	87.1	360	88.7	336	4.1
Midland MI	88.0	305	85.7	378	85.0	390	-3.0
Milwaukee	95.8	174	100.2	104	98.3	130	2.5
Monroe MI	88.2	299	90.0	302	90.8	291	2.6

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
Muncie IN	81.5	393	82.6	399	83.8	396	2.2
Muskegon MI	84.7	362	85.4	384	86.0	381	1.3
Niles MI	87.0	326	87.6	354	87.8	354	0.8
Oshkosh WI	85.6	349	87.9	340	87.8	354	2.2
Peoria IL	86.4	335	87.1	361	85.0	390	-1.4
Racine WI	89.1	274	90.9	283	90.0	311	0.9
Rockford IL	86.2	339	89.0	324	85.9	384	-0.3
Saginaw MI	82.6	386	83.1	396	83.3	398	0.6
Sheboygan WI	87.4	318	89.1	323	88.0	349	0.6
South Bend IN	85.5	352	85.9	375	87.1	366	1.6
Springfield IL	85.4	354	87.7	347	85.4	389	-0.1
Springfield OH	84.5	367	85.2	385	85.4	387	0.9
Terre Haute IN	81.7	392	83.2	395	85.0	392	3.3
Toledo OH	84.7	361	86.3	367	86.1	380	1.4
Warren MI	93.3	203	89.3	316	91.9	266	-1.3
Wausau WI	84.6	363	88.4	334	87.9	351	3.3
Weirton WV	81.0	397	82.8	398	85.9	383	4.9
Youngstown OH	83.9	374	83.9	391	84.3	394	0.4
West North Central							
Ames IA	87.3	319	92.0	253	91.1	282	3.8
Bismarck ND	90.4	251	94.7	186	102.6	72	12.2
Cape Girardeau MO	87.6	313	88.9	326	90.5	299	2.9
Cedar Rapids IA	90.3	254	96.5	156	95.4	193	5.0
Columbia MO	89.1	276	92.3	248	94.1	222	5.0
Des Moines IA	91.2	235	92.4	247	93.3	237	2.2
Dubuque IA	84.0	373	89.1	322	90.2	306	6.2
Duluth MN	85.8	345	87.6	351	87.6	357	1.8
Fargo ND	94.8	188	94.5	192	99.4	116	4.5
Grand Forks ND	91.8	226	90.8	285	96.3	171	4.5
Grand Island NE	86.9	328	86.3	368	87.2	363	0.3
Iowa City IA	88.9	278	94.5	193	93.2	242	4.3
Jefferson City MO	87.0	325	88.0	339	89.9	313	2.9
Joplin MO	86.8	331	88.5	330	89.8	314	3.0
Kansas City MO	95.6	177	96.8	151	97.2	152	1.6
Lawrence KS	87.5	315	91.0	271	92.2	257	4.7
Lincoln NE	90.7	247	90.1	301	90.8	290	0.1
Manhattan KS	86.3	337	90.9	280	91.7	274	5.4
Mankato MN	88.8	288	87.3	357	88.5	342	-0.3
Minneapolis	103.1	96	99.0	119	100.6	99	-2.5
Omaha NE	88.5	293	93.3	226	93.9	226	5.4
Rapid City SD	88.8	286	92.0	253	94.8	205	6.0
Rochester MN	90.4	252	89.2	321	90.0	310	-0.3
Sioux City IA	83.7	378	88.2	337	86.3	375	2.7
Sioux Falls SD	94.9	186	95.3	178	97.6	143	2.7
Springfield MO	91.3	234	92.4	245	92.9	245	1.6
St. Cloud MN	91.4	233	90.0	302	90.6	295	-0.8
St. Joseph MO	85.5	352	87.5	356	87.8	356	2.2
St. Louis	92.7	210	94.1	204	94.6	208	1.9
Topeka KS	85.9	343	88.4	333	88.7	335	2.8
Waterloo IA	84.0	372	89.3	318	87.2	364	3.1
Wichita KS	86.4	335	90.9	282	91.0	287	4.6

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
South Atlantic							
Albany GA	87.8	307	88.9	327	89.3	327	1.5
Asheville NC	96.7	162	98.0	132	96.7	164	0.0
Athens GA	92.2	221	93.9	207	93.9	229	1.7
Atlanta	101.2	117	98.5	123	100.6	95	-0.6
Augusta GA	91.8	225	93.1	229	93.3	239	1.5
Baltimore	109.3	55	113.1	29	110.1	37	0.8
Beckley WV	86.9	330	86.8	365	89.2	329	2.4
Blacksburg VA	89.4	269	91.9	255	91.7	273	2.3
Brunswick GA	95.0	185	94.3	199	93.1	244	-1.9
Burlington NC	90.8	240	88.5	332	88.5	340	-2.3
California MD	111.8	44	111.3	34	110.7	35	-1.2
Cape Coral FL	110.1	49	93.8	213	99.6	113	-10.5
Charleston SC	88.1	301	91.0	275	91.6	277	3.6
Charleston WV	101.5	113	106.9	51	108.9	41	7.4
Charlotte NC	98.6	133	97.3	143	98.7	122	0.1
Charlottesville VA	100.7	120	104.9	63	104.0	66	3.3
Columbia SC	94.7	190	99.7	110	100.6	98	5.9
Columbus GA	89.9	261	91.3	265	91.7	271	1.8
Crestview FL	105.8	73	102.8	77	100.9	92	-4.9
Cumberland MD	83.8	376	88.1	338	86.9	370	3.0
Dalton GA	91.5	231	90.9	281	88.6	339	-3.0
Deltona FL	102.9	99	95.2	179	94.2	219	-8.7
Dover DE	102.8	101	105.6	58	100.5	102	-2.3
Durham NC	99.6	125	99.8	108	98.4	125	-1.2
Fayetteville NC	91.9	224	95.7	172	93.7	232	1.8
Florence SC	91.5	231	92.6	241	93.3	237	1.8
Fort Lauderdale FL	123.7	23	109.5	40	111.2	31	-12.5
Gainesville FL	105.1	77	102.5	79	98.8	121	-6.3
Gainesville GA	97.9	142	96.7	154	96.8	157	-1.1
Goldsboro NC	85.6	350	87.8	344	88.4	343	2.9
Greensboro NC	98.0	140	93.1	231	92.1	260	-5.9
Greenville NC	88.0	305	90.3	295	89.6	320	1.6
Greenville SC	97.9	145	96.0	165	96.2	174	-1.7
Hagerstown MD	96.9	160	96.0	164	94.1	222	-2.8
Harrisonburg VA	91.7	227	96.9	149	95.8	182	4.1
Hickory NC	92.0	222	89.5	310	89.4	322	-2.5
Hilton Head SC	115.5	35	110.1	37	109.7	38	-5.8
Hinesville GA	89.7	262	90.4	293	92.2	258	2.4
Homosassa Springs FL	105.4	75	97.1	145	96.8	160	-8.6
Huntington WV	85.9	342	88.8	328	90.1	308	4.2
Jacksonville FL	104.4	85	100.3	103	100.7	94	-3.7
Jacksonville NC	89.7	264	92.4	244	91.7	275	2.0
Lakeland FL	104.8	81	98.3	125	96.2	175	-8.7
Lynchburg VA	90.2	256	92.4	246	92.5	251	2.3
Macon GA	89.1	275	90.1	300	90.4	302	1.3
Miami	121.3	26	108.0	48	110.2	36	-11.1
Morgantown WV	87.8	309	92.1	250	94.3	218	6.5
Myrtle Beach SC	104.6	83	100.6	101	100.7	93	-3.8
Naples FL	133.2	13	112.8	30	114.9	28	-18.4
New Bern NC	92.4	216	93.1	228	91.4	280	-1.0
North Port FL	114.7	38	102.2	81	103.5	68	-11.2
Ocala FL	102.3	106	94.2	203	93.1	243	-9.1
Orlando FL	113.8	41	102.0	84	101.2	86	-12.6

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
Palm Bay FL	101.4	115	93.9	209	94.9	202	-6.5
Panama City FL	101.5	112	99.7	112	98.3	131	-3.3
Parkersburg WV	82.8	383	85.5	383	86.9	369	4.1
Pensacola FL	97.6	152	99.0	118	97.7	140	0.1
Port St. Lucie FL	108.4	59	96.9	148	97.1	153	-11.3
Punta Gorda FL	102.6	102	94.2	202	95.0	200	-7.6
Raleigh NC	99.3	127	102.2	82	100.6	99	1.3
Richmond VA	97.6	151	103.1	75	100.4	103	2.7
Roanoke VA	88.4	295	93.9	210	93.5	236	5.1
Rocky Mount NC	85.3	357	87.0	364	86.3	377	1.0
Rome GA	88.9	281	89.7	308	90.5	300	1.6
Salisbury MD	103.9	90	106.3	54	103.1	71	-0.8
Savannah GA	96.7	163	97.3	142	97.5	144	0.8
Sebastian FL	107.1	66	98.3	127	96.8	159	-10.3
Sebring FL	95.7	175	87.8	344	91.0	286	-4.8
Silver Spring MD	130.3	18	128.4	13	129.6	12	-0.6
Spartanburg SC	95.5	179	92.0	251	92.7	248	-2.9
Staunton VA	90.7	245	92.8	233	92.5	253	1.7
Sumter SC	89.0	277	89.4	315	90.4	303	1.4
Tallahassee FL	102.1	108	101.1	96	99.1	119	-3.1
Tampa FL	107.5	62	101.2	94	99.9	110	-7.7
The Villages FL	108.0	60	94.8	183	97.0	156	-11.0
Valdosta GA	89.7	263	90.2	298	90.7	294	1.0
Virginia Beach VA	98.5	137	103.7	70	100.1	105	1.6
Warner Robins GA	89.3	271	91.3	266	92.0	264	2.6
Washington DC	122.3	25	122.4	16	123.8	18	1.5
West Palm Beach FL	123.4	24	109.0	45	110.7	34	-12.7
Wheeling WV	83.9	375	83.7	393	86.4	374	2.6
Wilmington DE	107.7	61	110.4	36	106.7	54	-1.0
Wilmington NC	103.0	97	103.3	73	101.4	83	-1.6
Winchester VA	97.8	148	95.7	170	96.7	166	-1.2
Winston NC	95.7	176	93.4	225	92.8	247	-2.9
East South Central							
Anniston AL	87.2	321	90.6	290	91.0	287	3.8
Auburn AL	91.1	238	94.8	182	93.7	231	2.7
Birmingham AL	97.0	159	99.7	113	99.9	108	2.9
Bowling Green KY	87.8	310	91.6	259	95.0	199	7.3
Chattanooga TN	98.5	136	96.9	147	96.8	158	-1.7
Clarksville TN	88.6	292	91.2	267	92.7	248	4.1
Cleveland TN	90.0	259	91.3	264	91.7	272	1.8
Daphne AL	100.7	119	98.3	126	99.9	109	-0.8
Decatur AL	91.9	223	90.9	284	90.9	289	-1.1
Dothan AL	88.4	296	91.5	261	89.4	324	1.0
Elizabethtown KY	89.3	273	90.6	291	92.1	261	2.8
Florence AL	88.8	287	90.9	277	92.1	259	3.3
Gadsden AL	87.8	311	91.4	263	92.5	254	4.7
Gulfport MS	95.6	178	96.6	155	95.6	188	0.0
Hattiesburg MS	90.4	253	93.4	223	95.2	195	4.8
Huntsville AL	95.8	173	98.4	124	97.3	150	1.5
Jackson MS	93.8	193	95.6	173	97.3	151	3.5
Jackson TN	86.9	329	89.2	320	90.5	298	3.6
Johnson City TN	87.5	314	91.0	274	91.8	270	4.3
Kingsport TN	88.9	282	89.9	304	90.7	293	1.8

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
Knoxville TN	94.9	187	95.5	176	95.6	185	0.7
Lexington KY	90.8	244	94.7	186	94.5	210	3.8
Louisville KY	91.6	229	93.4	224	93.9	228	2.3
Memphis TN	93.7	197	95.8	167	94.3	217	0.6
Mobile AL	93.2	204	96.0	162	94.1	224	0.9
Montgomery AL	93.5	199	96.9	149	95.9	178	2.4
Morristown TN	88.0	303	89.5	311	90.2	307	2.1
Nashville	100.8	118	101.8	88	102.0	77	1.2
Owensboro KY	83.3	380	86.2	369	89.3	328	6.0
Tuscaloosa AL	90.1	257	94.1	204	94.9	201	4.8
West South Central							
Abilene TX	91.1	236	94.6	189	95.6	185	4.5
Alexandria LA	93.8	194	93.5	222	97.7	141	3.9
Amarillo TX	86.9	327	92.6	239	94.9	203	7.9
Austin TX	103.2	94	109.1	44	111.1	32	7.9
Baton Rouge LA	101.3	116	101.9	86	101.8	79	0.5
Beaumont TX	92.8	209	93.9	208	95.1	198	2.3
Brownsville TX	88.5	294	85.7	380	87.0	368	-1.4
College Station TX	90.8	241	94.4	196	96.2	173	5.4
Corpus Christi TX	95.8	172	100.7	99	99.6	112	3.8
Dallas	102.9	99	106.1	56	108.5	43	5.6
El Paso TX	95.3	180	97.6	136	97.0	154	1.7
Fayetteville AR	92.4	217	89.9	306	91.8	268	-0.6
Fort Smith AR	85.9	343	86.0	373	87.1	365	1.2
Fort Worth TX	98.6	134	100.7	100	102.2	75	3.6
Hammond LA	97.9	143	97.1	145	98.4	129	0.5
Hot Springs AR	89.4	268	90.3	294	91.9	267	2.5
Houma LA	96.4	168	96.5	157	98.2	132	1.8
Houston	105.0	78	105.3	60	107.0	52	2.0
Jonesboro AR	84.2	369	85.1	386	84.4	393	0.3
Killeen TX	92.5	214	96.0	166	96.8	161	4.3
Lafayette LA	97.1	157	97.2	144	100.9	91	3.8
Lake Charles LA	93.5	201	93.6	220	95.6	189	2.1
Laredo TX	88.8	284	92.8	234	92.0	265	3.1
Lawton OK	85.7	348	87.6	352	89.2	330	3.5
Little Rock	92.8	207	95.7	171	96.4	169	3.6
Longview TX	89.5	266	94.4	198	96.0	176	6.5
Lubbock TX	90.7	246	93.9	211	95.4	192	4.7
McAllen TX	87.0	324	90.7	288	89.8	316	2.8
Midland TX	94.5	192	99.8	109	106.1	55	11.6
Monroe LA	95.1	184	93.6	218	95.5	190	0.4
New Orleans	97.7	150	103.9	69	103.4	69	5.8
Odessa TX	92.3	218	94.3	201	97.8	139	5.5
Oklahoma City	92.7	211	97.4	140	98.6	124	6.0
Pine Bluff AR	84.1	370	85.6	382	87.4	358	3.3
San Angelo TX	92.5	215	93.8	212	95.8	182	3.3
San Antonio TX	100.6	121	100.4	102	102.3	73	1.7
Sherman TX	90.6	249	92.8	235	94.3	216	3.8
Shreveport LA	98.1	138	99.3	116	100.9	90	2.8
Texarkana TX	89.6	265	87.1	359	89.0	332	-0.6
Tulsa OK	92.5	213	95.0	180	95.6	185	3.1
Tyler TX	95.2	183	98.0	132	99.4	115	4.2
Victoria TX	93.7	196	101.9	87	104.6	63	10.9

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
Waco TX	89.9	260	92.7	236	93.9	227	4.0
Wichita Falls TX	88.7	289	90.9	279	91.7	276	3.0
Mountain							
Albuquerque NM	98.7	131	98.2	128	97.3	149	-1.3
Billings MT	91.1	236	92.8	232	96.2	172	5.1
Boise City ID	98.5	135	95.3	177	98.2	133	-0.3
Boulder CO	112.9	42	117.0	26	119.6	23	6.6
Carson City NV	114.9	36	100.9	98	98.9	120	-16.0
Casper WY	97.4	154	93.7	217	97.8	138	0.4
Cheyenne WY	91.6	230	94.7	185	97.5	145	6.0
Coeur d'Alene ID	97.7	149	94.3	200	95.5	190	-2.2
Colorado Springs CO	99.1	128	100.2	105	100.5	101	1.4
Denver	103.9	89	105.5	59	107.8	46	3.9
Farmington NM	94.7	189	96.1	160	94.5	209	-0.2
Flagstaff AZ	102.1	109	101.3	92	101.3	84	-0.8
Fort Collins CO	95.3	181	94.6	191	96.5	168	1.3
Grand Junction CO	95.8	171	92.7	237	92.2	256	-3.6
Great Falls MT	86.7	333	87.3	358	91.1	283	4.3
Greeley CO	93.7	195	91.0	273	93.7	233	-0.1
Idaho Falls ID	88.1	302	87.6	353	89.0	332	0.9
Lake Havasu AZ	100.4	123	92.2	249	91.6	278	-8.8
Las Cruces NM	88.8	283	88.7	329	88.4	344	-0.5
Las Vegas	116.7	33	100.0	106	101.4	82	-15.3
Lewiston ID	90.0	258	92.6	242	94.1	220	4.1
Logan UT	90.6	250	88.5	331	90.5	301	-0.1
Missoula MT	96.1	169	97.5	139	100.0	106	3.9
Ogden UT	97.4	155	92.6	238	94.9	204	-2.5
Phoenix	106.3	69	101.3	93	104.6	64	-1.7
Pocatello ID	83.8	377	86.1	370	87.4	359	3.6
Prescott AZ	99.5	126	96.2	159	97.7	142	-1.8
Provo UT	98.7	130	92.5	243	95.9	178	-2.9
Pueblo CO	87.5	317	86.1	371	88.1	348	0.6
Reno NV	118.0	31	101.5	91	102.3	74	-15.7
Salt Lake City	105.7	74	103.3	71	105.8	59	0.1
Santa Fe NM	110.0	50	104.1	67	104.1	65	-5.9
Sierra Vista AZ	92.8	208	90.9	277	93.7	233	0.9
St. George UT	101.6	111	89.7	307	92.5	251	-9.0
Tucson AZ	106.1	71	97.6	137	97.3	148	-8.7
Yuma AZ	90.7	248	91.0	271	91.2	281	0.5
Pacific							
Albany OR	101.6	110	94.6	190	95.1	196	-6.5
Anaheim CA	144.4	5	142.1	5	146.2	5	1.8
Anchorage AK	114.7	37	108.9	46	110.9	33	-3.8
Bakersfield CA	104.0	87	95.7	168	99.7	111	-4.3
Bellingham WA	104.1	86	106.2	55	105.8	58	1.8
Bend OR	109.9	52	93.1	230	98.1	134	-11.8
Bremerton WA	104.4	84	104.3	66	103.2	70	-1.2
Chico CA	104.9	79	104.5	64	103.6	67	-1.4
Corvallis OR	101.4	114	97.7	135	101.1	89	-0.3
El Centro CA	92.6	212	84.7	388	85.9	385	-6.7
Eugene OR	99.1	128	99.9	107	98.4	126	-0.7
Fairbanks AK	132.9	14	106.0	57	107.4	47	-25.5

Table 1: 2013 Cost of Living Index (Cont.)

U.S.=100

	2007		2010		2013		2007-2013
	Index	Rank	Index	Rank	Index	Rank	Change in living cost
Fresno CA	103.6	93	97.3	141	97.8	137	-5.8
Grants Pass OR	103.8	91	95.5	175	97.4	146	-6.3
Hanford CA	100.3	124	96.8	152	94.8	206	-5.5
Kahului HI	136.0	11	133.3	9	133.5	9	-2.5
Kennewick WA	93.1	205	96.7	153	96.8	161	3.6
Longview WA	93.7	198	90.2	296	90.6	296	-3.1
Los Angeles	126.8	22	117.9	25	121.5	22	-5.3
Madera CA	109.7	53	98.7	121	98.7	123	-11.0
Medford OR	107.2	64	94.6	188	95.7	184	-11.5
Merced CA	102.5	104	91.1	268	94.4	214	-8.2
Modesto CA	109.0	57	95.7	169	99.1	117	-9.9
Mount Vernon WA	104.9	80	102.7	78	101.2	87	-3.6
Napa CA	138.5	10	120.3	20	128.4	13	-10.1
Oakland CA	148.0	4	139.4	6	142.6	6	-5.4
Olympia WA	100.4	122	102.4	80	100.0	107	-0.5
Oxnard CA	140.0	9	129.5	12	132.3	10	-7.7
Portland OR	106.4	68	107.2	50	107.2	49	0.8
Redding CA	104.0	88	99.5	114	99.1	118	-4.9
Riverside CA	114.5	39	102.0	85	107.0	51	-7.5
Sacramento CA	111.8	44	103.2	74	105.0	60	-6.8
Salem OR	97.9	143	97.6	138	95.3	194	-2.6
Salinas CA	135.8	12	108.8	47	116.1	26	-19.7
San Diego	130.5	17	122.3	17	125.0	16	-5.5
San Francisco	152.4	3	150.0	2	157.7	3	5.3
San Jose CA	156.1	2	147.5	3	159.6	2	3.5
San Luis Obispo CA	127.2	21	120.5	19	123.3	19	-3.9
San Rafael CA	172.7	1	167.6	1	170.5	1	-2.2
Santa Cruz CA	143.6	7	133.5	8	134.7	8	-8.8
Santa Maria CA	142.0	8	127.1	14	134.9	7	-7.2
Santa Rosa CA	130.9	16	120.2	21	123.9	17	-7.1
Seattle	120.4	27	121.5	18	123.1	20	2.8
Spokane WA	96.6	164	97.9	134	96.4	169	-0.2
Stockton CA	111.0	47	98.0	131	101.3	85	-9.7
Tacoma WA	106.3	70	106.8	52	105.9	57	-0.4
Urban Honolulu HI	143.6	6	146.0	4	146.7	4	3.1
Vallejo CA	119.7	28	104.5	65	108.4	44	-11.3
Visalia CA	97.8	146	93.6	220	94.5	213	-3.4
Walla Walla WA	93.5	200	96.1	161	96.7	165	3.2
Wenatchee WA	96.5	166	94.5	194	94.5	212	-2.0
Yakima WA	97.1	156	94.5	195	93.8	230	-3.3
Yuba City CA	97.8	147	92.6	239	94.0	225	-3.8

Source: Moody's Analytics

Appendix C

The Regional Impact of Quality of Life on Entrepreneurial Decisions

BY DAN WHITE AND DOUGLAS WYNNE

In the wake of the Great Recession, local policymakers are working harder than ever to differentiate their areas as friendly to small businesses and economic development. As part of these efforts, billions of public dollars are spent every year to attract companies, big and small, through the use of venture capital, tax incentives, public-private partnerships, workforce training, capital improvements, and many other tools. As economic development has become more competitive, policymakers are offering more and more to attract jobs and new opportunities for their constituencies. Though it is clear that these financial incentives are producing results in some areas, there are other environmental factors that policymakers can improve to attract more new businesses.

One of the areas most overlooked when comparing competing metro areas is a livability factor, or quality of life, that makes certain areas more attractive to individuals and thus businesses. One of the most often cited reasons for the location of a new business, especially a small business, is quality of life, yet it is one of the areas policymakers most often overlook in attracting entrepreneurs and the highly skilled people who most often work for them.[1, 2, 3] After all, in addition to the fact that an entrepreneur wants to start their business in a place where it can thrive, making economic and tax factors important, the person must also want to live there. This is especially true for high-tech and computer-related businesses that can increasingly be created and sustained virtually anywhere. Quality of life, though not always the first consideration in deciding where to start a business, can be the X factor that differentiates two competitive metro areas.

Objective subjectivity

The primary reason that quality of life is so often overlooked in this process is that it can be difficult to measure objectively. Quality of life is a subjective, intangible thing that can mean different things to different people. People have different priorities in terms of their quality of life, and they cannot be totally controlled for. In addition, things such as geography and weather are out of policymakers' control. For example, the mayor of Lincoln NE cannot simply move his city to the beach to attract more tech startups.

This study attempts to construct as objective a measure of quality of life as possible, based on concepts that are widely accepted as contributing to a higher standard of living. More important, it also attempts to include measures that can at least nominally be influenced by local policymakers and their decisions. It is important for the purpose of this study that quality of life be a dynamic measure, susceptible to changes in public policy. Based on this research, this study then attempts to go a step further by comparing the objective Quality of Life Index, or QOL, to business formation in U.S. metropolitan statistical areas. By comparing the measures, we can see how much entrepreneurial decisions may be influenced by, or at the very least correlated to, quality of life.

Constructing the index

To assemble an objective QOL, a variety of factors were compiled by metro area, ranging from life expectancy to the share of childhood poverty. Data limitations on some variables prevented the inclusion of a handful of metro areas and all metro divisions from being included in this study.[4] These factors were then tested econometrically using OLS regression techniques against new-business formation data from the Census Bureau's Longitudinal Business Database. Under the Census Bureau's criteria, new businesses encompass entrepreneurs starting entirely new entities as well as established businesses adding new locations or relocating from another metro area. To gauge not only the number of new businesses but also their success, only firms healthy enough to

1 McCann, Joseph. "Quality of Life Scores Highest for Florida Entrepreneurs." University of Florida (2000)

2 Pennings, Johannes M., "The Urban Quality of Life and Entrepreneurship." *Academy of Management Journal* 25.01 (1982) pp.63-71

3 "What Do the Best Entrepreneurs Want in a City?" Endeavor Insight, February 4, 2014

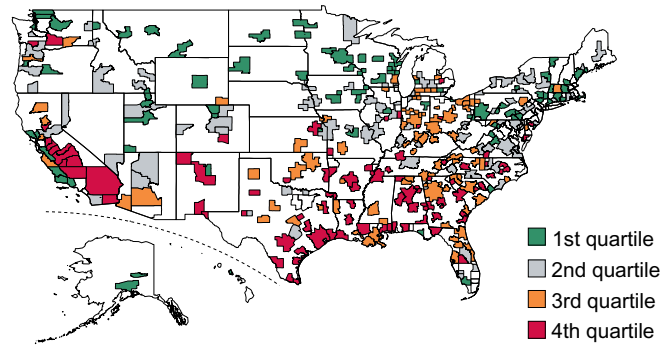
4 Data limitations in recreational facilities and new-business formations prohibited the use of metro divisions. Missing crime data also warranted the exclusion of Casper WY, Fayetteville AR, Mankato MN, Manhattan KS, Morgantown WV, North Port FL, Toledo OH and Tucson AZ.

Table 1: Individual Variable Regression Statistics

Variable	Coefficient	t-Statistic
Crime	-0.036171	-2.297326
Child Poverty	-1.061535	-6.412481
Recreation	0.824293	10.91481
Graduation	0.016088	6.323149
QOL Index	0.496454	9.620349

Chart 1: Regional Quality of Life

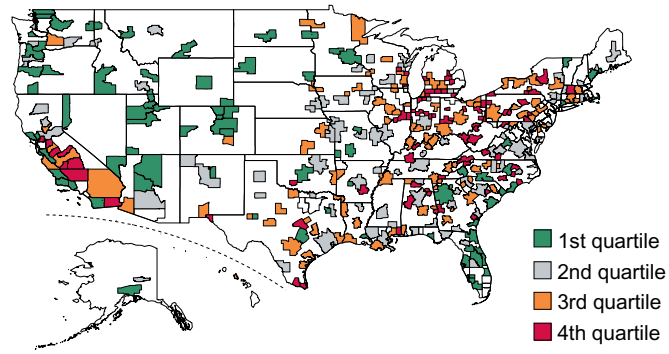
Quality of Life Index, 2011



Source: Moody's Analytics

Chart 2: Regional New Business Formation

New businesses lasting at least a yr, per capita, 2011, 10-yr MA



Sources: Census Bureau, Moody's Analytics

last a full year were included, while those entities two years or older were no longer considered new. Since the underlying QOL factors are structural and not as subject to large year-to-year fluctuations as new-business formations, the business data were taken as a 10-year moving average. Different moving average time periods were experimented with, with no material impact on the overall findings.

The most influential variables on new-business startups fall under four different categories, each generally synonymous with a high quality of living: public safety, public education, child welfare and recreation. Data from 2011 were used, as it was the most recent year for which full data were available. Specific measures include:

- Per capita crime rate
- High school or equivalent educational attainment rate
- Per capita access to recreational facilities
- Percentage of children living in poverty under the age of 5

Educational attainment and child poverty rates were each obtained directly from the Census Bureau's American Community Survey. However, per capita crime rates and recreational facilities required a bit of transformation to make them as uniform as possible across metro areas. The per capita crime rate was constructed using data from the FBI's Uniform Crime Reporting Program, and includes murder, robbery, aggravated assault and property crimes.[5] Per capita access to recreational facilities was calculated using data from the Census Bureau's County Business Patterns publication, and includes the number of businesses classified under NAICS code 72, arts, entertainment and recreation. As a result, it is possible that this measure excludes some small public parks or other similar recreational facilities, but it does account for larger parks and private recreational facilities with permanent employees. Each measure was then indexed to the U.S. average and weighted based on its statistical significance so that an index value of 100 would equal the U.S. average[6] (see Table 1).

Impacts on business formation

Not surprisingly, the results show a high quality of life across a large concentration of relatively established Northeast and upper Midwest and West metro areas. With one notable exception, each of the metro areas in the top 10 score better than average in each of the four categories. However, particularly low rates for both crime and child poverty are the most common attribute among metro areas with the highest QOLs. This indicates higher income levels, often accompanied by higher levels of business startups. The major exception in the top 10 is Ocean City NJ, which has an abnormally high concentration of recreational facilities relative to its population. Aside from its abundance of recreation, Ocean City scores only average marks for education and significantly below average scores in crime and child poverty rates, making it somewhat of an aberration in the overall results (see Table 2).

The 10 metro areas with the lowest QOL scores, by contrast, were across California's Central Valley and the South. Each performed generally poor across all four facets of the QOL, with no easily discernible pattern except that each is home to some of the highest levels of poverty in the country. In general, the South performed the worst of the four census regions, with only a handful of metro areas in the top quartile. Metro areas with secularly declining industries such as nondurable manufacturing and lacking a dynamic private service industry driver typically fared the worst within the region (see Charts 1 and 2).

It is important, however, not to jump to conclusions too quickly based solely on these measures. Correlation does not necessarily indi-

5 Because of discrepancies in the definition and reporting of rape across metro areas, it was excluded from the index.

6 Crime and graduation statistics were each weighted 20%, while recreation and child poverty, the more statistically significant variables, were each weighted at 30%.

Table 2: Highest and Lowest QOL and Component Scores by MSA, 2011, U.S.=100

Top 10					
MSA	Crime	Child Poverty	Graduation	Recreation	QOL
La Crosse WI-MN	71.1	30.1	107.6	137.9	190.8
Barnstable Town MA	93.0	48.9	110.1	281.1	189.3
Missoula MT	81.9	48.9	109.6	270.3	188.8
Glens Falls NY	51.9	86.5	100.9	302.8	184.3
Kingston NY	59.2	56.4	100.9	254.1	183.4
Ocean City NJ	144.6	105.3	104.4	394.7	181.6
Charlottesville VA	62.4	37.6	102.0	137.9	173.6
San Luis Obispo-Paso Robles CA	72.6	37.6	102.2	132.5	167.5
Bridgeport-Stamford-Norwalk CT	64.1	45.1	102.0	162.2	166.7
Rochester MN	54.8	45.1	108.9	137.9	166.1
Bottom 10					
MSA	Crime	Child Poverty	Graduation	Recreation	QOL
Merced CA	118.0	131.6	79.7	37.8	67.0
Sumter SC	117.8	154.1	95.0	37.8	66.8
Albany GA	140.8	180.4	89.7	59.5	66.6
Visalia-Porterville CA	111.9	135.3	77.8	35.1	66.1
Fresno CA	140.5	157.9	85.7	48.7	65.0
El Centro CA	101.1	127.8	73.3	18.9	63.6
Laredo TX	137.0	180.4	74.0	48.7	60.6
Pine Bluff AR	164.7	150.4	96.6	29.7	60.3
McAllen-Edinburg-Mission TX	123.0	165.4	71.8	29.7	57.7
Brownsville-Harlingen TX	127.7	218.0	73.2	37.8	55.4

cate causation. Therefore, it is possible, and likely probable, that a relatively low QOL is at least partly the result of a dearth of new-business activity, and not necessarily the total cause of it.

The results of the comparison between QOL and new-business formations show significant, but not perfect correlation. Based solely upon the econometric results of the analysis, QOL factors appear to be able to explain less than a third of new-business formations by metro area. Though these results may be encouraging, there are countless other factors that go into where a new business will be started. Other structural, environmental and demographic features can tip the balance, and therefore distort the relationship between the Moody's Analytics QOL measure and the number of new businesses being created from one region to another. However, when looked at from a deeper regional perspective, QOL takes on a larger significance within new-business formations. Thus, while QOL may be only a secondary factor in determining which metro areas experience the most new-business growth nationwide, it becomes a much more significant driver of growth within specific regions themselves.

Digging deeper

A comparison of the QOL with new-business formations confirms a significant relationship, but also underlines the fact that the exact parameters of such a relationship can vary substantially from one area to another. Looking more granularly at the results of the study, it becomes apparent that regional and demographic differences can alter the way QOL is valued in the entrepreneurial decision-making process (see Table 3).

Among competing regional metro areas with little differentiation between their QOLs, particularly those that are experiencing secular industry decline, QOL may have little to no bearing on the decision to start a new business. Within central Pennsylvania metro areas, for example, business creation is poor despite an almost uniformly high QOL. Given the homogeneity of these metro areas in many aspects, especially QOL, little differentiates them in the eyes of entrepreneurs in ways that can be objectively measured. Furthermore, these are areas that have suffered a tremendous amount of out-migration in the last few decades, meaning that any new-business creation in that time was likely initiated by a local entrepreneur who would have put QOL much further down the list of criteria in the decision-making process. Even in metro areas with relatively high population growth, however, this phenomenon is visible. In California's Central Valley metro areas, for example, an almost uniformly poor QOL has resulted in equally poor new-business growth. Entrepreneurs see little differentiation between the metro areas from a QOL standpoint, and therefore little differentiation exists in terms of new-business creation, however poor they may be doing relative to the rest of the country (see Charts 3 and 4).

Conversely, when looking at competing regional metro areas with more dynamic economic fundamentals and significantly more differentiation in terms of QOL, there is a strong correlation with new-business creation. Midsize metro areas in the Mountain West show one of the most telling relationships. Because a larger portion of these entrepreneurs are coming from other states or metro areas, and there is a greater degree of heterogeneity among Mountain West metro QOLs, QOL takes on a greater degree of importance in entrepreneurial decision-making. Areas with relatively higher QOLs are foster-

Table 3: Intra-Regional Comparisons, 2011

	Quality of Life (U.S.=100)	Business Formations (U.S.=100)	Population Growth (% change)
Mountain West			
Reno NV	112.4	138.1	2.1
Colorado Springs CO	106.1	123.0	1.9
Salt Lake City UT	104.1	134.9	1.5
Albuquerque NM	84.3	89.7	2.0
El Paso TX	77.3	70.6	1.7
Central Virginia			
Charlottesville VA	173.6	123.8	1.4
Richmond VA	114.3	99.2	1.4
Roanoke VA	103.2	94.4	0.7
Lynchburg VA	101.7	92.9	1.0
Blacksburg VA	99.5	71.4	0.7
Central Pennsylvania			
Altoona PA	140.2	69.8	-0.2
Lebanon PA	129.8	68.3	1.1
York PA	126.7	68.3	1.3
Lancaster PA	125.9	83.3	1.0
Harrisburg PA	125.0	79.4	0.8
Central Valley, California			
Madera CA	70.5	63.5	2.0
Bakersfield CA	70.0	66.7	2.4
Merced CA	67.0	50.0	1.9
Visalia CA	66.1	61.1	1.9
Fresno CA	65.0	72.2	1.5

Sources: Census Bureau, Moody's Analytics
Note: Business formations and population growth are calculated using 10-yr moving averages.

ing more dynamic entrepreneurial environments and are churning out more successful new businesses as a result.

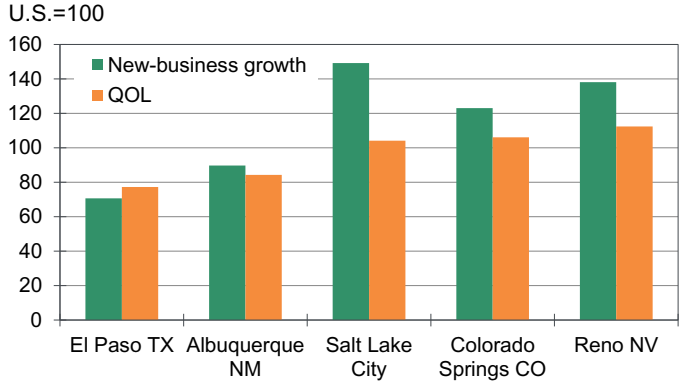
Even in cases with more sluggish population growth, it is evident how material differentiation in the QOL measure can correspond to better business growth. Among central Virginia's metro areas, for example, relative QOL correlates identically to relative per capita business growth. Thus, in a real-life scenario where a new business or highly skilled worker is moving to a specific region to pursue new-business opportunities, the results of this study suggest that QOL would be an important factor in their decision. It should therefore also be a major factor in local government economic development efforts, particularly in competitive high-growth regions.

Looking to policy

This study proposes a method for measuring the relative QOL in a metro area as objectively as possible. And this study finds that QOL can be both a cause and an effect of higher business formation rates and economic development. More important, this study concludes that there are areas of public policy that can create a more fertile environment for business investment beyond the tax and regulatory environment.

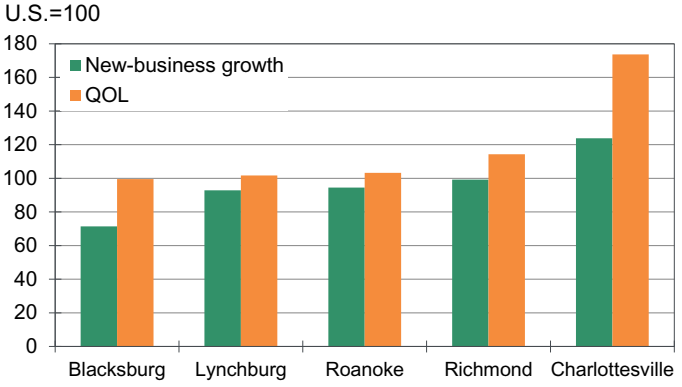
Large discrepancies between regional competitors can be used to explain differing results in economic development efforts. Metro areas in competitive regions can use a higher QOL as a trump card in attracting more entrepreneurs and the highly skilled workers who typically work for them. Generally, the greater the differentiation in QOL, the greater the differentiation of the number of successful new businesses being started. Furthermore, QOL proved more influential on startups in areas experiencing faster in-migration and population growth. Taken in concert with efforts to create a sound business environment from a tax and regulatory perspective, a strong focus on public safety, public education, child welfare and recreation by local policymakers is vital in attracting entrepreneurs and high-skilled workers into the local economy. Thus, local policymakers should be concerned with making their areas more profitable and more livable.

Chart 3: QOL More Important in Mountain West



Sources: Census Bureau, Moody's Analytics

Chart 4: Better QOL, More New Businesses in VA



Sources: Census Bureau, Moody's Analytics

Table 4: Comprehensive Data by MSA 2011 U.S.=100

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
La Crosse WI	71.1	107.6	137.9	30.1	190.8	1	83.3	192
Barnstable Town MA	93.0	110.1	281.1	48.9	189.3	2	135.7	28
Missoula MT	81.9	109.6	270.3	48.9	188.8	3	168.3	7
Glens Falls NY	51.9	100.9	302.8	86.5	184.3	4	91.3	150
Kingston NY	59.2	100.9	254.1	56.4	183.4	5	104.8	92
Ocean City NJ	144.6	104.4	394.7	105.3	181.6	6	123.0	50
Charlottesville VA	62.4	102.0	137.9	37.6	173.6	7	123.8	46
San Luis Obispo CA	72.6	102.2	132.5	37.6	167.5	8	141.3	22
Bridgeport CT	64.1	102.0	162.2	45.1	166.7	9	108.7	80
Rochester MN	54.8	108.9	137.9	45.1	166.1	10	93.7	140
Rapid City SD	93.6	106.1	259.5	67.7	164.8	11	146.0	17
Sioux Falls SD	74.0	105.5	194.6	52.6	163.5	12	125.4	41
Dubuque IA	63.0	105.3	173.0	52.6	161.7	13	94.4	134
Great Falls MT	111.3	104.7	259.5	71.4	158.8	14	105.6	91
Logan UT	32.1	107.1	108.1	71.4	158.2	15	135.7	29
Boulder CO	61.8	109.2	194.6	67.7	156.9	16	181.0	4
Bloomington IL	67.3	109.3	83.8	37.6	156.5	17	81.7	201
Billings MT	107.8	107.3	297.3	116.5	154.9	18	152.4	12
Fairbanks AK	133.8	104.5	191.9	48.9	154.8	19	95.2	128
Casper WY	100.0	105.7	173.0	48.9	154.4	20	154.8	11
Corvallis OR	77.8	108.9	113.5	41.4	154.1	21	90.5	152
Appleton WI	53.0	107.8	135.2	56.4	153.0	22	89.7	154
Santa Fe NM	118.0	100.6	243.3	71.4	152.1	23	148.4	15
Madison WI	80.7	109.4	146.0	48.9	151.8	24	99.2	110
Iowa City IA	59.5	108.1	94.6	45.1	150.1	25	95.2	133
Pittsfield MA	76.4	103.7	210.8	75.2	150.1	26	104.0	97
Ames IA	83.4	111.2	102.7	41.4	149.6	27	81.7	200
Portland ME	78.1	107.4	189.2	67.7	148.2	28	129.4	38
Burlington VT	93.3	106.5	156.8	52.6	146.8	29	111.9	72
Oxnard CA	55.1	95.2	124.3	56.4	145.9	30	108.7	83
Fargo ND	66.5	109.3	154.1	63.9	145.1	31	119.0	59
Carson City NV	74.3	102.9	243.3	127.8	143.9	32	207.1	2
Ithaca NY	71.4	106.5	148.7	60.1	143.8	33	78.6	222
Bismarck ND	76.7	107.3	129.8	52.6	143.5	34	115.1	64
Norwich CT	75.2	104.1	127.0	52.6	142.5	35	74.6	250
St. Cloud MN	71.7	104.6	154.1	63.9	142.0	36	108.7	84
Altoona PA	64.1	104.5	89.2	48.9	140.2	37	69.8	287
Wenatchee WA	79.9	94.0	170.3	67.7	139.3	38	124.6	45
Grand Forks ND	69.7	104.4	140.6	63.9	138.7	39	81.0	205
Oshkosh WI	60.6	105.3	118.9	63.9	136.7	40	71.4	275
Coeur d'Alene ID	79.9	106.1	167.6	75.2	136.4	41	172.2	6
Provo UT	65.9	108.8	75.7	48.9	136.2	42	131.0	35
Cedar Rapids IA	75.2	108.0	102.7	52.6	136.0	43	89.7	157
Manchester NH	73.2	105.2	100.0	52.6	135.4	44	98.4	115
Minneapolis MN	89.8	108.0	124.3	56.4	134.4	45	107.1	86
Green Bay WI	55.4	104.8	124.3	75.2	134.3	46	95.2	129
Poughkeepsie NY	62.4	101.4	124.3	67.7	134.0	47	103.2	100
St. George UT	57.7	106.0	100.0	63.9	132.8	48	188.1	3
Wausau WI	55.7	104.0	137.9	86.5	132.8	49	83.3	193
Santa Rosa CA	58.9	100.4	121.6	71.4	132.5	50	120.6	57
San Jose CA	69.4	100.0	73.0	48.9	132.1	51	114.3	66
Naples FL	63.2	99.5	175.7	109.0	131.7	52	177.8	5
Anchorage AK	116.6	107.1	159.5	67.7	130.8	53	113.5	67
State College PA	49.0	106.8	100.0	78.9	130.2	54	72.2	270

Table 4: Comprehensive Data by MSA 2011 U.S.=100 (Cont.)

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
Holland MI	56.5	105.3	89.2	63.9	130.1	55	85.7	179
Lebanon PA	53.3	99.6	108.1	75.2	129.8	56	68.3	298
Sandusky OH	94.7	104.0	227.1	154.1	129.5	57	73.8	253
Harrisonburg VA	40.8	94.3	78.4	78.9	129.4	58	97.6	120
Bend OR	98.5	108.1	175.7	86.5	129.3	59	232.5	1
Mount Vernon WA	134.7	104.0	143.3	60.1	128.5	60	130.2	36
Winchester VA	70.5	92.8	94.6	56.4	128.5	61	97.6	121
Fond du Lac WI	50.4	102.9	105.4	82.7	128.1	62	73.8	252
Bellingham WA	96.2	106.9	146.0	71.4	128.0	63	149.2	14
Pittsburgh PA	63.8	106.0	110.8	71.4	127.8	64	77.0	235
Napa CA	67.9	96.3	121.6	71.4	127.2	65	133.3	32
Lawrence KS	126.5	108.1	108.1	52.6	126.9	66	104.0	96
York PA	66.2	103.0	86.5	60.1	126.7	67	68.3	301
Ann Arbor MI	74.6	109.0	132.5	78.9	126.3	68	88.1	164
Lancaster PA	63.8	97.6	83.8	60.1	125.9	69	83.3	191
Santa Barbara CA	72.0	92.4	148.7	86.5	125.6	70	112.7	71
Worcester MA	74.9	102.7	94.6	60.1	125.5	71	82.5	199
Harrisburg PA	71.4	104.1	97.3	63.9	125.0	72	79.4	217
Sheboygan WI	63.5	104.4	135.2	97.7	123.6	73	71.4	277
Honolulu HI	104.3	104.4	73.0	48.9	123.3	74	80.2	211
Jefferson City MO	80.7	100.9	94.6	60.1	123.2	75	92.9	142
Panama City FL	141.1	100.2	118.9	56.4	123.1	76	122.2	52
Ogden UT	78.1	107.8	62.2	52.6	122.8	77	108.7	81
Fort Collins CO	78.7	110.2	135.2	86.5	122.7	78	151.6	13
Fort Wayne IN	84.2	103.7	102.7	63.9	122.2	79	86.5	175
Hartford CT	79.3	103.3	105.4	67.7	121.9	80	77.8	227
Eau Claire WI	65.0	106.5	132.5	101.5	121.4	81	92.9	141
Bremerton WA	93.3	108.0	94.6	60.1	121.3	82	104.0	95
Myrtle Beach SC	180.4	101.3	219.0	124.1	121.2	83	156.3	10
Des Moines IA	97.3	106.4	116.2	67.7	121.0	84	98.4	113
Wheeling WV	55.7	103.7	121.6	109.0	120.7	85	61.1	330
Nashville TN	114.5	99.8	178.4	101.5	120.5	86	100.8	103
Albany NY	80.4	105.7	127.0	82.7	120.4	87	84.9	182
Steubenville OH	51.0	104.0	129.8	142.8	119.9	88	54.8	340
Santa Cruz CA	108.1	97.6	113.5	63.9	119.0	89	113.5	70
San Diego CA	70.2	98.8	94.6	71.4	118.6	90	121.4	55
Olympia WA	86.9	109.2	89.2	63.9	118.6	91	111.1	74
Bloomington IN	79.6	103.9	75.7	60.1	118.5	92	74.6	245
Idaho Falls ID	65.0	103.8	89.2	75.2	118.2	93	142.9	19
Omaha NE	107.6	105.8	113.5	67.7	118.2	94	96.8	126
Trenton NJ	75.8	101.5	110.8	78.9	118.0	95	104.8	94
Duluth MN	100.3	107.9	162.2	109.0	117.7	96	80.2	209
Flagstaff AZ	108.7	99.4	183.8	124.1	117.6	97	111.1	73
Providence RI	83.7	95.9	127.0	82.7	117.5	98	94.4	136
Lewiston ID	100.6	101.3	140.6	86.5	117.0	99	88.1	167
Lincoln NE	111.3	107.9	116.2	71.4	116.4	100	106.3	88
Port St. Lucie FL	91.2	99.8	132.5	86.5	116.3	101	131.7	33
Binghamton NY	82.2	104.2	108.1	78.9	115.6	102	62.7	318
Waterloo IA	67.9	103.4	121.6	105.3	115.1	103	73.0	260
Champaign IL	82.8	106.1	83.8	67.7	114.8	104	70.6	280
Kankakee IL	86.6	98.0	100.0	71.4	114.7	105	72.2	265
Monroe MI	75.2	103.1	102.7	82.7	114.3	106	56.3	338
Richmond VA	79.3	99.8	97.3	75.2	114.3	107	99.2	111
Syracuse NY	76.4	103.8	113.5	90.2	114.3	108	77.8	229

Table 4: Comprehensive Data by MSA 2011 U.S.=100 (Cont.)

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
Medford OR	105.2	103.9	127.0	82.7	114.2	109	138.1	25
Utica NY	70.5	100.3	127.0	109.0	114.0	110	61.9	325
Columbia MO	105.2	106.9	97.3	67.7	113.9	111	114.3	65
Sebastian FL	91.2	99.9	124.3	86.5	113.9	112	145.2	18
Peoria IL	80.2	105.1	105.4	82.7	113.9	113	75.4	244
Portland OR	97.3	104.4	108.1	75.2	113.8	114	124.6	44
Crestview FL	95.0	106.0	110.8	78.9	113.5	115	129.4	37
Raleigh NC	81.6	105.5	97.3	78.9	112.8	116	126.2	39
Allentown PA	72.0	101.7	94.6	82.7	112.8	117	77.8	226
Punta Gorda FL	79.0	103.4	110.8	90.2	112.5	118	122.2	53
Reno NV	81.9	101.4	127.0	101.5	112.4	119	138.1	26
Midland TX	87.4	93.3	102.7	75.2	112.3	120	136.5	27
Denver CO	88.0	103.1	102.7	78.9	112.2	121	134.1	31
Boise City ID	64.7	103.1	94.6	94.0	111.8	122	141.3	20
Elmira NY	74.0	104.0	113.5	101.5	111.4	123	53.2	341
Reading PA	70.2	98.2	100.0	90.2	111.4	124	72.2	269
Palm Coast FL	70.8	104.9	73.0	75.2	111.0	125	138.9	24
Bay City MI	63.2	101.8	113.5	120.3	111.0	126	61.1	326
Bangor ME	83.7	105.0	137.9	124.1	110.4	127	96.8	122
Baltimore MD	106.7	101.8	97.3	71.4	110.3	128	93.7	138
Lewiston ME	89.5	102.4	108.1	86.5	110.0	129	88.9	163
Rochester NY	83.1	102.6	118.9	101.5	109.8	130	78.6	224
Grand Junction CO	86.0	104.0	108.1	90.2	109.8	131	167.5	8
Asheville NC	79.0	103.8	116.2	105.3	109.4	132	125.4	40
New Haven CT	99.1	102.2	89.2	71.4	109.4	133	78.6	223
Davenport IL	93.6	104.3	108.1	86.5	109.4	134	80.2	208
Johnstown PA	64.7	102.6	81.1	90.2	109.0	135	62.7	321
Parkersburg WV	74.0	101.1	110.8	105.3	109.0	136	69.8	290
Sioux City IA	94.7	98.4	140.6	116.5	108.7	137	84.9	184
Racine WI	90.4	102.0	102.7	86.5	108.1	138	68.3	299
Elizabethtown KY	47.2	101.4	64.9	116.5	107.8	139	73.0	258
Hagerstown MD	71.4	98.6	78.4	82.7	107.5	140	73.0	259
Greeley CO	67.3	99.0	81.1	90.2	107.1	141	109.5	79
Sherman TX	99.7	97.7	91.9	75.2	107.1	142	87.3	171
Pocatello ID	88.6	105.4	100.0	90.2	106.9	143	98.4	116
Evansville IN	75.8	102.4	89.2	90.2	106.9	144	75.4	242
St. Louis MO	102.0	103.2	100.0	82.7	106.5	145	92.1	147
Colorado Springs CO	94.1	107.8	100.0	90.2	106.1	146	123.0	49
Charleston WV	86.9	95.6	97.3	86.5	106.0	147	70.6	281
Grand Rapids MI	75.2	103.0	97.3	101.5	106.0	148	84.1	188
Wilmington NC	114.3	104.3	129.8	105.3	105.8	149	140.5	23
Virginia Beach VA	105.2	104.0	86.5	75.2	105.7	150	87.3	173
Austin TX	108.1	101.6	100.0	82.7	105.1	151	117.5	61
Eugene OR	110.8	104.7	113.5	94.0	105.0	152	110.3	75
Las Vegas NV	97.3	97.4	113.5	97.7	104.8	153	120.6	56
Wichita Falls TX	116.6	95.3	62.2	60.1	104.7	154	82.5	198
Janesville WI	94.7	101.5	100.0	90.2	104.7	155	74.6	247
Spokane WA	158.8	107.6	94.6	71.4	104.5	156	107.1	87
Lansing MI	77.5	106.3	75.7	86.5	104.5	157	72.2	266
Salt Lake City UT	128.0	102.6	86.5	71.4	104.1	158	134.9	30
Kansas City MO	111.9	104.6	83.8	75.2	103.8	159	103.2	99
Springfield IL	134.4	108.2	116.2	94.0	103.3	160	84.9	185
Roanoke VA	81.6	100.1	89.2	94.0	103.2	161	94.4	137
Buffalo NY	97.9	104.0	100.0	94.0	103.2	162	76.2	236

Table 4: Comprehensive Data by MSA 2011 U.S.=100 (Cont.)

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
Charlotte NC	109.0	100.1	100.0	86.5	103.1	163	113.5	68
Erie PA	84.2	104.6	113.5	124.1	102.9	164	68.3	297
Atlantic City NJ	113.4	99.9	129.8	116.5	102.3	165	92.1	144
Orlando FL	123.3	101.1	108.1	90.2	102.1	166	141.3	21
Michigan City IN	106.1	100.0	89.2	82.7	101.9	167	71.4	274
Cape Coral FL	91.2	99.8	118.9	124.1	101.7	168	147.6	16
Lynchburg VA	63.5	95.0	94.6	131.6	101.7	169	92.9	143
Sacramento CA	93.9	101.1	73.0	78.9	101.4	170	98.4	117
Williamsport PA	68.8	102.2	91.9	124.1	101.3	171	68.3	300
Durham NC	122.7	100.7	113.5	97.7	101.2	172	95.2	127
Prescott AZ	72.9	103.3	102.7	135.3	101.1	173	157.1	9
Niles MI	96.5	101.6	121.6	127.8	101.0	174	79.4	219
Kennewick WA	83.4	95.0	75.7	86.5	100.4	175	96.8	124
Cleveland TN	106.1	91.6	83.8	78.9	100.3	176	70.6	282
Gainesville GA	76.1	92.9	73.0	90.2	100.0	177	110.3	76
Owensboro KY	79.6	98.7	81.1	97.7	99.9	178	71.4	276
Indianapolis IN	116.9	102.3	105.4	97.7	99.9	179	95.2	132
Charleston SC	117.8	102.1	105.4	97.7	99.7	180	115.9	63
Jacksonville NC	93.6	104.1	51.4	71.4	99.6	181	57.1	336
Chico CA	76.9	101.0	75.7	97.7	99.6	182	88.9	160
Bowling Green KY	81.6	99.8	91.9	109.0	99.5	183	91.3	149
Blacksburg VA	76.4	97.3	81.1	101.5	99.5	184	71.4	278
Kalamazoo MI	99.4	105.2	108.1	116.5	99.4	185	69.8	288
Battle Creek MI	127.4	101.4	108.1	97.7	99.1	186	57.9	332
Milwaukee WI	106.1	103.8	102.7	105.3	98.9	187	82.5	196
Abilene TX	96.5	95.7	108.1	112.8	98.9	188	82.5	194
Kokomo IN	106.4	103.7	75.7	82.7	98.5	189	67.5	303
Canton OH	90.9	103.4	97.3	112.8	98.5	190	70.6	279
Cleveland OH	88.0	103.1	91.9	109.0	98.4	191	81.0	204
Cincinnati OH	108.7	102.4	91.9	94.0	98.4	192	74.6	246
Lexington KY	127.1	100.6	118.9	112.8	98.1	193	100.0	107
Jackson MI	72.6	103.1	100.0	150.4	98.1	194	59.5	331
Palm Bay FL	112.5	105.7	86.5	90.2	98.1	195	119.8	58
Dover DE	123.0	99.5	100.0	94.0	98.1	196	84.1	187
Huntsville AL	116.0	100.6	81.1	82.7	98.0	197	96.8	123
Tampa FL	102.3	100.8	94.6	101.5	97.6	198	125.4	42
Cheyenne WY	86.6	108.9	83.8	109.0	97.5	199	123.0	48
Louisville KY	119.5	100.8	94.6	94.0	97.2	200	84.1	189
Jacksonville FL	121.5	103.4	89.2	90.2	97.1	201	123.8	47
Tyler TX	104.6	99.0	78.4	86.5	97.1	202	110.3	78
Atlanta GA	114.3	101.6	86.5	90.2	97.0	203	122.2	51
Rome GA	125.0	88.9	70.3	71.4	96.9	204	76.2	240
Springfield MA	95.9	100.3	97.3	112.8	96.7	205	70.6	285
Salinas CA	81.6	82.9	86.5	101.5	96.6	206	81.7	203
Scranton PA	70.8	102.7	81.1	127.8	96.6	207	73.8	254
Hot Springs AR	173.4	96.0	164.9	184.2	96.5	208	121.4	54
Lafayette IN	80.7	105.7	75.7	109.0	96.1	209	69.0	294
Lafayette LA	121.0	95.4	102.7	101.5	96.0	210	131.0	34
Akron OH	97.3	103.7	91.9	112.8	95.4	211	77.0	231
Youngstown OH	103.8	103.0	105.4	127.8	95.0	212	69.0	296
Salem OR	87.1	97.4	89.2	116.5	94.9	213	99.2	112
Mansfield OH	130.9	100.3	86.5	90.2	94.5	214	62.7	322
St. Joseph MO	117.5	102.4	78.4	90.2	94.3	215	100.8	104
Tulsa OK	116.9	102.0	86.5	97.7	94.1	216	104.0	98

Table 4: Comprehensive Data by MSA 2011 U.S.=100 (Cont.)

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
Gainesville FL	116.3	102.8	89.2	101.5	94.1	217	101.6	102
Redding CA	100.0	101.9	83.8	105.3	94.0	218	106.3	89
New Orleans LA	112.5	97.6	105.4	120.3	93.9	219	92.1	146
Deltona FL	119.8	101.1	108.1	124.1	93.5	220	124.6	43
Saginaw MI	92.4	101.5	91.9	127.8	93.0	221	61.1	328
Killeen TX	90.4	103.7	51.4	86.5	93.0	222	61.1	327
Savannah GA	115.1	101.1	89.2	105.3	92.9	223	106.3	90
Amarillo TX	131.7	96.9	86.5	94.0	92.4	224	91.3	148
Decatur AL	80.2	90.6	48.7	86.5	92.4	225	70.6	283
Columbus OH	128.8	104.2	83.8	97.7	92.2	226	78.6	221
Anderson IN	102.9	101.6	83.8	112.8	91.5	227	57.1	335
Cumberland MD	91.8	98.2	81.1	116.5	91.5	228	69.0	293
Hattiesburg MS	73.4	96.9	73.0	131.6	91.3	229	95.2	130
Shreveport LA	122.7	99.2	91.9	109.0	91.2	230	80.2	212
Wichita KS	130.0	101.8	78.4	94.0	91.2	231	86.5	178
Muncie IN	95.9	101.6	94.6	139.1	91.1	232	57.9	333
Greenville SC	121.2	96.7	89.2	105.3	91.1	233	100.0	105
Greensboro NC	127.7	98.4	100.0	116.5	91.1	234	92.1	145
Elkhart IN	77.2	93.6	67.6	116.5	90.6	235	87.3	169
Chattanooga TN	122.1	97.2	75.7	94.0	90.5	236	79.4	216
Knoxville TN	123.9	101.7	73.0	94.0	90.3	237	85.7	180
Winston NC	141.4	100.1	91.9	105.3	90.2	238	85.7	181
Terre Haute IN	109.6	98.3	75.7	101.5	90.2	239	72.2	271
Kingsport TN	104.9	93.9	75.7	101.5	90.1	240	65.1	311
Lima OH	118.9	100.6	102.7	135.3	89.9	241	67.5	304
Dayton OH	106.7	103.3	75.7	109.0	89.6	242	62.7	320
Yuma AZ	72.9	86.8	37.8	90.2	89.4	243	77.8	230
Phoenix AZ	116.9	99.8	67.6	94.0	89.3	244	104.8	93
Houma LA	105.2	84.2	89.2	112.8	89.2	245	84.9	183
South Bend IN	113.7	102.4	78.4	109.0	89.1	246	69.0	295
Huntington WV	94.4	95.4	86.5	131.6	89.0	247	61.9	324
Oklahoma City OK	138.7	101.6	78.4	97.7	88.9	248	108.7	82
Valdosta GA	99.1	95.0	70.3	105.3	88.8	249	87.3	172
Ocala FL	85.7	98.4	78.4	135.3	88.7	250	113.5	69
Rockford IL	97.9	98.0	83.8	127.8	88.6	251	76.2	239
Columbia SC	133.8	101.4	78.4	101.5	88.3	252	88.9	161
Spartanburg SC	116.6	95.4	78.4	105.3	88.3	253	86.5	176
Muskegon MI	131.2	100.4	108.1	146.6	88.2	254	62.7	323
Jackson MS	108.7	99.1	67.6	101.5	88.0	255	93.7	139
San Angelo TX	107.3	95.7	78.4	112.8	87.9	256	82.5	197
Springfield MO	145.2	103.6	97.3	124.1	87.9	257	117.5	62
Vallejo CA	95.9	100.2	64.9	109.0	87.9	258	69.8	292
Athens GA	118.3	95.5	81.1	109.0	87.9	259	99.2	109
Johnson City TN	97.3	94.8	70.3	112.8	87.2	260	66.7	309
Lake Charles LA	140.8	96.6	86.5	109.0	87.0	261	76.2	238
Little Rock AR	166.1	101.5	75.7	94.0	87.0	262	100.0	108
Victoria TX	124.2	91.8	110.8	165.4	85.9	263	80.2	213
Monroe LA	146.6	98.2	91.9	120.3	85.8	264	96.8	125
Tallahassee FL	125.3	101.9	81.1	120.3	85.6	265	102.4	101
Florence AL	78.7	97.3	56.8	127.8	85.4	266	77.0	233
Baton Rouge LA	133.5	99.9	75.7	109.0	85.2	267	89.7	155
Yuba City CA	92.4	90.5	70.3	124.1	85.0	268	73.8	255
Hickory NC	107.3	93.1	70.3	112.8	85.0	269	75.4	243
Riverside CA	92.1	90.7	51.4	101.5	84.8	270	81.0	206

Table 4: Comprehensive Data by MSA 2011 U.S.=100 (Cont.)

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
Pueblo CO	143.4	100.8	70.3	101.5	84.7	271	77.8	228
Birmingham AL	130.3	98.2	70.3	105.3	84.6	272	89.7	156
Clarksville TN	93.9	102.2	43.3	101.5	84.3	273	62.7	319
Albuquerque NM	136.1	100.8	73.0	109.0	84.3	274	89.7	153
Joplin MO	115.4	95.3	73.0	116.5	84.0	275	107.1	85
Pensacola FL	118.6	101.0	67.6	112.8	83.9	276	89.7	159
Goldsboro NC	131.7	95.8	75.7	112.8	83.6	277	66.7	308
Dothan AL	96.5	94.1	51.4	105.3	83.5	278	98.4	114
Longview TX	107.8	92.9	64.9	112.8	83.2	279	94.4	135
San Antonio TX	146.6	95.7	64.9	97.7	82.9	280	81.0	207
Houston TX	119.5	93.5	59.5	101.5	82.8	281	95.2	131
Danville IL	131.2	97.7	91.9	150.4	82.3	282	51.6	342
Greenville NC	163.2	97.9	73.0	105.3	82.2	283	88.1	165
Tuscaloosa AL	111.6	99.2	62.2	116.5	82.1	284	70.6	286
Fort Smith AR	92.1	95.9	54.1	120.3	82.0	285	80.2	210
Odessa TX	107.3	84.4	75.7	127.8	81.7	286	81.7	202
Gulfport MS	113.7	99.2	75.7	139.1	81.7	287	83.3	190
Auburn AL	100.3	100.2	40.5	101.5	81.7	288	79.4	214
Danville VA	80.4	90.2	75.7	191.7	81.3	289	67.5	302
Topeka KS	131.7	105.9	75.7	139.1	80.6	290	86.5	177
College Station TX	102.6	96.9	62.2	131.6	80.3	291	82.5	195
Lubbock TX	155.6	98.7	83.8	135.3	79.9	292	97.6	119
Vineland NJ	110.2	89.0	54.1	109.0	79.7	293	72.2	272
Lakeland FL	107.6	94.7	62.2	127.8	79.7	294	91.3	151
Jackson TN	138.4	99.4	78.4	139.1	79.4	295	88.1	166
Salisbury MD	106.1	96.2	67.6	142.8	79.4	296	87.3	170
Columbus IN	125.0	102.9	70.3	139.1	79.2	297	76.2	237
Lake Havasu AZ	97.9	99.0	56.8	139.1	78.8	298	110.3	77
Brunswick GA	146.6	96.6	91.9	169.2	78.3	299	118.3	60
Decatur IL	100.6	101.0	67.6	169.2	78.1	300	66.7	307
Farmington NM	76.9	96.1	54.1	184.2	77.7	301	88.9	162
Waco TX	128.2	95.1	67.6	131.6	77.7	302	76.2	241
Pascagoula MS	104.3	100.2	59.5	146.6	77.5	303	67.5	305
Alexandria LA	143.4	94.7	70.3	127.8	77.4	304	86.5	174
El Paso TX	80.4	84.3	37.8	124.1	77.3	305	70.6	284
Hinesville GA	87.7	102.6	27.0	116.5	77.2	306	47.6	345
Columbus GA	162.3	97.6	70.3	124.1	77.1	307	19.8	347
Flint MI	131.5	102.7	67.6	142.8	77.0	308	64.3	314
Texarkana TX	153.3	100.9	62.2	120.3	76.8	309	78.6	225
Springfield OH	127.4	98.5	75.7	161.6	76.7	310	49.2	344
Hanford CA	74.3	80.2	37.8	135.3	76.5	311	43.7	346
Anniston AL	138.2	90.9	59.5	116.5	76.2	312	62.7	317
Burlington NC	125.9	94.5	81.1	176.7	76.1	313	79.4	215
Montgomery AL	126.8	98.2	56.8	127.8	75.9	314	72.2	268
Augusta GA	134.7	98.8	64.9	139.1	75.6	315	73.0	256
Rocky Mount NC	126.8	95.6	67.6	146.6	75.6	316	64.3	315
Modesto CA	120.7	88.1	48.7	112.8	75.4	317	74.6	249
Fayetteville NC	172.5	101.0	48.7	105.3	74.9	318	64.3	313
Yakima WA	131.2	82.1	78.4	154.1	74.7	319	73.0	262
Memphis TN	157.4	99.4	54.1	116.5	74.5	320	72.2	267
Beaumont TX	127.7	96.2	59.5	139.1	74.3	321	72.2	263
Mobile AL	157.1	96.4	67.6	139.1	73.9	322	74.6	248
Morristown TN	109.0	90.7	54.1	142.8	73.7	323	77.0	234
Lawton OK	155.6	102.2	51.4	120.3	73.6	324	65.9	310

Table 4: Comprehensive Data by MSA 2011 U.S.=100 (Cont.)

MSA	Crime	High School Graduation	Recreation	Child Poverty	QOL	Ranking	Business Creation*	Ranking
Warner Robins GA	131.5	100.9	43.3	120.3	73.3	325	73.0	261
Stockton CA	145.7	88.8	46.0	109.0	72.8	326	69.8	291
Macon GA	170.8	95.9	64.9	139.1	71.9	327	88.1	168
Longview WA	102.6	100.4	59.5	210.5	71.7	328	89.7	158
Corpus Christi TX	137.9	91.2	67.6	161.6	71.6	329	84.1	186
Gadsden AL	141.7	93.5	46.0	120.3	71.5	330	71.4	273
Las Cruces NM	103.5	90.3	54.1	169.2	71.3	331	79.4	218
Anderson SC	165.3	93.1	70.3	154.1	71.3	332	78.6	220
Jonesboro AR	121.0	93.2	56.8	161.6	70.8	333	100.0	106
Madera CA	87.4	78.5	46.0	165.4	70.5	334	63.5	316
Bakersfield CA	117.8	82.7	43.3	127.8	70.0	335	66.7	306
Dalton GA	90.4	78.1	32.4	135.3	69.6	336	73.0	257
Florence SC	163.5	94.4	56.8	146.6	68.6	337	73.8	251
Merced CA	118.0	79.7	37.8	131.6	67.0	338	50.0	343
Sumter SC	117.8	95.0	37.8	154.1	66.8	339	57.9	334
Albany GA	140.8	89.7	59.5	180.4	66.6	340	77.0	232
Visalia CA	111.9	77.8	35.1	135.3	66.1	341	61.1	329
Fresno CA	140.5	85.7	48.7	157.9	65.0	342	72.2	264
El Centro CA	101.1	73.3	18.9	127.8	63.6	343	56.3	337
Laredo TX	137.0	74.0	48.7	180.4	60.6	344	97.6	118
Pine Bluff AR	164.7	96.6	29.7	150.4	60.3	345	54.8	339
McAllen TX	123.0	71.8	29.7	165.4	57.7	346	69.8	289
Brownsville TX	127.7	73.2	37.8	218.0	55.4	347	64.3	312

Sources: Census Bureau FBI Moody's Analytics

*Business creation is expressed as a 10-year moving average.

About the Authors

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Dan White is a senior economist at Moody's Analytics, responsible for coordinating government consulting and regional economic research with an emphasis on fiscal policy. He regularly presents to clients and conferences, and has been featured in a number of print, radio, and televised media outlets, ranging from the Wall Street Journal to National Public Radio. He also has the pleasure of working closely with a number of governments in a consulting role. Before joining Moody's Analytics, Dan worked as a financial economist for the New Mexico State Legislative Finance Committee in Santa Fe, where he forecast revenues and analyzed a wide range of policy issues concentrated around economic development, public investment, and debt management. Dan holds an MA in economics as well as undergraduate degrees in finance and international business from New Mexico State University.

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