

Smarter, Faster, Cheaper

An Operations Efficiency Benchmarking Study of 100 American Cities

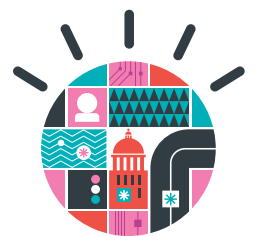


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Introduction

According to the Government Accountability Office (GAO), local governments in the United States are collectively facing a \$225 billion structural budget deficit, which constitutes about 12% of their total spending¹. Since these are structural deficits, they will not diminish even when the economy starts expanding again. These shortfalls represent a fundamental disconnect between the spending commitments city governments have made and the level of revenue growth they can reasonably expect to achieve.

As a consequence of these structural deficits, each year local governments must find a combination of new revenues and spending reductions to close the gap in their budgets. Since 2006 local governments have shed 353,000 jobs, including teachers, police officers and fire fighters. They have furloughed employees, refinanced pension obligations, and spent down reserve funds in order to minimize service reductions. Our analysis of the budget-closing measures employed by 13 cities in the State of California last year suggests that between 30% and 60% of the budget-balancing measures adopted by local governments represent one-time savings or revenue generating measures rather than permanent changes to cost structures. This is not surprising, as a similarly narrow approach has too often dominated conversations around the burgeoning federal deficit. But one-off cuts are not the answer. As these options exhaust themselves, more layoffs and services reductions are inevitable. Instead of just doing less, there is a way for cities to operate smarter, so that they can do more with less.

For this reason, there is no better time than now to take a hard look at the efficiency of local governments. If local government leadership will take the time to perform the analysis required to identify and root out inefficiencies in their operations, they can shed costs without significantly impacting service levels. In many cases, the thoughtful application of innovations in business process, organizational design, and technology can in fact reduce costs and improve services simultaneously.

One effective means for an organization to identify inefficiencies in their operations is through benchmarking. By comparing the operational profile of similarly situated organizations, opportunities for improved performance can be uncovered. To help cities address the worst budget climate in generations, IBM used publicly available data to benchmark the 100 largest cities in the United States to assess and compare how efficiently they operate. The results of that study, and recommendations for what cities can do with these findings, are the subject of this paper.

Our goal is straightforward: by comparing the efficiency with which cities deploy resources, IBM hopes to provide mayors and city managers with a road map for where they should be looking for high-yield savings opportunities in their own local government operations. Given the financial pressures cities face and the likelihood that unfavorable economic conditions will persist for the foreseeable future, there is no better time for local governments to become “smarter, faster, cheaper.”

US Cities Included in the Study

Akron	Boston	Columbus GA	Garland	Kansas City	Madison	Oakland	Portland	San Diego	St. Petersburg
Albuquerque	Chandler	Corpus Christi	Gilbert	Knoxville	Memphis	Oklahoma City	Raleigh	San Francisco	Stockton
Anaheim	Charlotte	Denver	Glendale	Laredo	Mesa	Omaha	Reno	San Jose	Tampa
Arlington TX	Chesapeake	Des Moines	Greensboro	Las Vegas	Miami	Orlando	Richmond	Santa Ana	Thousand Oaks
Atlanta	Chicago	Detroit	Hialeah	Lexington	Milwaukee	Overland Park	Riverside	Scottsdale	Tulsa
Aurora	Chula Vista	Durham	Honolulu	Lincoln	Minneapolis	Peoria	Rochester	Seattle	Virginia Beach
Austin	Cincinnati	El Paso	Houston	Long Beach	Nashville	Philadelphia	Sacramento	Shreveport	Wichita
Bakersfield	Cleveland	Fort Worth	Huntington Beach	Los Angeles	New Orleans	Phoenix	Salem	Springfield	Winston-Salem
Baltimore	Colorado Springs	Fresno	Irvine	Louisville	Newark	Pittsburgh	Salt Lake City	St. Louis	Worcester Mass
Birmingham	Columbus	Ft Lauderdale	Jacksonville	Lubbock	Norfolk	Plano	San Antonio	St. Paul	Yonkers

Figure 1: US Cities included in the study

The Inefficiency in Our Midst

All large organizations harbor inefficiencies. When IBM embarked on its transformation program in the early 1990s, the company eliminated \$6 billion in costs, primarily by simply being smarter about what we did and how we did it. IBM now orchestrates similar exercises on behalf of clients, and what we have learned is that no business operation is perfectly efficient. Just about any business process can be tweaked or adjusted in some manner to yield a cost saving. Mostly it's just a matter of looking for it.

However, once a process inefficiency is identified, fixing it is not a costless endeavor. Re-engineering business processes can be expensive and often require investments in technology, organizational redesign and change management. As a consequence, the biggest challenge for any organization is not necessarily in identifying inefficiencies, but in focusing attention on those inefficiencies where re-engineering investments are likely to yield the highest return.

In our experience, one of the best means for identifying “high yield” operations improvement opportunities is through benchmarking. The reason is quite simple: by comparing the operating performance metrics of a large sample of similarly situated organizations, there is a good chance that you can surface examples of highly efficient operating environments in specific service areas. At the very least, these examples can help management set their performance targets (“if Charlotte can deliver this service at this cost, we should be able to do so as well”). At best, these examples can provide a set of specific lessons that management can attempt to duplicate in their own city (“perhaps we can automate that process the way that Phoenix has”). If nothing else, benchmarking can force managers to take a hard look at their operations simply to explain why their resource deployment differs from their peers.

Our analysis of the spending and employment practices of the 100 American cities included in our study has yielded two major findings:

- The level of resources that cities dedicate to delivering basic municipal services varies enormously. In fact, per capita spending in certain services areas can differ by a factor of ten.



The Tao of Benchmarking

When Mayor Shirley Franklin first took office in 2002 in Atlanta, she managed to secure the pro bono services of a strategy consulting firm to deliver a series of planning projects. One of the first of these projects was a benchmarking study which compared Atlanta's spending profile to seven peer cities. Once the numbers were crunched, it turned out that Atlanta ranked next to last among these peer cities in terms of efficiency as measured by per capita spending.

Franklin established an operation within the Mayor's Office specifically dedicated to fixing this. One of the first places this team decided to look was in the city's court system, which an earlier review had suggested was rife with mismanagement. In 2003 a benchmarking study and organizational redesign of the court system was performed. In relatively short order, the study demonstrated rather convincingly that Atlanta was spending nearly 300% more on its court system than those of the best practice court systems in the country. Based on the re-organization and re-engineering plan subsequently developed and implemented, Atlanta reduced court spending from \$30 million to \$11 million over three years, reduced the number of sitting judges from 18 to 10, and shrank the total municipal court workforce from 249 to 114.

While savings opportunities of that degree are relatively rare, the interesting point is that few people within Atlanta city government at that time thought that the city was overspending on the courts. In fact, there were some council members and court administrators who were pressing for increases in funding.

Over the eight years of Mayor Franklin's term in office, she conducted over a dozen of these operational reviews. Ultimately the city reduced its headcount by 25% and eliminated \$120 million in spending. When the original benchmarking study was repeated in 2009, Atlanta had improved from seventh to second place among the eight cities included in the efficiency rankings. Atlanta ranks 13th in IBM's MICE rankings.

The lesson is that until you look and look hard, you don't really know what is being over-funded. As was the case with Atlanta's courts system, it is not always obvious. Benchmarking can be an indispensable tool for uncovering those opportunities.

- This broad variation in resource deployment does not seem to be driven by exogenous factors: spending does not generally correlate with population, per capita income, geographic size, labor conditions (union vs. non-union), or differences in workloads (e.g., park acreage).

This can lead to only one conclusion: in assessing the relative efficiency of resource allocation among municipal governments, management and policy choices are what matter. Cities spend what they spend because they choose to spend it. These choices come in two forms:

- *Cities make strategic choices.* Although cities are chartered to provide a variety of core municipal services (and are in some cases legally required to provide them), they generally have significant flexibility to determine the breadth and depth of those services. What specific services are provided to whom and at what level are all strategic choices that cities are largely free to make on their own. Those choices have significant cost implications.
- *Cities make operational choices.* Once a city decides which services it should deliver to which citizens at what level, management generally has broad discretion on how they will deliver those services. The choice of delivery model – the mix of capital and labor, the organizations and technologies deployed, and how they are sourced – is generally entirely discretionary to management. The quality of these choices will also have significant cost implications.

This is good news and bad news for those responsible for the management of cities. The good news is that the level of efficiency of your government is within your control and there is no shortage of examples from other cities where responsible (and re-electable) city governments have made different strategic and operational choices. The bad news is that the “usual suspects” that are often offered as excuses for failing to be more efficient – labor unions, operational environment, relative poverty – do not appear to be genuine obstacles to efficiency in local government service delivery.

The Study

The benchmarking study includes 100 of the largest cities in the United States² (see Figure 1). Collectively, these cities account for nearly \$51 billion in annual general government spending. To put that in perspective, municipalities in the United States spend approximately \$440 billion on core local government services³ each year. This means that these 100 cities constitute approximately 12% of total local government spending in the United States.

The cities represented in this study host 17% of the total population of the United States and 20% of the nation's total urban population⁴. These cities have diverse forms of government: 54% of these cities have strong mayor forms of government and 46% have city managers or hybrid governments where management duties are shared by the executive and legislative branch.

The \$51 billion in spending data collected in this analysis occurs within 52 independent budget line items. These line items “roll up” into four major categories: Public Safety, Public Infrastructure, Community Development, and Support Services (see Figure 2). Overall, 57% of the spending is dedicated to public safety. A further 18% is spent on public infrastructure and 11% is spent on community development services such as housing, economic development, and health and human services. Over 14% of spending is on overhead functions including finance, human resources and information technology.

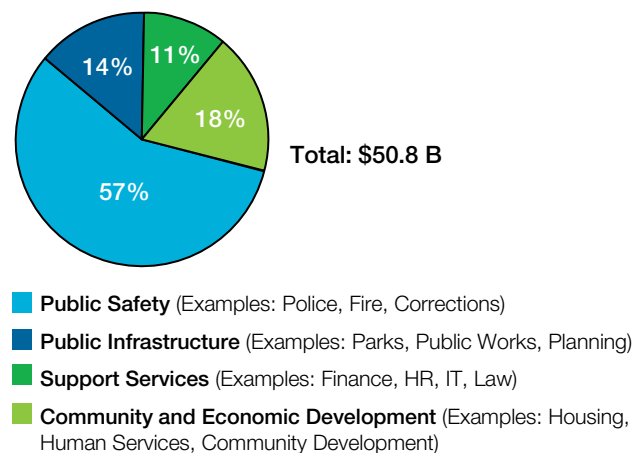


Figure 2: Spending by Functional Area for 100 Cities

For the purposes of the benchmarking analysis, a subset of spending line items have been extracted and included in the efficiency comparisons. The goal is to isolate a shared set of services to ensure that cities are being compared on an “apples to apples” basis. Of the 52 budget line items that were collected, 40 were included in the efficiency analysis. These 40 items constitute \$40 billion dollars in spending or 79% of total general government spending in these 100 cities. It is this spending upon which the efficiency rankings are based⁶.

To compare efficiency levels among cities, an index has been created called the MICE (Multivariate Index of City Efficiency). The MICE captures two key components of resource deployment: how much a city spends and how many people it employs to deliver a defined set of services. The MICE blends these two resource allocation decisions (weighted equally) into a single metric.

To account for the unique operational environments that cities encounter, city spending and employment data has been normalized on several dimensions – including population and

cost of living differences. This normalization effort minimizes the non-operational factors that might contribute to differences in resource allocation patterns. A more detailed explanation of the study’s methodology is included in Appendix A.

The average city in our sample spends \$705 per capita to provide core municipal services and employs 652 employees for every 100,000 citizens to deliver those services. The median city in the most efficient quintile spends \$500 per capita less than the median city in the least efficient quintile.

Efficiency varies to a considerable degree across cities (see Figure 3). The standard deviation within the efficiency distribution is \$178, which means that cities differ on their overall resource allocation choices by a factor of five. In some specific areas, the difference is even larger; spending on police services, for example, varies by a factor of 10. These are not minor differences. Without question, those who manage cities across the country are making very different choices about how they deploy resources to deliver a similar set of municipal services.

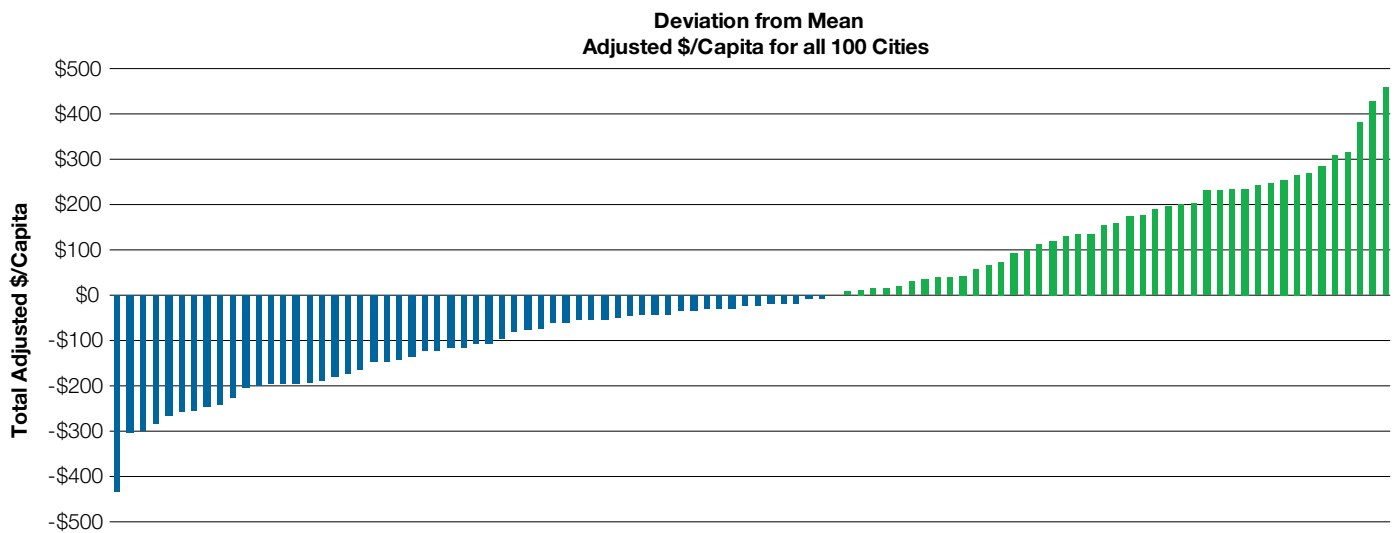


Figure 3: Variation in Spending Across Cities

What Drives Efficiency?

How can these large differences in resource utilization be explained? Observers of local government operations tend to entertain rather vague notions of what makes one city more efficiently run than another. The strength of public sector labor unions is often pointed to as an important factor in determining whether city managers can improve efficiency in operations. The “political environment” – code for the degree to which the legislative branch involves itself in management issues – is another factor that some use to explain relative performance.

Perhaps there are operational factors that come into play. Are city services subject to economies of scale? Some city services – such as public works and IT functions – have significant fixed costs associated with them; this might suggest that larger cities should be more efficient than smaller ones. What about geography? One could imagine that the costs to provide services to citizens who are widely distributed geographically would be higher than serving those living in close proximity.

Do demographic factors matter? Do cities with more prosperous residents choose to increase the breadth and quality of municipal services available to them, thereby increasing their costs? Or are wealthier cities in a better position to attract quality management which has the effect of lowering their costs?

Since one of the primary objectives of this study is to determine if any patterns could be detected among high efficiency performers and low efficiency performers, several of these potential “exogenous” drivers of efficiency have been tested.

What the analysis suggests is that efficiency does not correlate with any of these exogenous factors. As depicted in Figure 4, there appears to be no economies of scale at work: city population does not correlate with efficiency. Nor does the geographic size of the city appear to matter: there does not seem to be any advantage to having a smaller physical footprint in terms of the economics of service delivery. And the presence of labor unions with collective bargaining rights does not seem to matter; we can find no statistically significant difference in

the cost structures of cities with unions that collectively bargain and those that do not. In fact, none of the other exogenous factors that were tested can explain to a significant degree why efficiency varies among cities.

The lack of exogenous factors driving efficiency levels is a curious result. In a sample of this size, one would expect to find a set of variables that correlate with efficiency to some degree. Does scale really not matter? Can cities faced with unionized workforces really spend as little as those that are not subject to collective bargaining?

The analysis cannot fully answer those questions. What the analysis does suggest, however, is that if those factors do impact efficiency, their impact is being masked by a much more important factor. And that factor appears to be management.

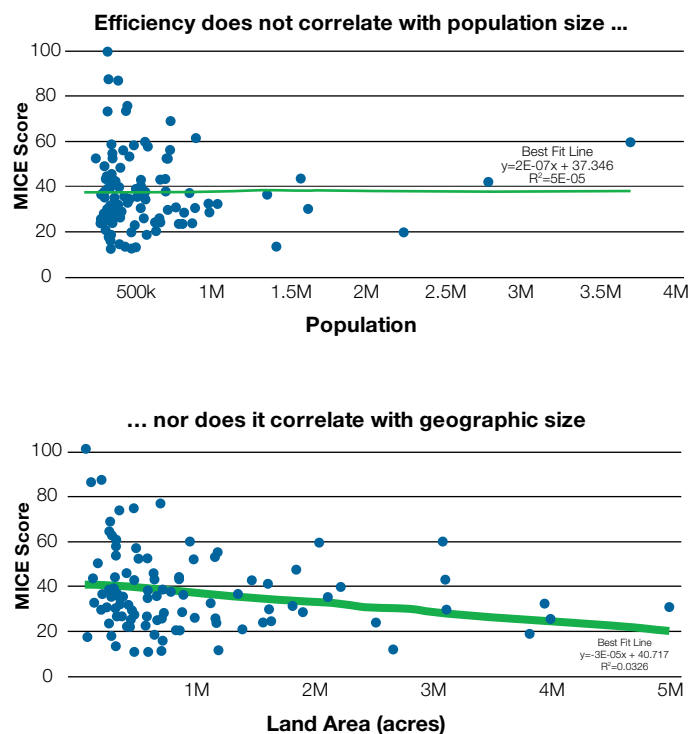


Figure 4: Drivers of Operational Efficiency

Management Matters (And It Matters A Lot)

Since none of the exogenous variables tested seem to account for differences in relative efficiency, it appears that endogenous ones must be operative. It is therefore hard not to conclude that the most important factor in determining the relative efficiency of a city is “management”. The term “management” is used to capture the two major types of impact that leaders can have on the efficiency of their governments:

1. Management makes strategic decisions about what services will be provided to which citizens and at what level of service they will be delivered.
2. Management makes operational decisions about the types of delivery models will be deployed to provide those services.

Management appears to be the key and the study provides some evidence for this. Cities with city manager forms of government are nearly 10% more efficient than cities with strong mayor forms of government. This finding appears to validate the assumption underlying city manager forms of government, notably that investing executive authority in professional management shielded from direct political interference should yield more efficiently managed cities. To put it another way, even if a city operates within conditions most favorable for efficiency – no collective bargaining, geographically compact, and peaking on all scale curves – management choices can still lead a city down the path to inefficiency. It is both a sobering and encouraging conclusion.

It is sobering because it places the spotlight on management. There is no place to hide. Yet it is encouraging because it means that managers are important. They influence outcomes.

So managers need to think hard about the strategic and operational decisions they make because those decisions are what drives the relative efficiency of their governments. The analysis cannot definitively specify which of these two management drivers – strategic or operational – is more important; however, there is some evidence in the study that can be useful in understanding the relative importance of strategic and operational choices.



Cutting Costs While Improving Service

With most cities almost solely pre-occupied with short-term budget cutting exercises, it is easy to forget that efficiency improvement efforts can in fact be thoughtful, deliberate exercises. Many cities have trained staff and adequate resources to identify, diagnose, and remedy inefficiencies in their operating divisions. Others will hire consultants to address specific areas. Unfortunately, financial crises tend to force the reliance on across-the-board cuts, hiring freezes, and other “slash and burn” tactics that rarely lead to sustainable efficiency improvements.

From IBM’s perspective, the use of benchmarking analysis such as that contained in this study can serve two purposes. First, it can place an individual city’s operations into a broader context. Why are we ranked where we are? Why can cities that look like me achieve similar outcomes at lower costs? What are we doing differently?

Secondly, it can provide aspirational targets. Just as Mayor Shirley Franklin compared her city to seven peer cities and launched a program specifically designed to improve her city’s relative efficiency ranking (see sidebar: The Tao of Benchmarking), other cities can do the same.

Once those goals are set, the key is to dedicate the staff and support resources that can focus on medium and long-term savings opportunities. In our experience, a four year program of designing and implementing an efficiency program is not an unreasonable timeframe; it may take longer to fully realize all the projected savings. Cost reduction programs that preserve (and improve) services will take time to execute.

And service levels can be improved. More effective use of technology, for example, often leads to cost reductions and improvements in service quality. Mobile field management technologies have been shown to increase the productivity of building inspectors by 20% while at the same time giving customers the ability to modify appointment schedules in real time. Automating citations have significantly reduced the time it takes for parking enforcement officers to issue tickets while at the same time reducing error rates in parking enforcement, leading to fewer customer complaints. The on-line submission of building plans expedite plan review and shorten the permitting cycle time, to the delight of developers.

Efficiency improvement programs should occupy a prominent and permanent position within city governments. They should be staffed with professionals and resourced appropriately. There is probably no better investment a city can make in its long term fiscal health.

Lost Labor's Love

Approximately 70% of municipal government expenses are labor related. If you add in post-retirement pension and health costs, the number approaches 80%. How labor is deployed and compensated is therefore the most important decision that managers make in constructing an efficient operating environment.

The study suggests that cities vary considerably in the intensity in which they deploy labor as an input in service delivery. On average, cities employ 652 employees per 100,000 residents. However, the average number of employees per 100,000 residents for the top quintile performing cities is 519 while the average for the bottom quintile performers is 983.

The use of labor – or, more accurately, labor “intensity” – is best understood in terms of how the quantity of labor employed relates to total spending. As depicted in Figure 5, cities that have relatively low spending per capita but high employment gravitate toward the top left quadrant of the chart. These are labor intensive cities that appear to retain large numbers of relatively low compensated employees. All things being equal, this is indicative of an operating environment that depends on manual, *labor-intensive* business processes. The leadership of such a city would be advised to seek out technology applications that could automate those business processes and improve overall labor productivity.

On the other hand, cities that gravitate toward to bottom right quadrant of Figure 5 have fewer employees but they appear to be more highly compensated. These are *labor-leveraged* cities. High labor costs may be driving their relative inefficiency, and those cities might be advised to seek out outsourcing opportunities in those areas that do not easily lend themselves to automation.

Cities in the top right quadrant of the chart are likely to be experiencing a combination of both of those labor issues. They would be well advised to deploy both strategies.

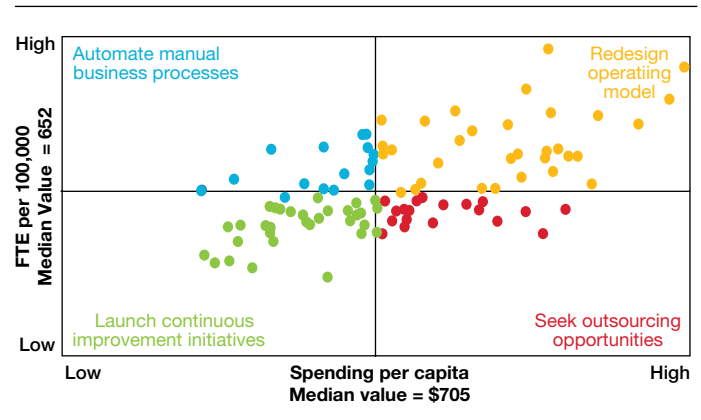


Figure 5: Cities Distributed by Spending and Employee Intensity

Deconstructing Budget Deficits

As mentioned earlier, local governments in the United States are collectively running a 12% structural budget deficit. This deficit is structural in the sense that even when revenues “recover” – that is, when the recession is over and the economy is expanding again – these deficits will not go away. The only means for eliminating these deficits is either to shift the revenue curve up – by say, increasing tax rates or adding new sources of revenue – or by shifting the cost curve down.

There are two ways to shift the cost curve down: eliminate services or become more efficient in the services that are delivered. Under the assumption that cities do not want to increase tax rates or add new taxes, the question becomes how hard will it be to close these structural deficits through cost reduction alone?

Assuming that the structural deficit ratio that applies to local governments nationally also applies to the 100 cities in our sample, these 100 cities together are running a collective \$2.3 billion budget deficit. Since the point of this study is to help cities identify areas where they should be looking for savings opportunities, let’s try to understand what level of performance improvement would be required to eliminate a deficit of this magnitude.

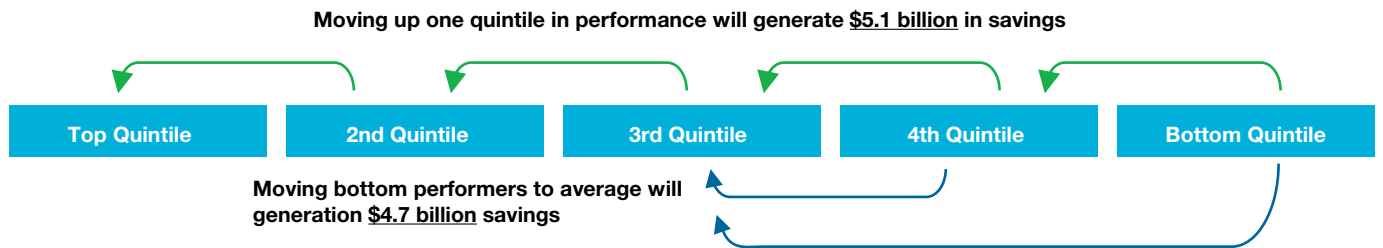


Figure 6: Cost Savings Opportunity Associated with Efficiency Improvements

Based on an analysis of the spending included in this study, if any given city moved up one quintile in the ranking, they would effectively eliminate on average 15% of their operating costs. In other words, cities do not necessarily need to aspire to move to “best practice” status in the rankings in order to achieve substantial savings. A more modest level of improvement can actually yield large expenditure reductions. If all of the cities in the bottom four quintiles simply moved up one quintile in performance (which would require a 15% improvement in efficiency on average), \$5.1 billion in total savings would be generated (see Figure 6). That is more than double of what is required to eliminate the collective \$2.3 billion deficit. If cities in the bottom two quintiles moved to the median level of performance, \$4.7 billion in savings would be realized. In other words, the 100 cities in our sample could run a collective operating surplus without any operating improvements in the top 60 performers. Clearly, the value that can be created through relatively modest improvements in efficiency is substantial.

How much effort would it take to make this level of improvement? One of the interesting findings of this analysis is that efficiency within a city can vary as widely as efficiency across cities. As you can see in Figure 7 the average standard deviation in efficiency within cities is nearly the same as the standard deviation across cities.

This is a very encouraging sign. What it suggests is that most cities already perform efficiently in certain areas. In other words, most organizations have “centers of excellence” that perform at a very high level while at the same time hosting operations that struggle to perform in an efficient manner.

Benchmarking can help management determine which of their operating entities fall in the former category and which fall in the latter.

For example, in Figure 8 (on page 12) the relative efficiency of a real (but unnamed) city in our sample is mapped. In Public Works, Parks & Recreation and IT, the city performs above average in our efficiency ratings. In Police, Fire, Law and Executive Offices, however, that same city performs well below average. Obviously, that city should focus its program of operations improvement in those areas. If it could simply move those operations to an average level of performance, it could yield \$92 million in savings, which is 20% of its total spending. In the case of this particular city, those savings alone would actually eliminate its structural operating deficit.

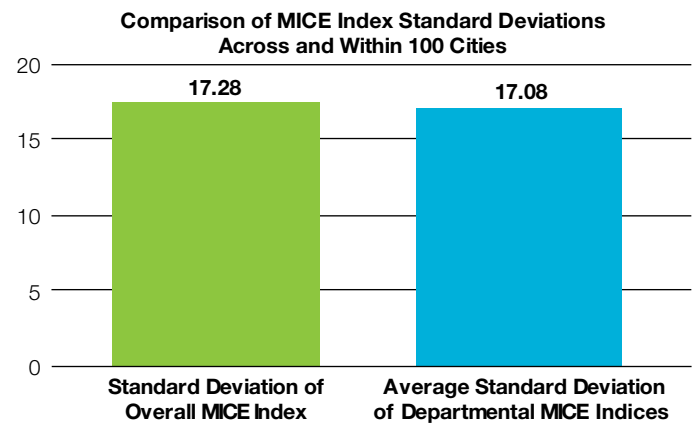


Figure 7: Standard Deviation of Efficiency Within Cities and Across Cities

To Spend or Not to Spend? And How Much?

How much should a city spend on fire fighting? Can a city spend too much on fire fighting? How would it know?

Most cities have a family of measures they rely upon to determine whether their fire departments are functioning effectively. Are the fire fighters trained properly? Are they well equipped? Do they avoid injuries? Is the community satisfied with their performance?

While these measures are important, there is a metric that overrides all others in determining the effectiveness of a fire fighting operation: can they respond quickly? More to the point, can they get the appropriate number of properly-equipped fire fighters to a Priority One fire within four minutes of a call being dispatched? If they cannot, they probably cannot get accredited.

This measure – response time – has a larger impact on the resourcing of fire fighting operations than any other consideration. In order to achieve the target response time standard, fire stations need to be distributed across the city and need to be staffed and equipped. As cities become denser and streets more congested, more fire stations are needed to meet the response goals. For any city growing in population or expanding geographically, the reliance on this measure ensures increased fire response expenditures.

But what if the number of fires is going down? What if the number of fires is actually plummeting? Does that have nothing to do with how much a city should spend on fire response operations?

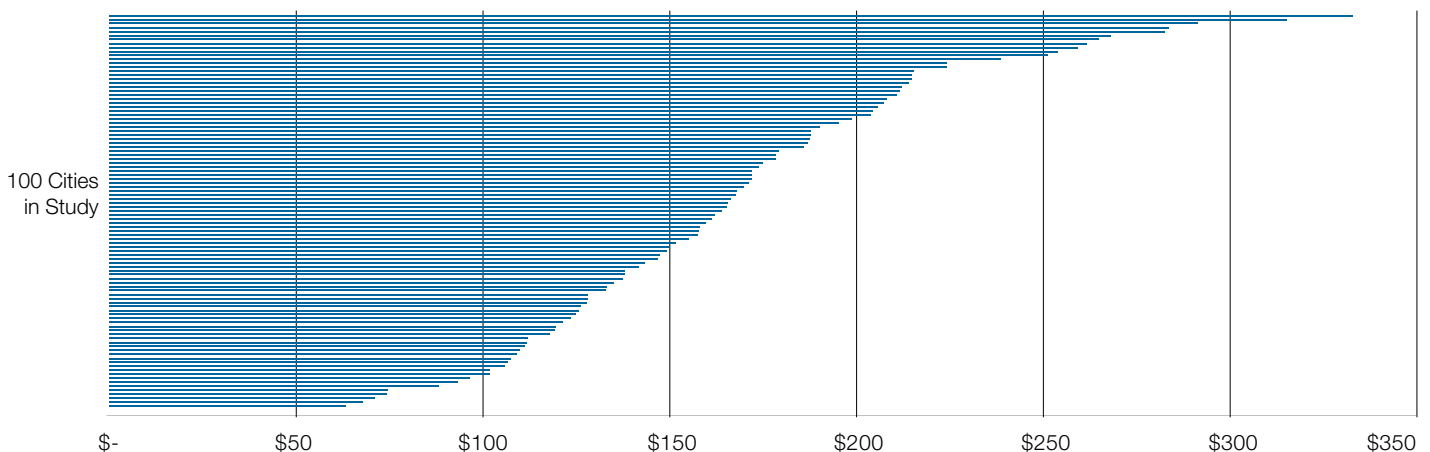
The fact is that by relying on response time as the metric that drives resource deployment, spending has been disconnected from outcomes. Consider this thought experiment: if city management knew for a fact that there would be only one fire in the city next year, but had no idea where it would be, how much should they spend on fire department operations? If they continued to rely on the response time standard, they would have no choice but to continue to fund fire operations at the same level as it did in the prior year in order to preserve its response time.

Most would agree that is an odd result.

But that is what cities do. The number of fires in the country has declined by 60% over the past two decades, but that decline has had no impact on the level of resources dedicated to fire departments.

In addition, city spending on fire operations varies enormously (see chart below). The City of Chula Vista in California spends \$63 per capita (adjusted) each year, while Cincinnati spends \$333. What operational factors could drive such disparate spending levels? Are cities that spend more significantly safer from fires than cities that spend less?

Spending on fire operations is just one example of why it is critical to revisit basic assumptions about what a city spends on the services it provides and why. Such an exercise might not change those choices, but at least it makes them explicit.



Variation in Fire Spending (adjusted \$ per capita spending on fire services)

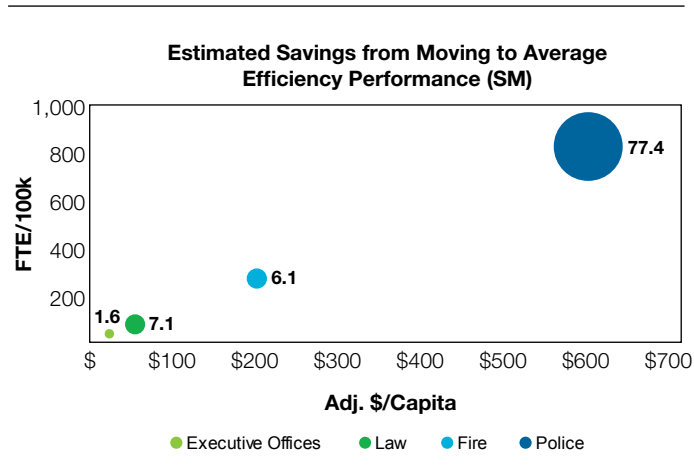


Figure 8: Estimating the Savings Opportunity for Unnamed City

The Path Forward

Like most studies of this type, more questions have been generated than answers. Benchmarking is a blunt instrument; it is more telescope than microscope. Benchmarking can find useful patterns and direct paths of inquiry; rarely does benchmarking specify a solution. In this case, the benchmarking analysis suggests a path forward. First, let's summarize the findings:

- Spending and employment levels varies widely among cities delivering a similar set of services;
- This variation in resource utilization cannot be explained by exogenous factors such as differences in scale, geographic coverage or labor market conditions;
- Management choices – particularly those related to strategic decisions dictating the scope and level of services delivered and operating decisions impacting the productivity of labor – appear to be the primary drivers of relative efficiency.

The challenge for city management is to quantify the difference between their operations and those cities that perform at a higher level of efficiency and determine how much of that difference can be attributed to differences in strategic choices and how much can be attributed to differences in operational choices.

For those differences that are attributable to strategic choices, cities need to revalidate those choices. If some cities can make different choices and justify them to their constituents, then that is powerful evidence that other cities can do so as well. In any case, turning an implicit choice into an explicit choice is a healthy exercise for any organization.

For those differences that are attributable to operating choices, cities need to develop targeted operational improvement initiatives to reduce or eliminate those differences. An efficiency program of this type might include business process redesign, re-organization efforts, automation through technology, or outsourcing initiatives. Our recommendation would be to centralize these efforts around a Chief Efficiency Officer or an equivalent position.

There is no perfectly efficient organization out there. As this study uncovered, within most local governments you will find a mix of highly efficient and highly inefficient operating units. The challenge is to figure out which is which. This, alas, is not always as easy as it seems. Our hope is that this benchmarking assessment can help cities ferret out the inefficiency that lurks within their organizations. While it is just one step, it is an important one.

Appendix - Of MICE and Methodology

In order to compare the relative efficiency of cities, a methodology is required that accounts for several practical challenges. These challenges include:

- **Defining efficiency.** What does it mean to be “efficient” and how do you measure it?
- **Accounting for differences in city missions.** Cities in the United States are generally chartered by states and are authorized to deliver a variable set of services. How do you create a benchmarking study that controls for those differences?
- **Accounting for local operating conditions.** Spending and employment across cities can be dependent on the amount of activity they are required to perform. Cities also face different cost environments (it costs 42 % more to employ a police officer in San Francisco than it does in Winston-Salem, NC). How do you account for these differences in operating environments?

Defining Efficiency

For the purposes of this study, one city is more efficient than another if it can deliver a comparable set of services using fewer resources.

In applying this definition of efficiency, the study acknowledges that resource deployment levels can vary based on both operational decisions and strategic decisions. Operational decisions are those that are typically associated with efficiency measures: how well is the work force trained and equipped, how well is technology deployed, are services sourced efficiently, etc.

For the purposes of this study, strategic decisions are also included. Although cities are generally chartered to provide a largely identical set of services, they have significant discretion to determine the breadth and depth of those services. For example, in “recreation services” cities make unique decisions about the segment of the population they choose to provide recreation services to, what those services are, and at what level

they provide them. City A might provide a wide variety of recreation services to seniors and youths of all socio-economic backgrounds while City B offers a narrow set of services to low income seniors only. For the purposes of this study, since City B spends less on recreation on a per capita basis than City A does, it will be considered more efficient.

It is important to remember that the point of this exercise is to help cities understand where they should be looking for savings opportunities. One place to look for savings are in areas where a city is providing services at a level beyond that which their peers are providing. Cities may be making conscious choices to deliver services to broader populations or at higher levels than other cities, but they should be aware of the costs they are incurring to do so. For that reason, no adjustments have been made to account for the differences in strategic choices that cities make.

The study employs two proxies to capture this admittedly broad measure of efficiency: spending per capita and employment per capita. In other words, the study assumes that the amount of money cities spend and the number of employees they deploy to deliver a comparable set of services – on a per capita basis - is indicative of their relative level of efficiency.

To measure efficiency among cities, IBM has created the Multivariate Index of City Efficiency (MICE). The MICE combines the two major measures of efficiency – spending per capita and employment per capita – into a single metric that gives equal weight to each measure. The resulting score is then applied to a scale that applies the rating of “1” to the most efficient city in the sample and a rating of “100” to the least efficient city in the sample. The remaining 98 cities are then arrayed on the scale based on how their MICE score compares to the other cities in the sample.

Accounting For Differences in City Missions

American cities come in a variety of flavors. Our country's federalized governing structure means that cities are generally incorporated by state legislatures and those legislatures have significant discretion to determine what activities cities are authorized to perform. Some cities run zoos and museums while others run libraries and senior centers. Some manage school systems while others operate airports. For benchmarking purposes, it is critical that these differences in service missions be accounted for.

Cities also vary in terms of their governance structures. Some cities – such as Louisville – are combined city and county governments sitting on the same geographic footprint. Others – like Charlotte-Mecklenburg County – are consolidated in some areas and not in others, with the city serving one geography and the county serving another. Some cities provide a set of municipal services locally and some regionally: Las Vegas looks like a city in every way except that its police department serves the entire Las Vegas metropolitan region.

The challenge for this study has been to identify these differences among cities and to minimize – to the extent possible – the impact they might have when comparing their operating economics. This has been accomplished in two ways:

1. Efficiency comparisons are based on core local government services only⁵. Since there is some variation in the services that cities are chartered to provide, it is important to exclude those that are not (more or less) universally shared. Of the 58 spending categories surveyed, 40 were included in the efficiency index. These categories constitute 79% of the total spending captured in the study.
2. Budget data is analyzed using the appropriate baseline metrics. In Las Vegas, for example, the city's per capita spending on police services is calculated based on the population of the metro region that the department serves. The city population is employed for the balance of the city's services.

While not perfect, the methodology effectively eliminates any material impacts variations in governance structures might have on the study's results.

Accounting For Local Operating Conditions

Each city faces a unique operating environment. Some cities are larger than other cities. Some cities have more crime than other cities. Some have more parks. Some cities have broader missions than others. Some are simply more expensive. To compensate for these differences, the study applies a normalization process. Three major normalization factors have been employed:

1. Spending and employment data is compared on a per capita basis. Ultimately, local governments are chartered to deliver a set of core services to their constituents. The level of resources they deploy to deliver those services on a per person basis is the most compelling means for comparing efficiency.
2. Spending and employment on police services has been normalized by crime rate. The rationale is that cities with higher crime rates are likely to dedicate more resources to police services (which is in fact the case).
3. All spending data has been weighted using the Council of Community and Economic Research's ACCRA Cost of Living Index. Cost of living varies considerably across the country and cities compete, by and large, in local and not national labor markets.

Additional normalization is possible, and in fact additional factors were tested for possible inclusion. For example, it was hypothesized that parks maintenance spending might correlate with parks acreage under management and that fire response spending would correlate with geographic coverage. However, no correlation between spending and these factors could be found, so those factors were not included in the normalization process. While additional normalization is likely possible, it appears that further efforts in this regard will yield rapidly diminishing returns and will not materially impact the results.

Data Sources

The analysis relies on authorized spending and employment data as portrayed in the most recently enacted budgets of these cities (primarily fiscal year 2010 or 2011). The spending and employment data from each city has been distributed across the spending categories. Since cities do not conform to a uniform organizational and budgeting structure, spending was allocated to these categories on a “best efforts” basis. While in some instances this is a challenging exercise (several cities have been eliminated from the study because their budget structures were too non-conforming), the vast majority of the spending was allocated with little difficulty.

IBM and Smarter Government

Government plays an increasingly central role in our economic lives. In the United States, government will be responsible for more than 4 out of every 10 dollars spent within our economy in 2010. Perhaps even more importantly, large sections of the private economy – health care, financial services, communications, and energy to name just a few – are more closely integrated with government than ever before. Traditional lines between the private and public sectors are becoming less distinct, and the overall performance of our economy is now dependent on improved cooperation and alignment between private companies and government. Getting government right – that is, making sure that it operates in a highly efficient and effective manner – has never been more important.

In recognition of the fact that the performance of government is the public’s collective responsibility, IBM has launched its Smarter Government program. Our goal is help governments inject intelligence into their decision support processes, business operations and public infrastructure to improve performance and deliver better public outcomes. Governments need to maximize the public value they generate through every dollar they spend. We think we can help.

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Footnotes

- 1 Condition of State and Local Finances, March 2010 Update, Government Accountability Office
- 2 Some cities were excluded either due to their unique organizational structures or to a lack of publically available data. Excluded cities include New York City, Dallas, Washington DC, Indianapolis, Buffalo, and Tucson.
- 3 Excludes public education, enterprise services such as water utilities and airports, and non-distributed costs such as debt service, capital outlays, workers compensation and unemployment insurance contributions.
- 4 Based on CIA World Factbook (2008) urbanization data.
- 5 In some rare cases we included budget information from an associated local government agency that provides one of these core services outside of the city government. The Chicago Parks District is one example.
- 6 Spending areas included in the study: police, fire, parks, public works, planning & building, executive offices, human resources, law, information technology and finance.



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