



# The State Policy Road Map

Solutions for the Journey Ahead





## About the Deloitte Center for Government Insights

The Deloitte Center for Government Insights shares inspiring stories of government innovation, looking at what's behind the adoption of new technologies and management practices. We produce cutting-edge research that guides public officials without burying them in jargon and minutiae, crystalizing essential insights in an easy-to-absorb format. Through research, forums, and immersive workshops, our goal is to provide public officials, policy professionals, and members of the media with fresh insights that advance an understanding of what is possible in government transformation.





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## Letter from the editor

## A road map for the journey ahead

The Deloitte Center for Government Insights is pleased to present *The State Policy Road Map: Solutions for the Journey Ahead*. This compendium is for anyone looking for innovative ideas for improving state government.

The spotlight will be on states throughout 2018 and beyond, as 36 states will hold gubernatorial elections with a minimum of 17 new governors taking office in 2019. But regardless of the election landscape, many state leaders are looking for fresh ideas to meet their constituents' evolving needs.

The opportunities are immense. Technology is creating a new world, from self-driving cars to flying taxis, from delivery drones to machines that can outdo human champions in everything from board games to trivia. Medical advances are not only extending our lives, but improving their quality as well. We live in a new era of possibility—but one in which our political institutions often struggle to keep pace.

As we've met with state leaders around the country, we hear many with a common goal: to create a government capable of evolving as quickly as the world around us. How to meet that challenge is what *The State Policy Road Map* is all about.

The journey begins by reexamining the rules, constraints, and incentive structures of state governments—structures that were largely established in the early 20th century. The framework created during the Progressive Era was largely centered on a belief in the ability of governments to meet public needs through structured bureaucracies; it never imagined today's incredibly rapid technological and social change. The "tech tsunami" hitting governments can be overwhelming, but also offers enormous opportunities. Because governments tend to be "fast followers"—identifying and moving to implement good ideas relatively quickly—state leaders have the opportunity to adopt certain "mature" technologies to address citizens' needs.

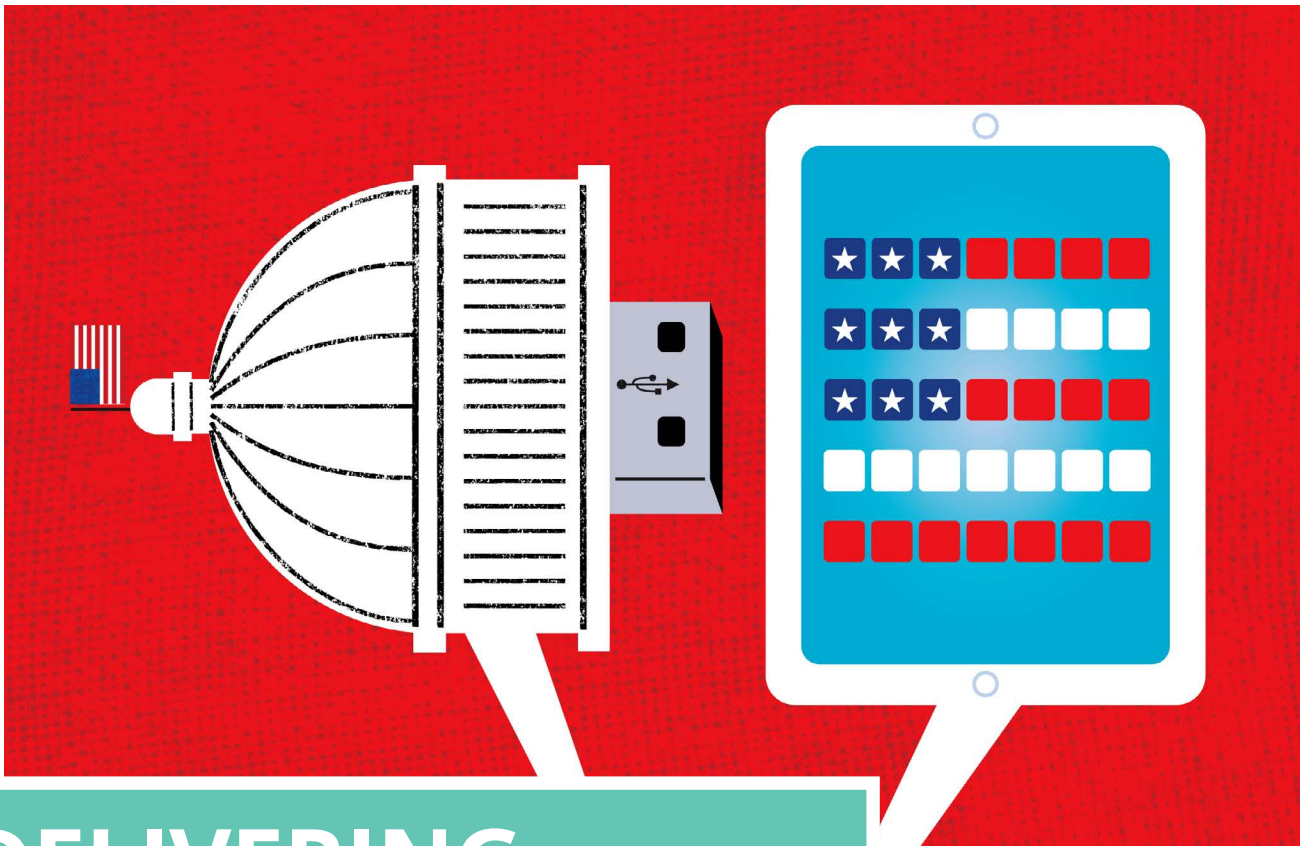
The compendium is organized into the following key themes:

- **Government reform** examines issues including digital transformation, workforce modernization, and approaches to saving money without cutting services.
- **Future state** looks at the emerging trends and challenges changing the landscape of state governments, from the opioid crisis to the emerging fields such as blockchain, artificial intelligence, and nudge thinking.
- **Delivering essential services** explores the latest approaches to delivering key services such as health care, education, and human services.
- **Improving quality of life** discusses policies and approaches for improving mobility, building infrastructure, creating jobs, and more.

The gap between "what is" and "what could be" in state governments seems as large as it has ever been. The future belongs to the bold, to those willing to not only accept change, but to embrace it. It is our hope that the ideas in this compendium can contribute to fresh thinking about innovative ways to serve and safeguard citizens in a manner consistent with the great traditions of our democratic institutions.

Here's to a bright future!

John O'Leary  
State and local government research leader  
Deloitte Center for Government Insights



# DELIVERING

## the digital state

William D. Eggers and Steve Hurst

### What is the issue?

**F**ROM the Internet of Things to artificial intelligence, no single factor may alter citizens' experience of state government more than the pure power of digital technologies. Governments worldwide are in the midst of a historic (and frequently wrenching) transformation as they abandon analog operating models and embrace digital.

At the state level, citizens want outstanding digital service from their government for the same reason they want it from an online clothing retailer, a bank, or a travel booking site: Great service makes their lives easier. The less time

people spend searching for information or filling out forms, the more time they can spend getting on with their lives.

So what do state governments need to do to forsake analog, industrial-era models in favor of their digitally enabled counterparts? This article provides a set of strategies that may help in getting from here to there. One thing to understand is that transformation is not just about the technology— it's a changed mind-set that puts customers and users before organizational interests, can turn human-centered design into a state's core competency, and improves the way state agencies serve their citizens.



## ISSUE BY THE NUMBERS: DIGITAL GOVERNMENT TRANSFORMATION

56%

State and local government IT spending is 56 percent (\$108 billion) of total government IT spending in the United States. This is expected to increase up to 58 percent (\$117 billion) by 2018. Some of this additional funding will likely be used for transition from legacy to cloud systems.<sup>1</sup>

73%

According to Deloitte's 2015 digital government transformation survey ([bit.ly/deloitte-digital-government-transformation-survey](http://bit.ly/deloitte-digital-government-transformation-survey)), 73 percent of state and local government respondents believed that their digital capabilities were behind the private sector.<sup>2</sup>

10%

The NASCIO 2016 State CIO survey findings show that over one-third of CIOs stated that greater than 10 percent of their state's IT budget is allocated to modernization work.<sup>3</sup>

20%

Nine of ten state CIOs considered at least 20 percent of their systems due for replacement or modernization, while nearly two out of three CIOs saw more than 40 percent of the systems as legacy.<sup>4</sup>

### How can state leadership tackle the issue?

#### DEVELOP A STATEWIDE DIGITAL STRATEGY

Our research points to a strong link between an organization's success and the presence of a digital strategy.<sup>5</sup> States with a clear, coherent digital strategy are likely better equipped to respond to opportunities and threats, and are more likely to foster innovation and collaboration. The strategy should consist of a road map that addresses the key elements of digital transformation: culture, leadership, workforce, and procurement. A high-profile strategy can accelerate the digital journey.

#### ESTABLISH A STATE DIGITAL STUDIO

State officials should have a central point for orchestrating the digital vision. Many commercial organizations—and some leaders in the public sector—have put a creative digital studio at the center of their digital transformation. The studio can provide web development, design thinking, and prototyping capability. This operation might be housed within the organization, or it might be co-sourced or even outsourced.

One of the first governments to set up an organization to function as an enterprise-wide design studio was the United

Kingdom, which formed its Government Digital Service (GDS) in 2011. The GDS soon evolved into a Cabinet office and seemed to inspire other governments to form organizations based on its practices. These included the United States Digital Service and 18F in the United States, the Digital Transformation Agency in Australia, and the Canadian Digital Service.<sup>6</sup> Hong Kong, Singapore, and Thailand have also established organizations of this kind.<sup>7</sup>

When smart organizations develop digital studios, they usually make those resources available to all departments and agencies with existing contract vehicles and attractive incentives. For example, the city of New York is in the process of creating a master service agreement (MSA) for several digital studios in order to provide design capabilities.

#### CREATE AN END-TO-END DIGITAL EXPERIENCE FROM THE CITIZEN/CUSTOMER'S POINT OF VIEW

Most citizens don't care about a state's organizational chart. They certainly don't want to spend time hopping from one state agency's website to another, trying to figure out which ones can help them with which concerns. They want to

get their questions answered or their transactions completed in a few simple steps.

Like the best e-commerce sites, the most seamless state digital service environments don't greet you by asking, "Where do you want to go?" Instead, they ask, "What do you want to do?" and then whisk you off to the place where you can accomplish what you need. Want to register to vote? You don't need to know the name of the agency that handles that. It's the service's job to take you to the right place.

#### USE DESIGN THINKING PRINCIPLES

Work conducted according to the principles of design thinking can be highly iterative. Practitioners conduct research to understand the real human needs behind the problem they're trying to solve or the service they're building. They commonly use brainstorming to generate large numbers of ideas and do a great deal of sketching, prototyping, and testing.<sup>8</sup> Whenever you see an organization that excels at digital design, you'll likely find that it builds a user focus into every step of every project.

#### PHASE OUT LEGACY SYSTEMS GRADUALLY

In the second decade of the twenty-first century, an alarming amount of critical state government business depends on IT systems that date back to the age of punch cards and green screens. Reliance on obsolete technology can open government agencies to potentially serious perils.

So how can you move off obsolete systems without risking a major belly flop? Refactoring, especially automated refactoring, can be a promising solution in many cases.

Refactoring is a straightforward approach that replaces old code one module at a time, producing code written in a contemporary language that can use a modern environment. The benefit is limited disruption, as end users shouldn't detect any difference in the systems they use from day to day. They would continue to use the same interfaces to execute the same business processes. But behind the scenes, refactoring creates an environment based on a modern framework such as .Net or JAVA that can run on newer platforms such as Windows or LINUX, providing a strong foundation for future modernization.

Refactoring is typically a lower-cost, lower-risk strategy that lets an agency conduct business with very limited disruption. It usually takes only about 18 to 24 months to complete a refactoring project. In a typical modernization, it can take that long just to gather requirements.

#### BUILD DIGITAL CAPACITY

Many government leaders identify workforce issues and technical skills as the most challenging areas for digital evolution.<sup>9</sup> Many state government agencies seem to lack the

skills needed to take advantage of digital transformation—skills in user research and analysis, agile and iterative project management, financial modeling, and digital supply chain issues, as well as coding and design. They should have a plan that pinpoints the capabilities they need and suggests ways to secure them.

Hiring, retaining, and training the right talent may require new approaches to recruitment, training, and engagement with the wider digital talent ecosystem. It will likely require offering the best candidates something beyond compensation and benefits, and creating a workplace in which they can thrive.

#### MAKE AGILE WORK FOR A GOVERNMENT ENVIRONMENT

Agile development is neither new nor unproven; in fact, agile projects are 350 percent more likely to be successful than waterfall development (600 percent for very large projects).<sup>10</sup> Despite this, agile is used relatively sporadically in state government. This means that the moment agile projects interact with parts of state government that have not adopted the methodology, they often meet resistance.

Traditional agile is designed for small teams working on well-defined projects over short periods of time. Scaling agile to large state IT projects involving dozens of teams over multiyear time horizons typically requires adapting the approach. Key modifications often include multiyear road maps, strong governance, coordinating cross-team dependencies, consolidated reporting, and increased testing.

#### DEVELOP ENTERPRISE-WIDE IDENTITY MANAGEMENT

Today, many governments rely on a sprawling patchwork of systems to manage information about people, using everything from passwords to smart cards to biometrics. Every department seems to handle the issue differently. The result can be inconvenient to the end user and can limit government's ability to leverage information it possesses but cannot access. These disconnects can be frustrating at best and crippling at worst.<sup>11</sup>

Imagine the potential if states could "connect the dots." Someone seeking benefits wouldn't have to provide their name, address, and other information to multiple agencies. Citizens would get tax forms with fields pre-populated with data. Agencies could take steps based on actions taken in other agencies, too. For example, someone sent to prison could have his or her unemployment benefits stopped, or someone who applied for nutrition assistance could be told that he or she qualifies for a school lunch program.

Today's limitations often stem from the way government manages identity: databases that can't talk with one another,



limited information sharing, and complex rules and protocols. To make digital government work and deliver great customer experiences, state governments likely need something simpler: a unique, uniform digital ID that grants agencies access to all of the appropriate data and services, from anywhere and any device.

## TRANSFORM PROCUREMENT

Our digital government survey shows the big changes government organizations seem to want in the procurement process: agile development, less restrictive terms and conditions, and a more decentralized procurement model. Any proposed procurement reform should consider these issues.<sup>12</sup>

Digital-age procurement entails simplifying the procurement process, breaking large projects into smaller parts, and increasing flexibility and agility in procurement approaches.

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### ACCESS HEALTH CT

Connecticut developed an online health insurance exchange widely viewed as successful. How did the state do it? By focusing on user-centric design and testing to eliminate pain points, address glitches, and prepare for contingencies.

### TEXAS HEALTH AND HUMAN SERVICES COMMISSION

How can digital projects improve the customer experience? One way is by working to understand user behavior and focusing on the user perspective while designing the project. That's exactly what the Texas Health and Human Services Commission (HHSC) did when it integrated eligibility systems for all federal and state programs and launched a mobile app for document verification.

### 18F

Apart from conventional recruitment criteria, evaluating candidates' motive for joining the team and testing whether they are a good cultural fit can play a role in hiring the right individuals for the job. The US federal government's digital studio, called 18F, reengineered, or "hacked," the government's hiring process to build a digital dream team.

### MICHIGAN'S MILOGIN

The MILogin identity management system allows users to access state information and applications, including private data, from multiple agencies with a single sign-in. The system uses tools such as credentials verified by a third party, strong passwords, and multifactor authentication to protect the user's identity, with specific requirements determined by the agency that owns each application. As of September 2017, more than 60,000 state employees and contractors, plus 100,000 Michigan citizens and 700,000 business entities, had registered for a user account to access over 170 state applications from multiple agencies.<sup>13</sup>

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# A STATE WORKFORCE

## to meet modern challenges

John O’Leary and Julie Quinn

### Changing the rules of engagement

**T**ODAY, most citizens expect government to deliver at Internet speed—and are too often disappointed. Those state leaders who can deliver high-level services may enjoy a competitive advantage.

But how can state leaders achieve twenty-first century performance management with workforce approaches often rooted in the twentieth century? Elected officials rely on state employees to carry out their agendas, but often struggle to get the best from their workforce, for reasons that may be both structural and cultural.

In a nutshell, the challenge is this: From recruitment to compensation to pension systems, the way most state governments manage their workforce doesn’t seem well suited for attracting and retaining top employees—particularly those with digital-age skills. Today’s most innovative and disruptive firms have reimagined work. In contrast, govern-

ment too often still operates on legacy employment rules from a bygone era.

Perhaps the greatest divergence today between government and the private sector isn’t technology; it may lie in how work gets done. How work is organized. How it’s rewarded. How people are hired. How team performance is measured and optimized. What the employee experience feels like.

The problem isn’t with public workers—it’s with the systems in which they work. State employees often have a wealth of domain expertise and are steeped in the complexities of various policy areas, from air quality regulations to SNAP eligibility, from budgeting to procurement. But while important, such knowledge alone won’t be enough if state government is to keep pace with the technology revolution rapidly transforming the private sector.

## ISSUE BY THE NUMBERS: STATE WORKFORCE

**19.5 MILLION**

US state and local governments employ a total of 19.5 million people (local: 14.4 million, state: 5.1 million).<sup>1</sup>

**46.5 YEARS OLD**

The state government workforce is aging. The median age of workers in public administration jobs has been increasing since at least 2011, reaching 46.5 in 2016 (figure 1).

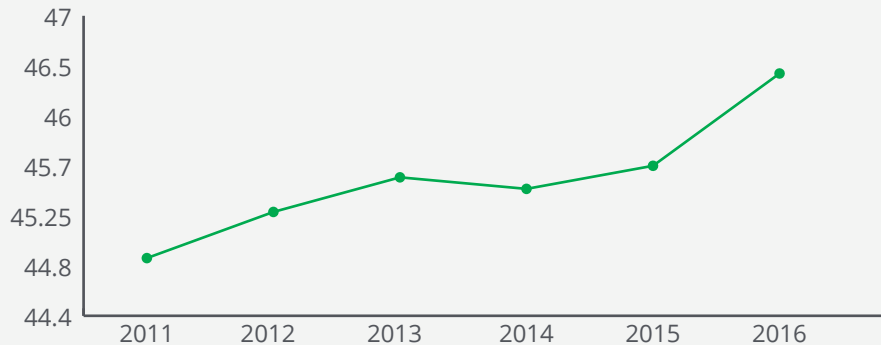
**92%**

Recruiting and retaining qualified personnel was ranked as the most important issue for the second year in a row by state and local government human resources managers, according to a 2016 survey (92 percent rated this issue important or somewhat important).<sup>2</sup>

**63%**

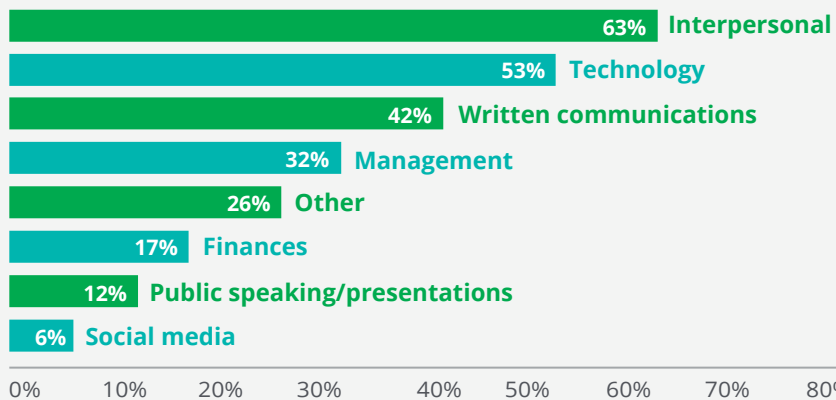
Interpersonal (63 percent) and technology (53 percent) skills are the skills state and local governments need most, according to state and local government human resources managers (figure 2).

**Figure 1. Median age of public administration workers**



Source: Deloitte analysis of Bureau of Labor Statistics' Current Population Survey.

**Figure 2. What skill sets are most needed in new hires?**



Note: "Other" skill sets offered were: verbal communication; analytical; administrative; emotional intelligence; innovative/adaptable/resourceful/resilient; leadership; politically savvy; customer service; collaborative; social/diversity awareness; business results; business acumen; critical thinking; good work ethic; coping skills.

Source: Center for State & Local Government Excellence, *State and Local Government Workforce: 2016 Trends*, May 2016.

## How can state leadership tackle the issue?

In these times of change, leaders across government are being pressed to rewrite the “rules” for how they recruit, develop, manage, and engage twenty-first-century employees.

### PUT THE PURPOSE FIRST

Here’s a typical state job description, modified from a state employment website:

**Program Director 1, Compliance Reviewer:** This position provides mental health and substance use expertise to review new and existing entities licensed or certified by the Department of Mental Health. Position is responsible for reviewing provider policies and procedures, client files, and other collateral information for compliance with laws and contract requirements. Master’s degree, licensure in substance use treatment or mental health field preferred.

The job listing then goes on to list all the benefits of working for this particular state, including pension, vacation, dental coverage, free parking (!), and the like.

Would this inspire you, or anyone you know, to apply for this position? Hardly. While it explains what the job entails and what you’ll receive for doing it, it misses the most critical element of all: *the why. The mission. The purpose.* Compare it with this ad for the same job:

**Substance Recovery Director:** Are you a mental health professional concerned about the opioid epidemic and other addictions? Come join the team at the State Department of Mental Health, where you can put your knowledge of substance abuse treatment to work as we combat one of the biggest public health challenges of our time. We have the resources to help you make a bigger difference than you ever thought possible.

If you recruit people by telling them about the dental benefits, you will get applicants who care about dental benefits. If you recruit people by telling them how they can make a positive impact—well, you might be surprised at who might apply.

One of the advantages that state employment has in attracting great candidates is the critical mission that benefits society. Instead of selling widgets, state employees are keeping the roads safe, helping the homeless, putting away

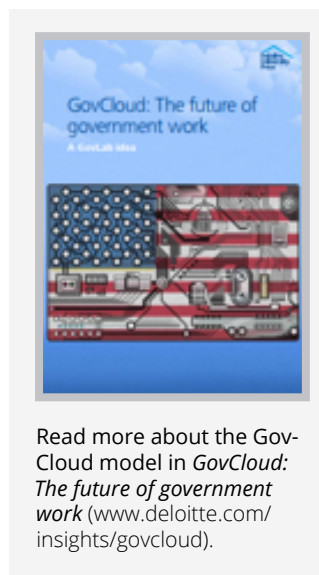
criminals, and so forth. Intangibles such as purpose may be even more important than the size of the paycheck.<sup>3</sup>

But many state governments have a brand problem.<sup>4</sup> Many job seekers won’t automatically equate state government and “good cause.” Take every opportunity to remind them.

### LEADERSHIP DISRUPTED: DEVELOPING THE NEXT GENERATION OF STATE LEADERS

In an era of incremental change, the gradual development of leaders working their way up the ranks might have made sense. But in today’s era of rapid change, leadership development often needs to be accelerated, and it should include more than training programs. Most leaders need firsthand experience driving change, especially during large-scale transitions.

Government agencies should engage high-potential leaders in real-world scenarios that expose them to digital disruption in order to help develop a pipeline of leaders equipped to lead through change.<sup>5</sup> Strong government leaders typically embrace innovation and risk-taking, and they ideally have a strong technical understanding. A frequent lament among state leaders is the challenge of finding enough employees with the professional skills needed to drive change in areas such as cybersecurity, data analytics, and digital government. Hands-on experience is critical. In the United Kingdom, for instance, the Department for Work and Pensions (DWP) created a boot camp-style digital academy to train and upskill staff. Workers are trained on key elements of digital technology such as user-centric design, agile development, and digital government services.<sup>6</sup> While started by the DWP in 2014, the Digital Academy has now been expanded to provide digital training to the rest of the UK government.<sup>7</sup>



Read more about the GovCloud model in *GovCloud: The future of government work* ([www.deloitte.com/insights/govcloud](http://www.deloitte.com/insights/govcloud)).

### GOV CLOUD: CREATING A MORE FLEXIBLE, ADAPTIVE WORKFORCE

The “GovCloud” model represents a potential future of state government talent management. In a GovCloud model, high performers aren’t put into traditional, static jobs. Instead, they are given assignments, and can be shifted to various departments and projects as needed. While likely not for everyone, this agile, collaborative,



and efficient talent pool often fits well with the talents and preferences of younger professionals as well as meeting the rapidly shifting needs of government organizations.

With this in mind, a GovCloud talent pool translates the job-hopping consultant model to the permanent workforce.<sup>8</sup>

Imagine a techie in her early twenties—let’s call her Tina—starting a job at a state department of transportation. After working at the agency for a year, Tina finds herself seeking a new challenge. Under the GovCloud model, she could undertake a wide variety of creative, problem-focused work in a virtual staffing cloud. And she wouldn’t be limited to the department of transportation.

While young workers may vary in background and expertise, many exhibit traits of “free agents”—self-sufficiency, self-motivation, and strong loyalty to teams, colleagues, and clients. A cloud system would allow teams to form and dissolve as needed, encouraging civil servants to focus on specific project outcomes rather than ongoing operations. Tina, for instance, could start a six-month stint at the department of health and human services helping to design mobile apps for social workers. As a cloud worker, she could go wherever her skills are needed and where her passion draws her—learning and growing along the way. From the agency’s perspective, the department of transportation may not require a permanent, full-time employee building mobile apps, but could use the occasional infusion of just-in-time talent in areas such as data analytics, project management, or behavioral economics.

While the conventional wisdom among many state HR officials holds that millennials (defined as those born between 1980 and 1995) can be particularly hard to recruit and retain in state government jobs, that may not be true.<sup>9</sup> In fact, many millennials want to work in government; millennials don’t leave government jobs more frequently than other generations; and millennials’ age-specific turnover rates are lower than Generation X’s.<sup>10</sup> Provide a positive work environment, and millennials could become key long-term contributors.

One of the worst things a boss can do is ignore an employee, and that may be especially true of purpose-driven millennials. Performance management at its best is real-time, ongoing, and blended between formal and informal regular “check-ins.” Frequent feedback can fuel performance and drive exceptional work.<sup>11</sup>

#### CREATE A DIGITAL HR PLATFORM TO ENRICH THE EMPLOYEE EXPERIENCE

Once hired, state government workers can thrive if their organizations view them as “customers” with choices about where they work. Digital technology has transformed the

customer experience in recent years, and digital tools could similarly reshape the employee experience.

Becoming digital is not just about new or more technology, but about platforms that provide access to knowledge, tools, and support at critical moments in the journey. A digital HR platform can help employees create a personalized career journey, receive regular feedback, and keep track of their training and development.

#### USE DIGITAL WORKFLOWS TO AUGMENT (AND ENHANCE) THE WORKER EXPERIENCE

Outdated and poorly designed technologies can increase the time it takes to get the job done, creating an environment where employees could feel frustrated and unproductive. For example, digital tools can streamline much of the “paperwork” associated with child welfare and other family services—freeing up social workers to do social work.

#### BROADEN THE TALENT APERTURE

It used to be that most state government workers were “lifers”—they started young, worked their whole careers within state government, and looked forward to a predictable pension when they retired. But this talent model doesn’t seem to work as well in today’s climate of job mobility, skill shortages, and retirement portability. Long-term employees can still be an important part of the government workforce, but they’ll likely be joined by other sources of talent:

- **Tour-of-duty talent** (workers from outside government who sign on for a few years to make a contribution)
- **Rented talent** (employees of state government contractors or partner organizations)
- **Periodic talent** (employees who go in and out of government service)
- **Freelance talent** (employees brought in as individuals for a specific project)
- **Open-source talent** (people who don’t work for the state directly, but contribute to its value chain for non-monetary purposes).<sup>12</sup>

Increasingly, many state governments are looking at a fifth source of talent—**digital labor**. Digital labor is the technology that can augment human capabilities and extend the reach of government workers. State governments have the opportunity to invest in technologies that could relieve overburdened departments. Those technologies could come to be seen as partners with government workers, and would finally help break the trade-off between holding down costs and meeting the mission.<sup>13</sup>

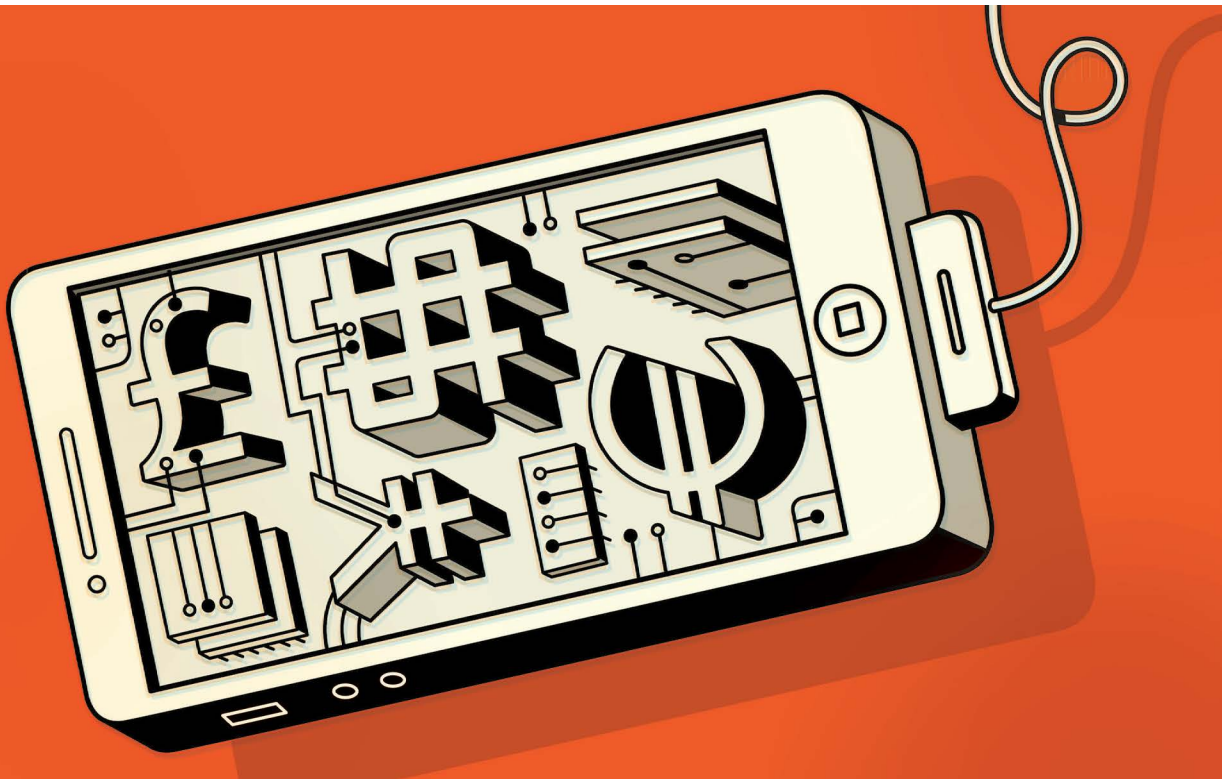
## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### CALIFORNIA

For a real-world example of innovative talent strategies in state government, look no further than California. California is often ground zero in the tech talent wars, so it may not be surprising to see the Golden State innovating with its state IT workforce. Faced with a 34 percent vacancy rate for IT workers, California Health Care Services' IT department adopted a variety of measures to tackle the metrics. For example, the IT department adopted a telecommuting policy that allowed employees to work from home on specific project activities, helping them keep their work-life balance. The state uses technology to allow employees to work whenever they want throughout the day, rather than tying them to a traditional eight-hour workday. Another effort in this direction was providing employees with substantial training opportunities in new technologies. As a result of these measures, the department's vacancy rate for IT positions dropped to 5 percent.<sup>14</sup>

California's overall IT system is rebooting its job titles and classifications in order to attract and retain employees. The NASCIO 2016 state CIO survey found that "modernizing IT job titles and classifications" was state CIOs' top concern with respect to personnel reform. Several states as well as local governments have now started to address this concern with job reclassification initiatives.<sup>15</sup> In California, this effort is a part of the larger Civil Service Improvement Initiative. Started in 2014, the "IT Classification Consolidation Project" eliminated more than 2500 classifications, consolidating the job titles into just 60 classifications. The purpose of the initiative was to make it easier for qualified applicants to understand the career opportunities that they have with the state of California.<sup>16</sup>

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## DELIVERING INNOVATIVE,

## better, and lower-cost state government

William D. Eggers, Christina Dorfhuber, and Chris Rose

### What is the issue?

**A** DECADE after the Great Recession, a number of states still face budget challenges. In 2015, 22 states had expenditures exceeding total revenues;<sup>1</sup> 30 states faced revenue shortfalls in 2017 and 2018 or both, according to the Center for Budget and Policy Priorities.<sup>2</sup> Like always, money is tight.

Most governors are looking for ways to reduce costs without cutting programs. While you may think most of the low-hanging fruit has already been picked, such strategies do exist.

An ongoing challenge facing public operations is the trade-off between cost and quality. One way state leaders can address this challenge is to embrace new thinking

and break the trade-offs through innovation. In the private sector, this takes the shape of making a better product for lower cost. For example, in the past, you could either serve lots of people with a standard product, or a small number of people with a customized product. Today, through personalization technologies, there is the potential to do both, and break the trade-off to offer “mass customization.”

In government, innovations that break the trade-offs can involve new technologies, new policies, or new service models to deliver equal or better quality for less money. Nesta, a UK-based think tank, calls such an approach “radical efficiency”: the art of developing different and better models—not just lower-cost versions of existing ones.<sup>3</sup>

# ISSUE BY THE NUMBERS: BREAKING THE COST-QUALITY TRADE-OFF

## 30 STATES

Thirty states face expenditures exceeding total revenues in FY17, FY18, or both (figure 1).<sup>4</sup>

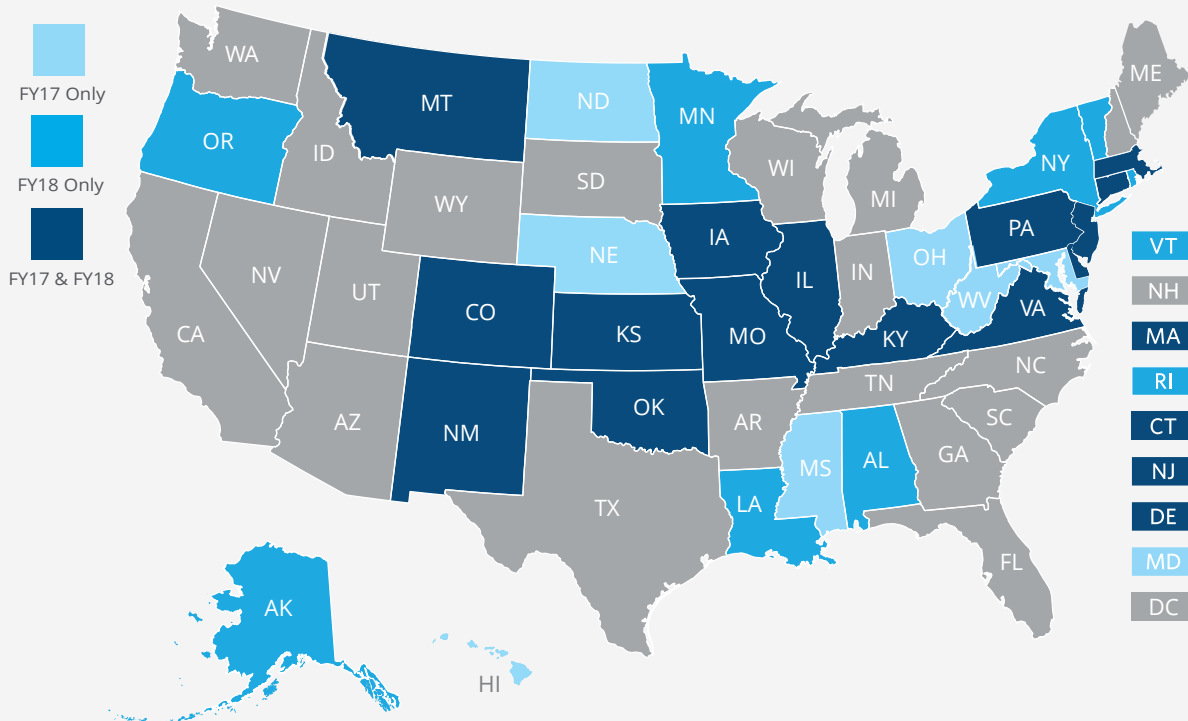
## 4-30%

Huge savings may be possible from new automation technologies. The Deloitte Center for Government Insights projects that state governments can realize time savings of between 4 and 30 percent by implementing automation technology in the next 5-7 years. This translates to between \$119 million and \$931 million in potential annual savings.<sup>6</sup>

## \$1.1 TRILLION

Some states have fallen further behind on funding their employee pension systems. The gap between state pension liabilities and assets grew to \$1.1 trillion in 2015.<sup>5</sup>

**Figure 1. Thirty states addressed or will address revenue shortfalls in FY17, FY18, or both**



Source: Elizabeth McNichol and Samantha Waxman, "States faced revenue shortfalls in 2017 despite growing economy," Center on Budget and Policy Priorities, October 4, 2017.



## How can state leadership tackle the issue?

A new administration can be an opportunity for state leaders to look at state operations with a fresh set of eyes. Rapid changes in technology can create a chance to borrow great ideas from commercial best practices. Advances in understanding the customer experience likewise offer opportunities.

But what's the best way to approach such an effort?

### A METHODOICAL APPROACH

Rather than starting with a set of preconceived notions and a few “prime targets” for cost reduction, taking a more methodical approach may be more effective. Start with analyzing your data—expenditure data, budget data, HR data, and performance data. The results of the analysis will identify some potential focus areas. With these focus areas identified, cast a wide net to generate ideas. Reach out to employees, senior government executives, think tanks, consultants, academics, and other partners.

The next step is key. How to choose from among the (hopefully) long list of cost-reduction ideas? One of the best approaches is to treat each idea as a “hypothesis” and critically test that idea against a set of criteria, including:

- Investment required
- Time horizon
- Likely return on investment
- Complexity and risk
- Impact on service levels
- Impact on state employees

This step can also include input from focus groups, surveys, and other “crowdsourcing” instruments. By critically testing these hypotheses up front, you can bring the best ideas forward.

Now, you can prioritize these ideas and start to execute with confidence. With a data-driven approach, you are more likely to pull the right levers and overcome possible resistance.

There may be opportunities for “incremental” cost savings—but saving even a small percentage of a large operation can generate meaningful savings. There may also be opportunities for more dramatic savings. For example, if you charge \$20 for annual license renewals, a policy change could enable you to charge \$60 for a three-year renewal instead—and cut the total number of transactions by 67 percent.

The break-the-trade-off ideas will likely fall into several different buckets.

## “BREAK THE TRADE-OFF” STRATEGIES

Organizing for efficiencies

Policy changes

Workforce strategy/alternative service delivery

Technology/data-driven solutions

Asset and real estate management/internal ops

New tools for reducing fraud, waste, and abuse

VS.

## ZERO-SUM STRATEGIES

Raise fees

Reduce services

Cut programs

Increase taxes

Freeze salaries, travel, etc.

### ORGANIZING FOR ONGOING EFFICIENCY IMPROVEMENT

#### Develop institutional capabilities

Some states have created independent agencies that conduct periodic top-to-bottom reviews of state programs, agencies, and departments and make recommendations for maintaining, eliminating, redesigning, or restructuring them. Texas is one state with robust independent review capabilities. Created in the wake of a recession-led budget deficit, the Texas Performance Review (TPR), launched in 1991, resulted in savings of over \$10 billion over the course of the next decade.<sup>7</sup> Meanwhile, the Texas Sunset Commission has resulted in \$981 million in savings and increased revenues over its 33-year history.<sup>8</sup>

Other states such as Arizona and Washington State are adopting lean thinking to maximize project impact while reducing waste.<sup>9</sup> For instance, Arizona launched a results-driven management system called Arizona Management System based on lean principles. The idea was to track and improve state agencies’ performance on a regular basis, honing customer value. As a part of this initiative, the state has revised its processes and policies, saving millions. One such revised process is data-driven procurement, which helped Arizona achieve \$20.4 million savings in 2016 alone.<sup>10</sup> Similarly, following lean thinking, Washington State automated the monthly manual billing process, which involved 300+ organizations, generating savings estimated at \$500,000.<sup>11</sup>

## Build a balanced portfolio

To achieve results, leaders can build achievable, robust programs that contain a portfolio of initiatives to potentially reduce costs. Some pitfalls can include taking on too many initiatives at once and constructing a cost-reduction portfolio that lacks balance and coherence. This can lead to one initiative diluting the benefits of another and, possibly, a wider failure of confidence in the whole program.

Cost savings take a varying amount of time to extract. Think fast money and slow money. Fast money can come from opportunities that are not particularly complex to implement and where savings can be realized more quickly. Slower money can come from projects that are more complex, that may require a greater level of attention and management, or that have more dependencies with other projects underway. It can take years, for example, to extract savings from shared services, consolidation, and other changes in the government's operating model. Additionally, the timeframe may be affected by the level of risk involved in the opportunity.

## Workforce strategies

Personnel costs can represent a large chunk of state budgets. In looking for possible savings, state leaders may consider looking at functions that involve large numbers of public employees.

Outsourcing, automation, self-service, and other forms of alternative service delivery are several options state leaders can consider. Can the function be performed through self-service? Can parts or all of it be automated? Can it be contracted out or done through a public partnership? Can policy changes reduce effort with little or no impact on outcomes?

Careful workforce planning that takes advantage of natural attrition can help to minimize adverse impact on state employees.

## OPERATING MODEL: RECONFIGURING BUREAUCRATIC STRUCTURES TO ACHIEVE POLICY OUTCOMES IN A DIFFERENT WAY

Often, the fiscal gap is so big that efficiency savings alone may not suffice. State officials can identify cost-reduction opportunities that change the shape and the way they do business, allowing services and policies to be delivered in a different way. This can take many forms, depending on the circumstances of the organization in question. Some common techniques that can help reduce costs through operating model change include:

- **Implement shared services:** Share back-office functions (for example, HR, finance, procurement) and delivery models with other departments or public bodies, including boards and commissions.
- **Reduce overlap:** Adjust the responsibilities of state agencies and departments by merging or modifying programs to reduce overlap.
- **Rationalize:** Reduce the number of agencies, units of local government, and "arm's-length bodies" involved in delivering public services.
- **Redesign:** Adjust organizational hierarchies to increase spans of control and "delayer" middle-management roles through new workforce civil service paradigms and other means.

Changing the operating model can be harder than driving out efficiency savings because it can require state agencies and employees to fundamentally alter their ways of working and to adapt to a larger degree of change.

## POLICY CHOICES: CHANGING COSTS WITHOUT SACRIFICING MISSION

Policy choices can be a sensitive part of any cost-reduction program because they can affect large constituencies external to government. But this also represents an area where cost savings can be found without undue impact on core services. While some policy changes may require legislation, others may be accomplished through executive action.

Policy choices, in some cases, are rooted in long-ago decisions that established processes appropriate for the time but are no longer necessary due to technology changes. Does it really make sense to publish certain public notices in newspapers in the Internet age? Does having a different license plate for each county in the state justify the costs of managing multiple inventories? For that matter, is having a service office in each and every county the best use of scarce resources?

Reexamining existing policies can also reveal current practices that may be needlessly causing inconvenience to citizens. What is really gained by requiring documents to be notarized? Why can't someone simply take a photo of his or her latest utility bill and email it in, rather than dealing with the hassle of finding an envelope and stamp to mail in a paper copy?

In some cases, there may be good reasons for continuing the current practices, but it never hurts to ask questions. Policy choices are driven by leadership, and cost-saving directives can often provide a useful spur to creative policy thinking.



Read more about how state governments can apply cognitive technologies in *AI-augmented government* ([www.deloitte.com/insights/ai-in-government](http://www.deloitte.com/insights/ai-in-government)).

## TECHNOLOGY- AND DATA-DRIVEN SOLUTIONS

Rapid advances in technology, in areas including robotics, cognitive computing, and cloud, mean that almost every aspect of state operations can be reevaluated for streamlining through new technology.

In the past, tech upgrades in state government were often synonymous with large system implementations that were slow and costly to

implement. Some systems will still fall under this category, but there are increasing places where more “lightweight” automation or cloud IT solutions can yield savings with less risk, less cost, and a faster payback in a shorter period of time.

The tech revolution is reshaping the economy, and state government is a target-rich environment for opportunities to use automation to improve efficiency. Mobile applications, for example, can allow field workers, such as social workers, to input and access critical data on-site, creating huge efficiencies without incurring massive costs.

Digital government, online self-service, artificial intelligence, and a host of other technologies offer a chance to rethink workflows, reduce costs, and in many cases to do so while enhancing service levels.

In addition, technology now allows for data-driven solutions that, through predictive analytics, can dramatically improve the allocation of state resources, from people to facilities to budget dollars.

### Management by data to optimize programs and operations

Big advances in data analytics in recent years can help states save time, money, and energy.<sup>12</sup> By making decisions based on data rather than intuition, states can allocate budget resources to maximum effect.

Consider Oregon, a leading state in using data to advance more evidence-based programs and services. The state targets many of its grants to local public safety agencies to test strategies that reduce recidivism and save prison costs. In human services, the state’s Pay for Prevention initiative directs funds to evidence-based interventions with the goal of preventing children and youth from entering

the state’s child welfare and foster care systems in the first place, ultimately saving tax dollars.<sup>13</sup>

### Asset management

From real estate and fleet maintenance to procurement and energy efficiency, state governments control significant assets. In some cases, practices established in the past may not be optimal today in light of new technologies or new practices. For example, states are now able to better understand usage patterns in offices and design flexible spaces that meet the needs of the modern and often mobile workforce. This can result in avoiding construction of new buildings or reducing the total square footage needed to support the existing workforce.

### Internal operations

Robotic process automation (RPA) can replace the keystrokes on scores of repetitive manual tasks sometimes common in internal operations, allowing workers to focus on higher-value work. These technologies can take over repetitive tasks from human workers, freeing up those workers to perform more high-value activities. Bots, which mimic the actions of human workers, can automate processes in human resources, finance, payroll, IT, and procurement (figure 2).

Procurement rules and hiring processes are also potential targets for innovation. Finance and budgeting functions can be dispersed and highly manual.



Read more about fighting fraud, waste, and abuse in *Shutting down fraud, waste, and abuse* ([www.deloitte.com/insights/fraud-waste-abuse](http://www.deloitte.com/insights/fraud-waste-abuse)).

### CUTTING FRAUD, WASTE, AND ABUSE

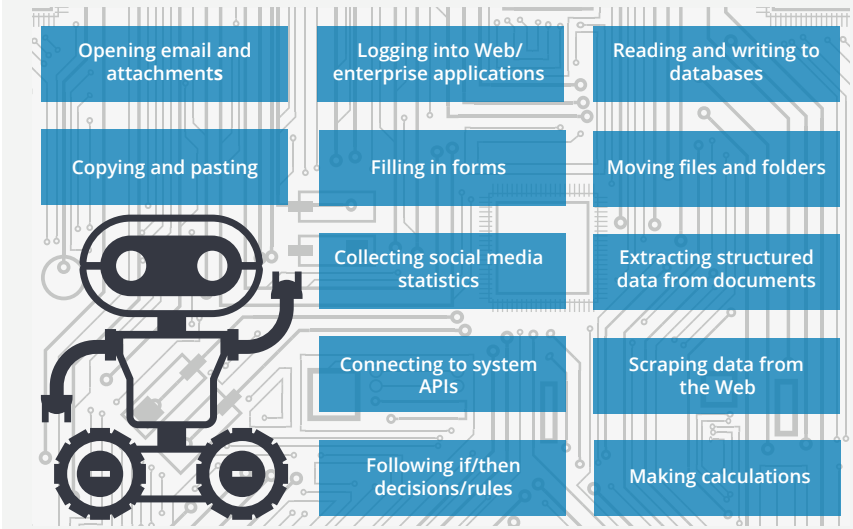
Elimination of fraud, waste, and abuse is the equivalent of found money—money that can be spent on delivering real value.

Fraud perpetrators can be highly inventive. Keeping pace with them requires states to build anti-fraud systems that contain all relevant information and are capable of learning new fraud patterns on the fly. However, new tools that allow states

to employ artificial intelligence-enabled fraud detection are coming online and can help states build such systems.

Tennessee’s Medicaid program TennCare took a holistic approach when it enforced statewide sharing of suspected

**Figure 2. Key functions replaced by bots**



Source: Deloitte analysis.

Deloitte Insights | [deloitte.com/insights](http://deloitte.com/insights)

fraudulent provider lists. The relatively simple policy, procedure, and technology changes associated with this move allowed Tennessee to save \$50 million in one year, according to TennCare’s former director.<sup>14</sup>

**Behavioral “nudges” can boost voluntary individual tax compliance**

Tax systems overwhelmingly rely on voluntary compliance, for both individuals and corporations. Efforts to boost compliance through enforcement can be costly and difficult. The emerging field of behavioral economics, or nudge thinking, has the potential to increase revenues without raising taxes. A successful example of nudge thinking appli-

cation comes from the Canadian province of Ontario, where the government turned to behavioral science to tackle delinquencies in employee health tax (EHT) filing by the businesses. To assist employers who were running late on filing, Ontario tested new messaging that focused on implementation intentions. In 2015, a subset of employers tweaked their collection letters, guiding participants about where they could file a return (directing them to websites and the mailing addresses of service centers) and providing detailed instructions for filing and deadlines. A month later, employers using the implementation intention approach reported a 13 percent increase in their filings vis-à-vis the control group that received the standard delinquent message.<sup>15</sup>

**► NUDGE TOOLBOX: IMPLEMENTATION INTENTIONS**

Committing to a plan can help individuals accomplish a specific goal by spelling out “how, when, and where” they intend to carry out an action, which is known as an implementation intention. In a number of studies concerning fruit and vegetable consumption, people who expressed their dietary goals in an “if/then” format—for example, “If I am at home and I want to have dessert after dinner, then I will make myself a fruit salad”—consumed significantly more healthy foods.<sup>16</sup>



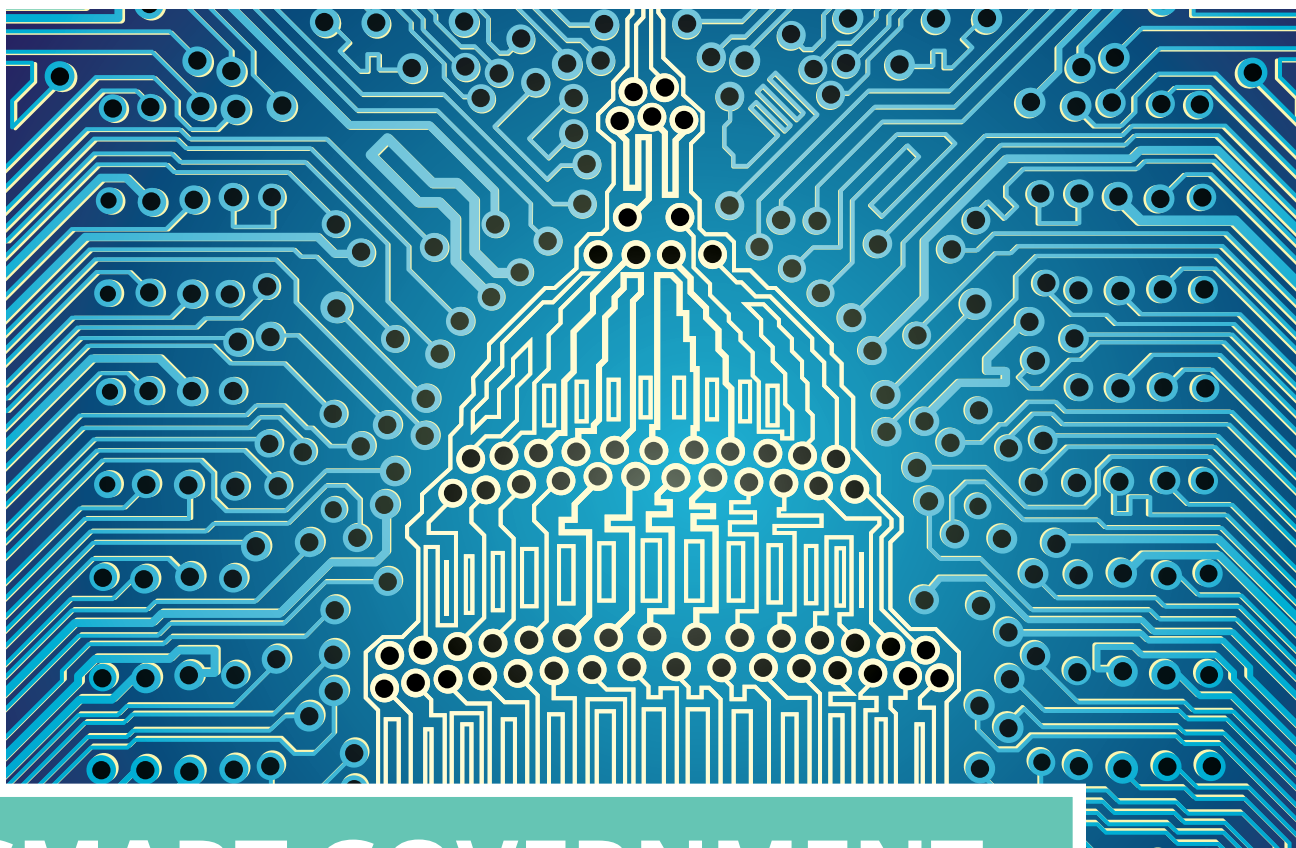
## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### NCGEAR

In 2013, North Carolina launched an initiative to analyze and reform state government operations. Better known as the North Carolina Government Efficiency and Reform, or NCGEAR, this initiative was a “data-based approach to improving state government processes, enhancing customer service, and realizing cost savings and cost avoidance.”

After a comprehensive evaluation of the executive branch (which includes major state agencies), the NCGEAR published its final report in March 2015 with 22 reform recommendations. Following an eight-step process of opportunity identification, the initiative’s recommendations included a host of major changes, such as transitioning to an enterprise-wide approach for state programs and services from the current traditional agency-focused approach. The initiative is expected to result in savings worth \$14 million in the first year, cumulating to \$615 million by 2025 in net present value.<sup>17</sup>

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- 13 *How states engage in evidence-based policy: A national assessment*, The Pew Charitable Trusts and the MacArthur Foundation, January 2017.
- 14 Peter Viechnicki et al., *Shutting down fraud, waste, and abuse: Moving from rhetoric to real solutions in government benefits programs*, Deloitte University Press, May 11, 2016.
- 15 The case is from the report *Behavioral Insights and Public Policy: Lessons from Around the World*, OECD Publishing, March 2017, pg. 332.
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# SMART GOVERNMENT

## Unleashing the power of data

Mark Price, William D. Eggers, and Rana Sen

### Finding the value hidden in data silos

**T**HE twenty-first century so far has been an object lesson in the power of data. Moore’s Law observed more than 50 years ago that advancements in computing power, with chip capacity doubling approximately every two years, were enabling a rapid expansion in our ability to manipulate data. With the advent of the Internet, the same exponential increase now applies to the ability to share that data as well.

The result is a new information age, with new rules of value creation. Indeed, some observers rate Google, Apple Inc., Microsoft, Amazon, and Facebook as the five most valuable global brands—all of them information companies first and foremost.<sup>1</sup>

Why is this relevant for states? Most states are sitting on an untapped treasure trove of data and are just starting to scratch the surface of how they can use this data to deliver value to their citizens.

To some, the term “smart government” may sound like marketing hype. But just as digitally savvy companies rely on data, a 360-degree smart government looks to leverage data to improve outcomes.

The digital infrastructure of a state allows entrepreneurs in government to discover new ways of creating value. Moreover, smart governments often foster partnerships between government, businesses, non-profits, community groups, universities, and hospitals—with all entities

focused on a shared goal: creating a smarter state and improving the lives of citizens.

Digital government creates the data-rich platform. Data-smart government then delivers the goods. Perhaps the biggest challenge is getting the data out of the shadows and making it available for use. If states can succeed in that, then, and only then, can the potential power of all that data be realized.

The vision is a government that embodies the best attributes of the public sector today—one that is **intuitive**, **integrated**, and **intelligent**:

- **Intuitive.** Intuitive governments understand the power of data, harnessing digital technology to sense citizen needs as they emerge. Performance analytics can help governments to continuously improve services and proactively connect with citizens through easy-to-use interfaces.

- **Integrated.** Integrated governments make data-sharing the spark that burns down silos. Data integration allows data sets from across departments, domains, and sources to be combined into meaningful and valuable information. When data—lying around in several disparate sources—is integrated, the impact can be multiplied dramatically. The integration of data into a single, unified data layer could be essential to unlocking the true potential of government data and, thus, of digital government itself.
- **Intelligent.** Smart governments can also make use of emerging fields such as behavioral economics, psychology, and data analytics to manage risk, empower their workforces, and continuously evolve in pursuit of better outcomes. By tapping into citizens' knowledge, a smart state can make superior use of scarce resources, and share data to help their citizens make better choices.

## ISSUE BY THE NUMBERS: DATA AND SMART GOVERNMENT

90%

An estimated 90 percent of all data in existence today was generated during the last five years.<sup>2</sup>

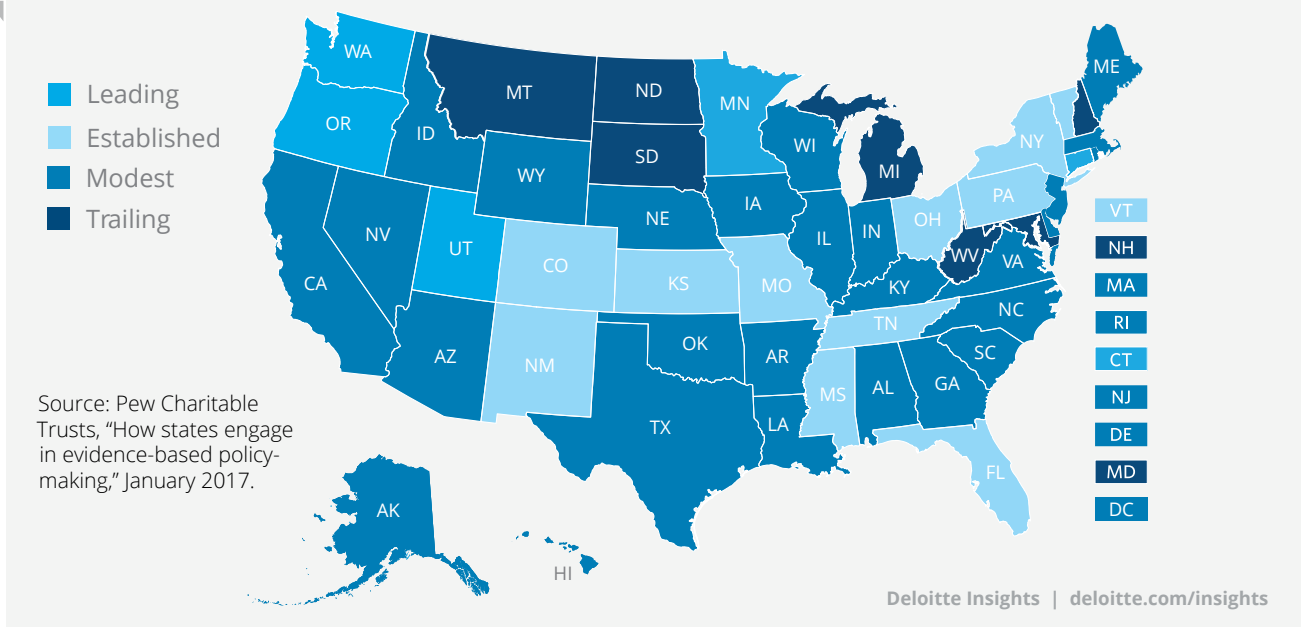
50%

Open, transparent data can also be critical to a data-smart government. A US States Open Data Census evaluation of nine key data sets showed that only 21 out of 50 states scored at least 50 percent.<sup>4</sup> These data sets were evaluated on various metrics—free availability of data sets, machine readability, and bulk availability being just a few.

5 LEADERS

Performance data, such as program evaluations and outcome analyses, can be a critical tool in enhancing performance. According to the Pew Charitable Trusts, most states engage in some form of this evidence-based policymaking, with Washington, Utah, Minnesota, Connecticut, and Oregon leading the way.<sup>3</sup> Figure 1 shows how each state fared in Pew's evaluation of evidence-based policymaking in US states.

**Figure 1. Evidence-based policymaking: How each state scored**



## How can state leadership tackle the issue?

There is no magic formula for a state that wants to take advantage of data it already has; there are various ways to tap into that latent data potential. What is important is recognizing the value trapped in currently available data and committing to unleashing that value for citizens.

That said, several barriers can exist to making this data available. Some are technical: For instance, users are often unable to access data housed in different systems. Some are cultural: Various departments may not put a high priority on sharing information outside their own organization. Legal restrictions on data-sharing and privacy concerns must be considered, too. For example, a department that shares sensitive data with another department needs to ensure that appropriate cybersecurity measures are in place to safeguard that data.

Here are some concrete steps that states might consider on their data-smart journey.

### CREATE A DATA ANALYTICS CENTER OF EXCELLENCE (COE) FOR STATE GOVERNMENT

Government agencies can better realize the benefits of data by putting some structure behind their data effort. One way of doing this could be by establishing centralized oversight for the government’s data analytics. An analytics center of excellence (CoE) staffed with data scientists, in-

formation designers, and cognitive scientists can promote cross-agency knowledge-sharing. A data analytics CoE can share skills, tools, and techniques to meet the needs of all state government agencies. This CoE can become a tiger team for data challenges that can be assigned to whatever priority problem state leaders identify, from the opioid crisis to Medicaid fraud to transportation. The collaboration among this data community can inform decisions made by state leaders.

Read more about data-driven human services delivery in *Rethinking human services delivery* ([www.deloitte.com/insights/rethinking-human-services](http://www.deloitte.com/insights/rethinking-human-services)).

### SHIFT FROM REACTIVE TO PREEMPTIVE GOVERNMENT

Data-driven public policies can help governments shift resources to where they are needed most. Predictive models, as well as other types of data analysis and visualization, allow states to focus more efforts on prevention rather than on reaction and remediation. For example, rather than simply reacting after a noncustodial parent has missed support payments,



a predictive model can alert enforcement officers ahead of time about which noncustodial parents are likely to go into arrears. This can allow the agency to proactively communicate with and offer additional services to potential defaulters, possibly even preventing them from going into arrears in the first place.

With 15 years of historical data, Pennsylvania’s Bureau of Child Support Enforcement developed a payment score calculator using predictive modeling. This calculator estimated the likelihood of different scenarios: that a noncustodial parent would begin to pay court-mandated child support, that the parent would fall behind at some point in the future, and that the parent would pay 80 percent or more of accrued amounts within three months.<sup>5</sup> Based on this score, caseworkers can now follow a series of steps and keep a case from becoming delinquent.



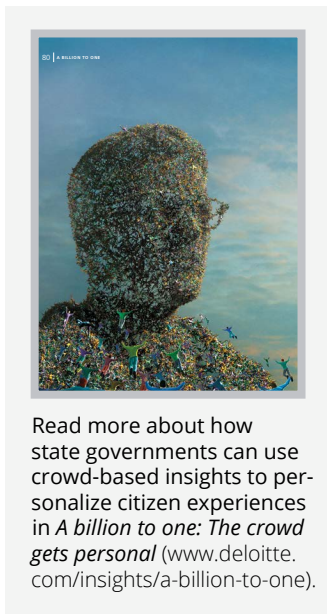
Read more about how nudges can help state government improve outcomes in *Beyond carrots and sticks* ([www.deloitte.com/insights/improving-outcomes](http://www.deloitte.com/insights/improving-outcomes)).

### EMPLOY “NUDGE THINKING”

Ideas inspired by behavioral economics— a.k.a. *nudge thinking*— can help encourage better behaviors, from voluntary tax compliance to following the rules of public benefit programs. The behavioral nudge revolution, which coexists with the data revolution, is a fairly recent phenomenon, popularized by authors Cass Sunstein and Richard Thaler. Their 2009 book *Nudge* helped inspire the establishment

of governmental behavioral economics units in the United States, the United Kingdom, and elsewhere.

The concept behind nudge thinking is this: Minor, often inexpensive, tweaks to choice environments can motivate big changes in people’s actions. Combining behavioral insights with the latest in digital technology and data science can take nudge thinking to a new level, enabling smarter decisions by citizens, groups, and the governments that serve them.



### CREATE PERSONALIZED GOVERNMENT

State governments with a strong data platform can shift from merely providing services to creating more personalized citizen experiences.

For example, Oracle (through its acquisition of Opower) uses the power of data and behavioral economics to motivate people to save energy. It creates personalized energy reports that compare a household’s energy use with that of their

neighbors—those who live nearby in similar types of homes. Through these reports and an online scoreboard, the company has gamified the experience of energy consumption. It encourages people to compare their household electricity use with their neighbors’, allows energy users to complete challenges, and earn points and badges tied to reduced energy use.<sup>6</sup>

### DEVELOP AN API STRATEGY

With today’s technologies, creating an enterprise system is often less about trying to corral dozens of disparate agencies into using a single platform and more about creating systems of systems built around data exchanges with a common understanding of how that shared data is defined. The key enabler for this is a strategy around application programming interfaces (APIs)—tools that allow one computer program to communicate with another. APIs enable the government’s core IT assets to be reused and shared. They can also facilitate the development of third-party applications from government data.

### TAP INTO UNSTRUCTURED DATA

State governments mostly think in terms of *structured* data. But as they expand their data capabilities, they should consider tapping into *unstructured* data sources as well, such as video feeds, surveillance cameras, public tweets, and geotagged 311 reports.

New analytical tools now enable these kinds of unstructured data to be analyzed in order to shine a light on what was dark, thus potentially increasing effectiveness and leading to better decision-making.

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION



Read more about New Mexico's use of behavioral tactics to encourage honest self-reporting in *Nudging New Mexico: Kindling compliance among unemployment claimants* ([www.deloitte.com/insights/nudging-new-mexico](http://www.deloitte.com/insights/nudging-new-mexico)).

### NUDGING NEW MEXICO

Behavioral science can sometimes help government agencies solve some of the trickiest problems. The New Mexico Department of Workforce Solutions used behavioral tactics to enhance the accuracy of responses among unemployment insurance claimants.

By including pop-up messages at key points in the digital workflow, claimants were reminded of the importance of providing correct information at a critical moment. Administrators tested different messages to determine the most effective one—another data smart approach. In the year after the smarter system went live, improper payments fell by half and unrecovered overpayments were reduced by almost 75 percent, saving the state almost \$7 million.

### IDENTIFYING AT-RISK CHILDREN IN THE DISTRICT OF COLUMBIA

Child welfare agencies across the nation often struggle to return children to their parents quickly (reunification) and help them remain there (stability).<sup>7</sup> The District of Columbia's Child and Family Services Agency (CFSA) tackled reunification by building

a statistical model that would predict the extent to which a successful reunification was probable or unlikely based on the specific facts of the case. The predictive model segmented children into different groups, flagging those least likely to have a timely and stable reunification. Perhaps more importantly, the model identified *why* children faced these risks and *which* factors were under the CFSA's control.<sup>8</sup>

### OHIOCHECKBOOK.COM

Until 2015, Ohio was behind most states in digital budget transparency. Things changed when the state launched OhioCheckbook.com, an interactive spending transparency platform that allowed people to view and use budget data from various categories—all the way down to specific expenditures. OhioCheckbook delivered value not only to people outside, but also to those working within the government, who used it to perform various tasks instead of relying on internal tools.

OhioCheckbook.com illustrates how better data presented interactively can engage more people within and outside an organization. This, in turn, can help identify data quality problems and may result in even better data and insightful analysis, thus creating a virtuous cycle.<sup>9</sup>

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## THE CHALLENGES

### that could change everything

Deborah Sills and William D. Eggers

#### When the agenda is not of your choosing

**C**HARLIE Baker took office as governor of Massachusetts on January 8, 2015. After a mild start, that month turned into the fourth-snowiest in Boston's history. Then came February, which was even worse, becoming Boston's all-time snowiest month.

Though he hadn't run on a platform of clearing snow, the *nine feet* that fell during "Snowmageddon" put Governor Baker in the media spotlight as he dealt with broken

trains, clogged roads, and a snowed-in airport. How well did Baker meet the challenge? After his first 100 snowy days in office, Baker's approval rating stood at over 70 percent.<sup>1</sup>

For governors in 2018, a number of challenges are brewing, which could define their time in office. Though not every potential pitfall can be foreseen, here are some of the issues most likely to surface—and that governors should be prepared to deal with.

## “Governor, we’ve been hacked”

In the past few years, cyber criminals have hacked into every conceivable organization’s data.<sup>2</sup> Cyber risk for state government is likely to increase, as cyberattacks grow in volume, intensity, and sophistication. A major data breach can be costly not only financially, but also in terms of citizens’ trust. Moreover, a data breach can disrupt other policy priorities, as attention is spent in responding and recovering.

The most recent Deloitte-National Association of State CIOs (NASCIO) biennial cybersecurity survey shows that cyber risk has risen in importance in the eyes of governors and other state executives. Moreover, cybersecurity is becoming part of the fabric of government operations, with 29 percent of state chief information security officers providing their governors with monthly reports on cybersecurity. On the other hand, most states face a resource crunch in fighting cyber threats, both in terms of funding and talent. For most states, cybersecurity is less than 2 percent of their total IT budgets.<sup>3</sup>

Unfortunately, cybersecurity professionals seem to be in short supply and high demand. States should consider augmenting the capabilities of their cyber workforce through effective outsourcing and the use of cognitive technologies. For example, states could consider automating parts of the investigation of security alerts. Artificial intelligence and data analytics can likewise mitigate the effects of any cyber talent shortage. It is possible to analyze network traffic flows to identify suspicious activities, but this sort of analysis “does require savvy cyber professionals with a particular set of skills that can recognize and act on the insights gleaned from analyzing big data sets.”<sup>4</sup> Living with cyber risk appears to be the new normal, and managing it likely an essential part of achieving optimal performance in a digital government. The real test could lie in how state governments anticipate and counter any threats in this ever-shifting cyber landscape.

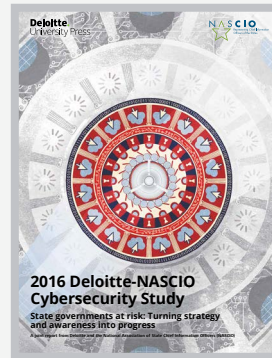
## Regulating in an era of exponential change

How do you regulate a moving target?

In 2017, self-driving cars were giving passenger rides in Pennsylvania, and self-driving trucks were delivering beer in Texas. Who can say what autonomous vehicles will be doing five or ten years down the road?

States are expected to play an important role in this emerging future, not only as regulators and policymakers, but also by allocating research and development funds, especially in cases where the federal government is providing

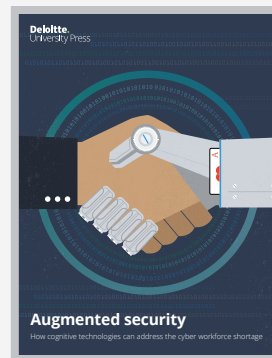
### LEARN MORE ABOUT CYBERSECURITY IN GOVERNMENT IN THESE DELOITTE STUDIES:



*2016 Deloitte-NASCIO cybersecurity study*  
([www.deloitte.com/insights/stateofcyber](http://www.deloitte.com/insights/stateofcyber)).



*Government's cyber challenge: Protecting sensitive data for the public good*  
([www.deloitte.com/insights/cyber-challenge](http://www.deloitte.com/insights/cyber-challenge)).



*AI-augmented cybersecurity: How cognitive technologies can address the cyber workforce shortage*  
([www.deloitte.com/insights/augmented-security](http://www.deloitte.com/insights/augmented-security)).

resources. States can also use their influence as a purchaser of vehicles. From a policy perspective, self-driving cars could be a game-changer for the elderly, the young, and the disabled—but presumably only in states with a regulatory structure that appropriately balance safety concerns with innovation.

Self-driving cars are just one of the emerging technologies that states need to grapple with. The Internet of Things offers great potential, but could also create great



risk. A vulnerable connected device can threaten an entire information ecosystem, putting public infrastructure at risk. Cryptocurrency, ridesharing apps, home sharing, apps that detect medical problems (does your smartphone qualify as a medical device?)—the tech revolution seems to be creating a regulatory maelstrom for state governments.

There are more questions than answers right now, and there could be many reasons for that. For example, innovation often moves fast, while regulation tends to move more slowly.

In a fast-moving and increasingly complex world, regulators are challenged with protecting citizens without stifling innovation. Regulate too much and you risk stymieing innovators. Wait too long and you risk losing the opportunity to regulate a new technology before it becomes widespread. The whole “ignore until large” strategy can sometimes backfire, since “large” can happen very quickly and regulators may not have the luxury to wait and see what happens.

Consider unmanned aerial systems (UAS), aka drones, which have a multitude of applications in law enforcement, disaster response, wildlife tracking, and even pizza delivery.<sup>5</sup> But the technology could also pose a threat to privacy and security, and can even end up as tools for terrorists. Taking this into consideration, at least 38 states are considering regulations related to UAS in the 2017 legislative session.<sup>6</sup> But how can legislators and regulators make informed judgments?

More than the particulars of any given regulation challenge could be the need for rethinking the whole approach to regulation. One outside-the-box approach is to consider leveraging technology to connect with citizens, especially early adopters. For example, New York State Department of Financial Services superintendent Benjamin Lawsky found a way to engage with citizens on the recent bitcoin regulation. He participated in a Reddit “Ask me anything” session, opening up a dialogue with hundreds of citizens on pending regulation. By using the Reddit platform to engage with citizens, Lawsky was able to address issues for the bitcoin community, and CoinDesk reported that his session “provided more evidence to suggest that he intends to craft legislation that strikes a balance between the needs of law enforcement and bitcoin entrepreneurs.”<sup>7</sup>

Innovative thinking could hold the key in reimagining the future of rulemaking, helping regulators sense emerging technologies before they reach scale.

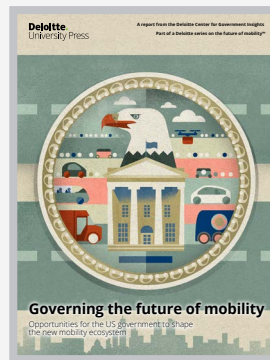
**READ MORE ABOUT INNOVATIVE APPROACHES TO REGULATION IN THESE DELOITTE STUDIES:**



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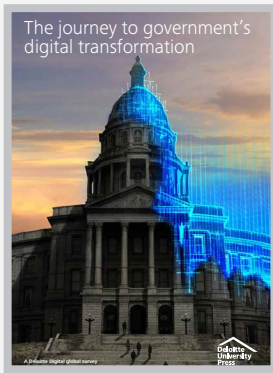


*Regulating ecosystems*  
([www.deloitte.com/insights/regulating-ecosystems](http://www.deloitte.com/insights/regulating-ecosystems)).



*Governing the future of mobility*  
([www.deloitte.com/insights/gov-fom](http://www.deloitte.com/insights/gov-fom)).





For more insights on digital transformation in government, check out Deloitte's *Digital Government Transformation* collection ([www.deloitte.com/insights/digital-gov](http://www.deloitte.com/insights/digital-gov)).

## Modernizing legacy systems

“Without investments in legacy system renovation, modernization, or replacement, the ability of states to operate as a modern organization and serve its citizen is at risk,” declared the NASCIO report in 2008.<sup>8</sup> Today however, a decade later, the goal of legacy modernization still continues to be one of the top priorities for state CIOs.<sup>9</sup>

The reason seems obvious. These legacy systems often serve mission-critical functions, but are likely running on outdated technology at risk of failure. Moreover, the unsupported platforms they run on can make sensitive data more vulnerable to cyber hackers.

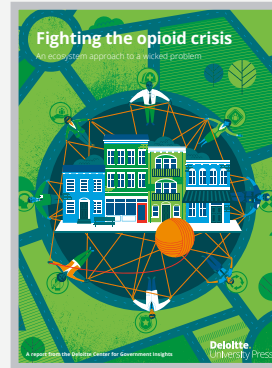
This challenge is not unique to state government. At the federal level, maintaining legacy systems takes up more than three-fourths of the IT budget.<sup>10</sup> Comparable data for state and local governments is harder to come by, and even new systems will require maintenance, but every extra dollar spent on maintaining old systems is a dollar unavailable for investing in new technologies.

The financial cost of maintaining these older systems may be just the tip of the iceberg. Because these legacy systems typically use older programming languages such as COBOL, there could be additional costs. One is that these legacy systems usually aren't very flexible, making it difficult to modify processes, especially in light of digital transformation. It can be extremely difficult to make use of predictive analytics, artificial intelligence, or other newer approaches when a foundation is outdated—which limits the ability to put these cutting-edge tools in service to constituents.

Another issue is finding programmers familiar with these dying languages in today's millennial workforce. With state government workforce expected to retire in hordes in the next few years,<sup>11</sup> the governments could face a crunch.

Many of these legacy systems are mission-critical in nature, making the “rip-and-replace” model a highly risky approach for most governments. But over the years, different states have used different solutions to modernize the IT infrastructure, including migration, augmentation, and re-platforming/refactoring.

In some cases, state leaders will need to bite the bullet and invest in upgrading new systems. In other cases, more incremental approaches can help state governments move off older systems with less risk.



Read more about the opioid crisis and possible ecosystem solutions in *Fighting the opioid crisis* ([www.deloitte.com/insights/opioids](http://www.deloitte.com/insights/opioids)).

## Fighting the opioid epidemic

One of the biggest threats to American lives in recent times has been from drug overdoses.<sup>12</sup> Opioids were involved in nearly 33,000 deaths in 2015, and opioid overdoses have quadrupled since 1999.<sup>13</sup> In one survey, over 60 percent of respondents said that federal and state governments aren't doing enough to fight the problem.<sup>14</sup>

Opioid addiction appears to be unlike prior drug epidemics, as it isn't limited to mostly recreational users of illicit drugs—many people now become addicted while using legally prescribed painkillers. This has provided impetus to a phenomenon referred to as “pill mills.” As opioid use has increased, and users have become more desperate for supply sources, some unscrupulous physicians have begun to set up storefront offices established seemingly to churn out prescriptions for opioids. Once focused primarily on urban areas, these networks quickly adapted to the new demand, targeting communities suffering from economic loss and hardship, including rural communities.

Today, many state governments face a new challenge—how to follow up with patients after the use of the overdose antidote naloxone in order to help curb their addiction in the long term. The opioid crisis creates ripples of challenges, and will likely take multifaceted efforts to address.

State and federal agencies are trying a variety of education, prevention, treatment, and criminal justice efforts to combat the opioid epidemic.

## The pension crunch

Unlike a natural disaster or a new technology, pension challenges can unfold in slow motion. Despite their gradual nature, many states struggle to control the level of their pension liabilities.

Large unfunded pension liabilities could have a cascading effect on the economy and on the fiscal health of a state. Annual state fiscal health rankings by the Mercatus Center show that the bottom five states clearly face a significant risk from unfunded liabilities as debt obligations start eating away at current budget allocations.<sup>15</sup> While the buildup

has been slow, the downfall could arrive fast and hard if a market downturn hits state pension funds.

Few pension reform options are painless. You can increase employee contributions, reduce payout benefits such as early retirement, and curtail various forms of pension abuse. But the earlier states act, the less painful the remedies might be. The best time to start fixing the pension situation was 20 years ago. The second best time is now.

Some states are already tackling the pension issue. But with sluggish economic growth and growing health care costs, states would need to make considerable structural changes to their pension systems.

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## EMERGING TRENDS

### Five trends reshaping state government

Mark Price and John O’Leary

#### 1 ARTIFICIAL INTELLIGENCE: REDESIGNING PUBLIC SECTOR WORK

UNTIL recently, the primary function of computers was to process information—that is, to take structured inputs, perform manipulations, and produce outputs. Computers ran payroll, helped to process applications, and performed spreadsheet-like calculations. Computers offered fast, error-free processing of data.

How quaint.

Today, artificial intelligence (AI) and cognitive computing are vastly enhancing the power of computers to produce value. Computers can now accept inputs in the form of unstructured data—everything from handwritten notes to videos—and make sense of them through techniques such

as image and facial recognition. In terms of processing, computers no longer need to follow a set of hard-coded instructions. Thanks to machine learning, computers can use feedback to “program themselves” adaptively. The result is nothing less than astounding, as AI is starting to emulate certain kinds of human intelligence—everything from driving a car to playing poker to providing medical diagnoses to suggesting songs you might like based on what you’ve listened to in the past.

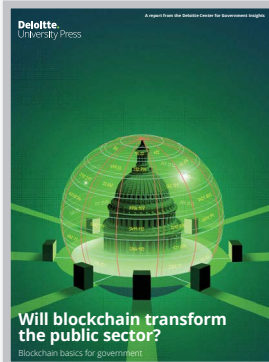
What will AI mean for state government? And what will it mean for state employees?

While some fear that AI-based programs will be a job-killer for state employees, a more likely scenario—particularly in the near term—may be that cognitive technologies will free up employees from dull, dangerous, and repetitive tasks, and augment their ability to perform higher value-added work. The ultimate result should be better, faster services for citizens—particularly in service areas with big backlogs.

How much can be saved through AI and how quickly largely depends on the amount of investment made in this area. A Deloitte study found that, with strong support for adoption of automation and AI applications, states could expect 27 to 30 percent time savings within five to seven years.<sup>1</sup> To realize an impact of this extent will require investment in technology as well as rethinking many aspects of state government work.

Many state governments are already experimenting with AI-based applications to improve services. Take, for example, the Georgia Government Transparency and Campaign Finance Commission, which processes about 40,000 pages of campaign finance disclosures per month, many of them handwritten. After evaluating other alternatives, the commission opted for a solution that combines handwriting recognition software with crowdsourced human review to keep pace with the workload while ensuring quality.<sup>2</sup>

► EXPLORE DELOITTE'S **ARTIFICIAL INTELLIGENCE IN GOVERNMENT** COLLECTION ([WWW.DELOITTE.COM/INSIGHTS/AI-IN-GOVERNMENT](http://WWW.DELOITTE.COM/INSIGHTS/AI-IN-GOVERNMENT)) FOR A DEEPER DIVE IN THIS AREA.



Read more about blockchain basics for government in the Deloitte study *Will blockchain transform the public sector?* ([www.deloitte.com/insights/blockchain-gov](http://www.deloitte.com/insights/blockchain-gov)).

## 2 BLOCKCHAIN: A DIGITAL LEDGER WITH A DIFFERENCE

Blockchain is complicated. Known primarily as the technology that supports bitcoin and other cryptocurrencies, blockchain wasn't even on the radar of most state leaders as recently as a few years ago.

That is rapidly changing. In July 2017, Delaware enacted legislation that allows corporations

to use blockchain technology to maintain a record of stock ownership and voting rights. The law allows these important ledgers to be maintained via “distributed electronic networks or databases,” which presumably would include blockchain.<sup>3</sup> This could have a significant impact, as over 66 percent of publicly traded companies in the United States are incorporated in Delaware.<sup>4</sup>

Though a leader in blockchain, Delaware is not the only state experimenting with it. New York, Illinois, and Texas have followed suit and are piloting and/or testing blockchain applications.<sup>5</sup> For its part, the private sector, particularly the financial services industry, is seeing significant investment in blockchain. A 2016 estimate suggested that banks alone would invest more than \$200 million in blockchain in 2017.<sup>6</sup> Some have likened blockchain's game-changing potential to that of the Internet, particularly in terms of financial transactions.

Many states, while intrigued by blockchain, aren't sure of how to capture its potential benefits to security, efficiency, and speed.

To get a better sense of blockchain's potential for government, think *transactions*. Blockchain is a ledger—a distributed, consensus ledger. Organizations have traditionally recorded transactions in ledgers kept under lock and key. Those ledgers are typically isolated to protect their accuracy and sanctity, and when conducting business, each organization maintains its own separate record to independently verify information.<sup>7</sup>

Creating distributed trust through a collectively agreed-upon consensus protocol is potentially transformative, freeing the ledger from the constraints of isolation in much the same way as the World Wide Web freed information and communications, transforming the way we do so much in business, government, and our personal lives.

Identity management, licensing and registration, land registration, and voting are just some of the potential use cases where governments are exploring blockchain.

## 3 HUMAN-CENTERED DESIGN: PUTTING PEOPLE FIRST

Frustration is a powerful emotion. Too often, even if the underlying technology works, a citizen can be frustrated by a government interaction that fails to create a smooth, intuitive experience. Whether it is a complicated tax form, the need to give the same data to five different agencies, or a confusing website, a poorly designed interaction can leave citizens dissatisfied with the service they receive.

Thankfully, the field of human-centered design combines elements of technology and design to improve the citizen experience.




Historically, most state governments haven't focused much attention on customer experience (CX). But in the digital age, citizens intuitively compare their interactions with government with the experiences they have with the best online retailers. When government experiences don't match expectations, frustration ensues.

Human-centered design focuses on the preferences of the user/citizen. Rather than requiring users to adapt their behaviors to a tool, a human-centered system supports existing behaviors. It involves a deep understanding of customers' needs—both the ones they tell you about and, perhaps more importantly, the ones they don't.

State governments can face some pretty daunting design challenges, as consequential as any in government, making human-centered design principles sorely needed. How can states move forward on this front?


The first step is to recognize that human-centered design is a critical discipline, and that driving changes in the citizen experience requires executive support. Senior state leaders should provide a mandate for change, and the resources needed to drive agencywide improvements. It's important for someone—be it a chief customer officer or a CX council comprising leaders who collectively own all the touchpoints across the citizen/business journey—to have a horizontal view across the entire agency and take responsibility for ensuring that the experience is consistent across touchpoints that may span multiple business units.

**READ MORE ABOUT HOW HUMAN-CENTERED DESIGN CAN IMPROVE THE CITIZEN EXPERIENCE:**



**Rx CX**  
Customer experience as a prescription for improving government performance  
Part of a series on customer experience in government

*Rx CX: Customer experience as a prescription for improving government performance*  
[www.deloitte.com/insights/rx-cx](http://www.deloitte.com/insights/rx-cx).



**Compliance without tears**  
Improving the government-to-business experience  
Part of a series on customer experience in government

*Compliance without tears: Improving the government-to-business experience*  
[www.deloitte.com/insights/compliance](http://www.deloitte.com/insights/compliance).


## 4 NUDGE THINKING

The idea is simple: It is better for state and local governments to help citizens “do the right thing” in the first place than to go through the painful process of penalizing those who misbehave. Government agencies seek to promote socially desirable citizen behaviors in many ways. No doubt the carrots-and-sticks paradigm—incentives and punishments used to change behavior—has its place. But for more

minor offenses or oversights, trying to drive better social outcomes through punitive actions can be costly, and officials are rightly reluctant to unleash big-time punishments on small-time violators.

Enter the emerging field of behavioral science, which explains how nudges—carefully designed prompts and activities that encourage better outcomes by leveraging how people naturally think and feel—can be a more effective (and often less expensive) alternative. A stark departure from the traditional carrots-and-sticks approach, nudge thinking relies on the idea that small changes to the choice environment can encourage large changes in people's actions. Part of the appeal of nudges—for both those seeking change and those who are being asked to change—is that, instead of mandating behavior, nudges offer people the ability to make their own decisions.

There are many areas where nudge thinking may prove more effective—and potentially much more cost-effective—than the carrots-and-sticks approach. And yet most state and local governments are just beginning to scratch the surface of this approach. They have not fully explored or realized its potential benefits, both in terms of cost and outcomes. Three broad areas in which state governments and municipalities could apply nudge thinking are in increasing program compliance, improving program adherence, and promoting better choices in participants and encouraging better behaviors.



**Beyond carrots and sticks**  
How state and local governments can use nudge thinking to improve outcomes

Read more about how nudges can help state government yield better results using fewer resources in *Beyond carrots and sticks* ([www.deloitte.com/insights/improving-outcomes](http://www.deloitte.com/insights/improving-outcomes)).



## 5 ORGANIZING FOR TRANSFORMATIVE CHANGE

The tech tsunami that is transforming our world creates a situation where state governments are often faced with more change than they are set up to handle. That is because the traditional silos of services are focused on delivering services—not driving change.

In response, some states are looking at establishing teams, sometimes led by a chief operating officer, that are designed to drive enterprise-wide transformations. In just the past few years, Tennessee, Missouri, and Oregon have established COO positions, and interest in the role appears to be growing.<sup>8</sup>

Whether done under the guise of a COO or another title, successfully organizing for transformative change in state government entails several factors. Some of the most important include:

- **A focus on driving change:** The various secretariats of state government generally have their hands full running their operations. As a result, they often don't have the bandwidth to drive change. A transformation tiger team wakes up every day focused on driving innovation.
- **Cross-boundary authority:** Issues such as the opioid crisis impact law enforcement, health, social services, and more. To drive change on an ecosystem problem, governors need someone with the authority to work across departmental boundaries. Ditto for change initiatives such as identity management.
- **A team with the right skill set:** The skill sets needed to drive deep organizational change include project management, digital design, data analytics, change management expertise, and others. No individual department could afford permanent staff skilled in these disciplines, nor could they keep them continuously busy. Hiring contractors and consultants is one way to address this talent deficit. Another option is to establish a centralized unit staffed to support innovation that could address projects on an as-needed basis, such as for large procurement projects or enterprise-wide change efforts—or just to supply added firepower in addressing a governor's top priority.
- **Corner-office support:** A bedrock principle of enterprise-wide transformation initiatives is executive support. A COO or another senior executive has the visible support of the governor and access to the corner office to resolve roadblocks.
- **An outsider's perspective:** Sometimes it is easier to see opportunities for change from the outside. For example, the state of Washington's "Results Washington" office promotes and uses the tools of lean management and performance measurement to drive (and measure) improvements throughout the state government. Having a group outside an agency or department's chain of command can help provide both the skills and the objectivity to effectively drive change.

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# TEN BOLD PLAYS

## Help drive action with these ambitious goals

Mark Price and William D. Eggers

### 1 CREATE A SINGLE VIEW OF THE CUSTOMER

Most state governments have multiple views of a single customer, unable to link one to the other. Imagine the possibilities if every department in a state government used the same identifier to build a coordinated customer experience.

**Goal: Boost efficiency and improve the customer experience of citizens and businesses by creating a foundation of a unique customer identifier.**

### 2 GO ALL IN ON DIGITAL, AI, AND COGNITIVE

Many states' IT infrastructure is outdated, which means that they are spending to operate and maintain stand-alone, legacy systems. By investing in digital platforms and transformative technologies, states could create a better citizen experience for less. **Goal: Leverage cutting-edge technologies to perform repetitive tasks, freeing state employees to focus on more complex service delivery.**

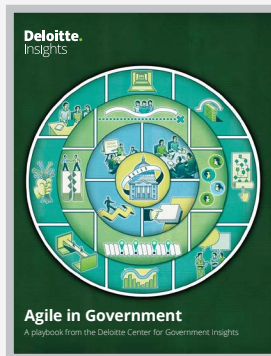


Read more about how states can make compliance easier in *Compliance without tears: Improving the government-to-business experience* ([www.deloitte.com/insights/compliance](http://www.deloitte.com/insights/compliance)).

### 3 MAKE BUSINESS COMPLIANCE EASIER

In some cases, the biggest cost of regulatory compliance for companies lies in figuring out what they need to do and dealing with manual state processes. Complying with multiple rules around licensing, permitting, and assessments, such as those around unemployment insurance and workers' compensation, often creates hidden costs for business. **Goal: Make it simpler for**

**regulated businesses to follow the rules by considering digital compliance and other tools.**



Read more about how states can adopt an Agile approach to IT procurement in Deloitte's *Agile in Government* series ([www.deloitte.com/insights/agilegov](http://www.deloitte.com/insights/agilegov)).

### 4 REVAMP IT PROCUREMENT

The traditional way states procure IT can be cumbersome and too slow to keep pace with rapidly changing technologies. Newer approaches, such as the Agile approach to software procurement, cloud, and software as a service (SaaS), may offer chances to improve in this important area. **Goal: Practice more effective IT procurement.**

### 5 MODERNIZE STATE WORKFORCE RULES AND EMBRACE THE FUTURE OF WORK

Outdated job classifications and descriptions, the challenge of appropriately rewarding top performers, and other practices can limit the effectiveness of any workforce. Upgrading work spaces, instituting work-from-anywhere protocols, and other innovative approaches can help the state attract and retain the best employees. **Goal: Improve the state workforce through updated workforce rules.**



Read more about fighting fraud, waste, and abuse in *Shutting down fraud, waste, and abuse* ([www.deloitte.com/insights/fraud-waste-abuse](http://www.deloitte.com/insights/fraud-waste-abuse)).

### 6 DECLARE A WAR ON FRAUD

From the SNAP program to Medicaid, state-run benefits programs too often send cash to fraudsters rather than to intended recipients. As states look to tighten their belts and increase credibility with potentially skeptical taxpayers and voters, analytics-based anti-fraud initiatives should gather steam. **Goal: Ensure that state programs benefit intended recipients.**

### 7 BUILD A CLASSROOM-TO-WORKFORCE PIPELINE

Skilled workers are in high demand, but our education pipeline doesn't always deliver the skill sets that some businesses need. Successful education won't always culminate in a PhD. Consider programs that may better align and integrate education and business needs, establishing lifelong learning opportunities and easing mid-career transitions for workers displaced by technology shifts. **Goal: Grow a work-ready workforce.**

## 8 EMBRACE “NUDGE THINKING”

States expend a lot of energy trying to get citizens to do things—such as pay their taxes, make their child support payments, and encourage students to stay in school. For the Medicaid population, states would likely love to get individuals to exercise, take their meds, and keep their doctor’s appointments. **Goal: Use behavioral economics principles to boost compliance rates, improve program impact, and lower costs.**

## 9 CONDUCT A STEM-TO-STERN EFFICIENCY REVIEW

Consider launching a statewide effort with the goal of identifying sources of cost efficiencies, such as potentially redundant agencies, areas where technology could reduce costs, and unnecessary boards and commissions. **Goal: Make more efficient use of scarce tax dollars.**

## 10 BUILD AN INTEGRATED MOBILITY ECOSYSTEM

Commit state resources to promoting a more integrated transportation ecosystem that allows for sharing of critical data and platforms to facilitate multiple modes of transport. Making the future of mobility a priority could improve both economic growth and enhance the quality of life. **Goal: Create platforms to support an integrated mobility ecosystem.**





# HEALTH CARE

## Improving outcomes, controlling costs

Melissa Majerol, Jim Hardy, and Lindsay Hough

### What is the issue?

**S**TATES have long played a significant role in the health care of their residents, but that role has increased dramatically over the last few years. Under the Affordable Care Act (ACA), millions of poor and low-income people have gained health insurance through Medicaid and the ACA Marketplace.<sup>1</sup> Many states are grappling with how to ensure access to quality health care for low-income and vulnerable populations as well as those who buy their own insurance, while at the same time controlling rising premiums and underlying health care costs.

Alongside these changes, many states are facing an unprecedented opioid crisis, a challenge not only for the health care system, but often also for law enforcement, the

child welfare system, and communities at large. Certain parts of the country have been hit particularly hard, but no state is immune to the impacts of this epidemic.<sup>2</sup> The crisis is far-reaching, with nearly half of all Americans saying they know someone who has been addicted to prescription painkillers,<sup>3</sup> and more than 60 percent saying that federal and state governments aren't doing enough to fight the problem.<sup>4</sup>

Against this backdrop of new challenges, many chronic health issues persist, including obesity, diabetes, and mental health conditions. Among the most costly are individuals with multiple chronic conditions—27 percent of Americans have multiple chronic conditions, but a much larger chunk,



66 percent, of total health care spending is directed toward their care.<sup>5</sup> There is a growing recognition that many such health issues are strongly linked to socioeconomic factors (for example, income, education, living and working conditions, and numerous other environmental factors) collectively referred to as the social determinants of health.<sup>6</sup>

These challenges are complex, and each state's circumstances are unique. But there are numerous strategies that could help states tackle some of their most pressing health care issues.

## ISSUE BY THE NUMBERS: HEALTH CARE

**20%**

Nationwide, nearly 20 percent of individuals are enrolled in Medicaid—a 29 percent increase since 2014 when the ACA Medicaid expansion provision was implemented.<sup>7</sup>

**15.8%**

In recent years, Medicaid's share of state budgets has been on the rise:<sup>8</sup>

- 11.7 percent in 2001
- 13.3 percent in 2011
- 15.8 percent in 2015

**4%↓ 145%↑**

Following the establishment of the ACA Marketplaces in 2014, states have seen significant variability in annual premium increases. For example, between 2016 and 2017, the average premium change in the Marketplaces ranged from a 4 percent decrease in Indiana to a 145 percent increase in Arizona.<sup>9</sup> The White House and Congress continue to consider executive actions and legislation that could impact the Marketplaces. An area of ongoing focus is the federal cost-sharing reduction subsidies (CSRs), which are paid to health insurers to offset deductible and out-of-pocket expenses for low-income individuals who qualify.

**40%**

Research shows that social circumstances (including income, education, and living and working conditions) and environmental exposure account for 20 percent of premature deaths. Health care (10 percent), behavioral patterns (40 percent), and genetic disposition (30 percent) account for the remaining 80 percent.<sup>10</sup>

**34,000**

Opioids contributed to nearly 34,000 deaths in 2015, and opioid overdoses have quadrupled since 1999.<sup>11</sup>

## How can state leadership tackle the issue?

### CONSIDER USING WAIVERS TO EXPERIMENT WITH MEDICAID AND MARKETPLACE INNOVATIONS

Most states have at least one Medicaid 1115 demonstration waiver. The purpose of these waivers is to allow states to waive certain federal Medicaid rules and experiment with new policies such as expanding eligibility, providing services not typically covered, and using innovative delivery systems that seek to improve care, increase efficiency, and reduce costs.<sup>12</sup>

The ACA equivalent of the 1115 waiver is the 1332 state innovation waiver, which became available to states in January 2017. This waiver aims to give states the flexibility to innovate in the health insurance market while retaining the basic protections of the law.<sup>13</sup>

Bringing a waiver from concept to implementation can be achieved in three phases:

- **Strategy:** States should align their waiver initiatives with their overall Medicaid goals while also assessing the likely impact the waiver could have on other important areas such as the local economy or the social determinants of health. The strategy phase is also a good time to engage stakeholders and to ensure that the initiative is operationally feasible.
- **Design:** It is important to develop a structured, planned approach to manage all aspects of waiver initiatives across technology, policy, and human capital; and come up with the best solution against existing infrastructure, policy, and agency operations.
- **Implementation:** States should provide technical, operational, and policy insight to support implementation. They should also effectively engage, communicate, and train stakeholders affected by the waiver initiative and use technology solutions, where appropriate, to engage members and stakeholders.

When developing policies and proposals for a Medicaid or ACA waiver, it can be useful to see what has and hasn't worked in other states, while recognizing that each state's goals and circumstances might differ. And when implementing a change to Medicaid or the Marketplace through a waiver, it is important to rigorously collect data and evaluate results to ensure that good ideas can be replicated.

► TO LEARN MORE, SEE DELOITTE'S STUDY ON HOW STATES ARE MOVING FORWARD WITH MEDICAID AND ACA WAIVERS (AVAILABLE AT [WWW2.DELOITTE.COM/US/ACA-WAIVERS](http://WWW2.DELOITTE.COM/US/ACA-WAIVERS)).

### EXPLORE VALUE-BASED CARE (VBC) TRANSFORMATION

The predominant form of health care payment in the United States across public and private payers is fee-for-service,<sup>14</sup> in which providers are paid for every consultation, exam, and procedure, regardless of the health outcome. Fee-for-service is often considered inefficient because it incentivizes volume over value.<sup>15</sup> A more aspirational goal is to pay less for health care by preventing illness while at the same time improving health outcomes overall.

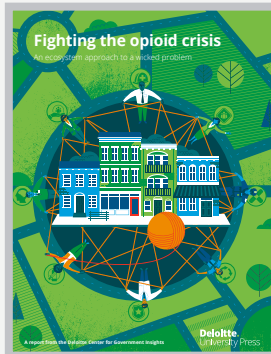
In an effort to transition from a payment model-based volume to one based on value, many states have begun experimenting with a variety of Medicaid alternative payment models (APMs), including patient-centered medical homes (PCMHs), Medicaid health homes, episode-of-care payments, and accountable care organizations (ACOs). Some of these models focus on the coordination of health care services by a team of health professionals to improve health outcomes and avoid unnecessary or harmful redundancies. Others incentivize care teams to improve health outcomes and reduce health care utilization by providing capitated payments to take care of a particular patient with a specific illness.

States that are exploring VBC for their Medicaid program can learn from other states that are already moving down that path. Consider these lessons:

- **Know your market.** States should consider their unique populations, stakeholders, delivery systems, and political environment when developing a vision for the new program. Design a program that providers and health plans can realistically administer and oversee.
- **Keep the program design simple.** New payment models can quickly become overbaked and complex. The more complicated the model, the more difficult it will be to implement. Keep it simple at first and, if necessary, introduce more complex components after initial implementation.
- **Determine how you will access, aggregate, and analyze data.** A VBC program relies on accurate and meaningful data to achieve its goals. New analytic solutions or system upgrades might be needed.
- **Expect the unexpected, reflect, and refine.** It is important to build time and space into the process to accommodate nuances. Incorporate successes and lessons learned into the program implementation.

► TO LEARN MORE, SEE DELOITTE'S STUDY ON ALTERNATIVE PAYMENT MODELS IN MEDICAID (AVAILABLE AT [WWW2.DELOITTE.COM/US/MEDICAID-ALTERNATIVE-PAYMENT-MODELS](http://WWW2.DELOITTE.COM/US/MEDICAID-ALTERNATIVE-PAYMENT-MODELS)).

## LEARN MORE FROM THESE DELOITTE STUDIES ON HEALTH:



**Fighting the opioid crisis**  
([www.deloitte.com/insights/opioids](http://www.deloitte.com/insights/opioids)).



**Supporting healthy communities**  
([www.deloitte.com/insights/healthy-communities](http://www.deloitte.com/insights/healthy-communities)).

## CONSIDER USING A COMMUNITY FUNDING HUB TO ADDRESS COMPLEX PROBLEMS

Health care is typically about much more than just medical care. The opioid and broader substance abuse crises, for example, impact not only health care providers, but often also human services, criminal justice, and child welfare. Health care is only one factor that contributes to health outcomes. Various social determinants of health—including housing, transportation, nutrition, education, and working conditions—can also influence well-being.

To tackle these complex problems, disparate agencies, health care providers, and community groups can and should work together. But such groups aren't necessarily used to communicating, pooling resources, and launching coordinated initiatives. Health care providers and law enforcement might be expending significant resources to address substance abuse and addiction in their communities. But without a coordinated response, they could be duplicating efforts—or worse, working at cross-purposes.

To align strategies and funding, states can work with counties and localities to establish *community funding hubs*. The purpose of a community funding hub is to break down the walls between agencies in order to pool funds and other resources, and to develop coordinated responses that impact the community. To that end, the hub would:

- Provide financial management and oversight to coordinate multiple funding sources
- Govern the prioritization of spending on evidence-based interventions to ensure accountability to the target community
- Serve as a trusted fiscal intermediary between sectors that are related to health care

## CONSIDER UPDATING DATA SYSTEMS AND DEVELOPING ADVANCED ANALYTICS

Because of Medicaid's sheer size, states and the federal government are often under tremendous political and economic pressure to ensure that the program is run efficiently and effectively. Doing so through payment and delivery system reform and quality measurement typically requires advanced data capabilities.

For states, the first step toward advancing analytic and data capabilities is likely to upgrade their analytics platform. Legacy systems typically were not built to support the advanced analytics usually required to operate a modern Medicaid program. Many were built based on fee-for-service claims processing operations and didn't explicitly take tracking processes and outcome measures into account.

As states begin to upgrade their data infrastructure, many are doing so with a broader vision of building an integrated data environment that is interoperable with electronic health records (EHRs) and other agencies and organizations, including social services, public health, and the department of corrections. The federal government has shown its support by offering Medicaid programs a 90 percent contribution to system upgrades that support interoperability, which could advance Medicaid program goals.<sup>16</sup>

While an upgraded analytics platform might be a necessary first step, it alone won't allow Medicaid agencies to become data-driven organizations. For that, they'll likely also need to ensure data quality and adopt self-service capabilities. In other words, agencies should first ensure that their data is accurate, then build software interfaces that can broaden the access and use of the data. Third, collecting the right data and setting clearly defined priorities—be it decreasing emergency room utilization, lowering obesity rates, or reducing the number of diabetes-related hospitalizations—could help deliver results.

Lastly, states should consider establishing a strong analytics team to run the analyses, build effective models, and support the Medicaid operation to drive new payment models, reduce costs, and improve outcomes. Whether a state's data capabilities are in-house, under contract with an outside vendor, or both, they should ensure they build a capability that can be sustained over the long term.

► **TO LEARN MORE, SEE DELOITTE'S STUDY ON ORGANIZING FOR ANALYTICS IN HEALTH CARE** (AVAILABLE AT [WWW2.DELOITTE.COM/US/HEALTHCARE-ANALYTICS](http://WWW2.DELOITTE.COM/US/HEALTHCARE-ANALYTICS)).

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### MINNESOTA'S 1332 STATE INNOVATION WAIVER

Minnesota's approved 1332 waiver allows the state to use ACA funds to help establish a reinsurance program designed to reduce the cost of premiums in Minnesota's ACA Marketplace.<sup>17</sup> Prior to the waiver being approved, insurers in the state filed two sets of rates, one under the reinsurance program and the other without one. In the absence of the reinsurance program, health plans intended to increase premium rates by between 3 percent and 32 percent from the previous year. With reinsurance, three out of four Marketplace plans will decrease their rates; one will increase their rate by under 3 percent.<sup>18</sup>

### OREGON'S COORDINATED CARE ORGANIZATIONS

In 2012, Oregon established 16 coordinated care organizations (CCOs) to serve its Medicaid population through an ACO-like model.<sup>19</sup> CCOs consist of networks of providers (physical and behavioral health, and dental care) who work together to serve their patients, and receive capitated payments.

Research funded by the National Institutes of Health (NIH) found that CCOs were associated with a 7 percent relative reduction in service expenditures, attributable primarily to reductions in inpatient utilization, and reductions in avoidable emergency department visits. CCOs also exhibited reductions in primary care visits (a potential area of concern),<sup>20</sup> but increases in timely prenatal care.<sup>21</sup>

### PENNSYLVANIA'S ADOPTION OF ADVANCED DATA CAPABILITIES

According to federal regulation, states that contract with managed care organizations (MCOs) are required to develop and enforce provider network adequacy standards that include minimum time and distances between beneficiaries and providers.<sup>22</sup> Pennsylvania is using advanced data analytics based on geospatial information systems (GIS) to map beneficiaries and providers to determine whether MCOs are complying with federal time and distance requirements and where the gaps need to be filled.<sup>23</sup>

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## K-12 EDUCATION

# Old debates yielding to new realities

Allan Ludgate and John O’Leary

### What is the issue?

**K**-12 education is an important issue for governors for two major reasons. First, voters care passionately about their children’s education. Second, a well-educated population is an important foundation for economic prosperity.

In 1983, America’s education world was shaken up by the report *A Nation at Risk*, with its memorable introduction:

*“If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war.”<sup>1</sup>*

This report was considered shocking by many because the United States had long expected top-notch results from

its education system. In the words of the report, it was “unimaginable” that other nations would match or surpass the United States’ educational attainments.

Today, our nation is no longer at the top of the global education standings. Though the United States spends a greater proportion of its GDP on education than other OECD countries, it generally ranks in the middle of the pack in terms of math and reading scores.<sup>2</sup>

Since 1983, the K-12 education landscape has been marked by political battles as well as a wide array of reforms, including the federal No Child Left Behind effort. As technology evolves and experimentation of various sorts provides data to guide reform, we are likely to see a continued focus on educational innovation.



While there is no shortage of political disagreement on the topic, there is one aspect of education policy upon which both Democratic and Republican governors seem to agree: States should lead and the federal government should allow them to do so. In 2017, the National Governors Association released a policy statement on education that stresses this point: “Governors believe federal education policy should embrace a stronger state-led accountability system . . .

[federal law should] recognize the proper, leading role of governors and other state officials to collectively govern education.”<sup>3</sup> That shift back to states appears to be already underway, as the Every Student Succeeds Act, which became law with bipartisan support in December 2015, gave states greater flexibility in terms of setting standards as well as in the areas of curriculum, pedagogy, and teacher professional development.

## ISSUE BY THE NUMBERS: K-12 EDUCATION

**19.4%**

In 2016, an estimated 19.4 percent of total state expenditures went toward elementary and secondary education.<sup>4</sup>

**9.8%**

Enrollment in private schools as a percentage of total K-12 enrollment has declined somewhat, from 11.2 percent in 2003 to just 9.8 percent in 2013.<sup>5</sup> Over a similar period, between 2003 and 2012, homeschooling has also increased from 2.2 percent to 3.4 percent.<sup>6</sup>

**AVERAGE**

As shown in figures 1 and 2, fourth-grade student achievement has been average and mostly flat over the last 17 years in both mathematics and reading.

**24<sup>TH</sup> | 38<sup>TH</sup>**

In 2015, the Programme for International Student Assessment<sup>8</sup> placed the United States at the 38th spot out of 71 countries in math and 24th in science, though these average figures may mask disparities in achievement based on income, race, and other factors.<sup>9</sup>

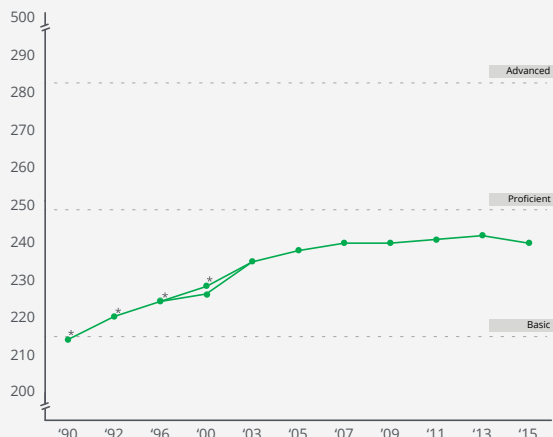
**~\$12,500**

The inflation-adjusted cost per student has leveled off at about \$12,500 after several decades of increase (figure 3).<sup>7</sup>

**ENROLLMENT ↑**

As shown in figure 4, several states should be anticipating significant increases in public school enrollment between 2014 and 2026.<sup>10</sup>

**Figure 1. United States fourth-grade National Assessment of Educational Progress (NAEP) mathematics average scores**

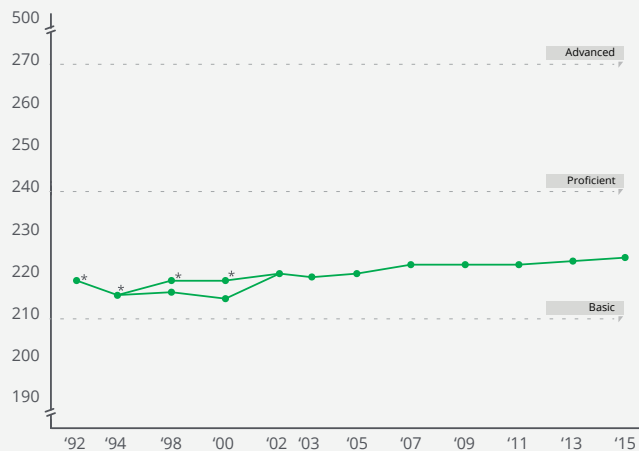


Note: The NAEP Mathematics scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.

Source: US Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, 2003, 2005, 2007, 2009, 2011, 2013, and 2015 Mathematics Assessments.

\*Accommodations were not permitted for this assessment.

**Figure 2. United States fourth-grade National Assessment of Educational Progress (NAEP) reading average scores**

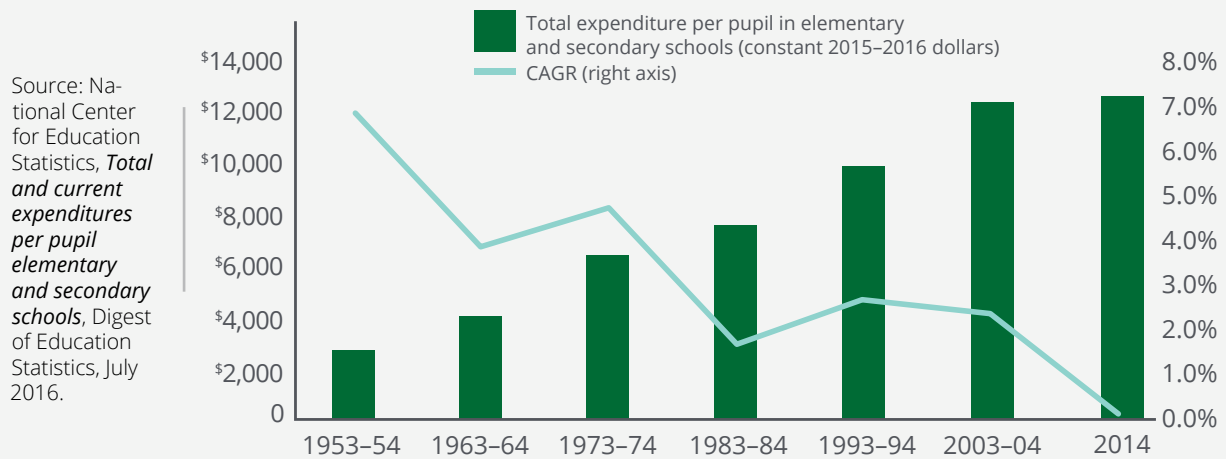


Note: The NAEP Reading scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.

Source: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1992, 1994, 1998, 2000, 2002, 2003, 2005, 2007, 2009, 2011, 2013, and 2015 Reading Assessments.

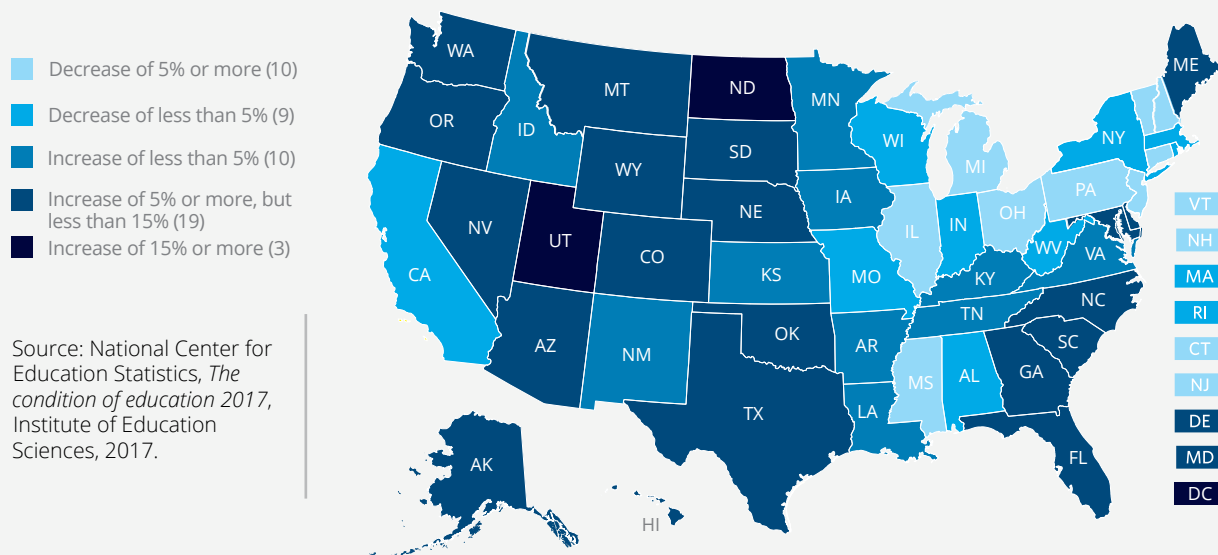
\*Accommodations were not permitted for this assessment.

**Figure 3. Inflation-adjusted cost per student in US K-12 schools (constant 2015-2016 dollars)**



Source: National Center for Education Statistics, *Total and current expenditures per pupil elementary and secondary schools*, Digest of Education Statistics, July 2016.

**Figure 4. Projected percentage change in US public elementary and secondary school enrollment between fall 2014 and fall 2026**



Source: National Center for Education Statistics, *The condition of education 2017*, Institute of Education Sciences, 2017.

## How can state leadership tackle the issue?

Education reform used to center on changes to traditional K–12 schools. Today, education innovation seems to be a much broader term. Rethinking education often starts with rethinking potential learners, from the very young through children in secondary school to people in their working adulthood. It also may mean reconsidering the notion of a public school, requiring fresh thinking about school governance approaches as well as about ways to deliver an effective education experience to students, teachers, and parents.

### COMING TO SCHOOL READY TO LEARN

Education doesn't happen in a vacuum. Children grow up in an ecosystem of their family, community, and school. Closing the economic achievement gap has been a regular goal of educational policy and education philanthropists alike, but the debate has often been framed as one of "fixing schools" or "fixing poverty." Too often for children growing up in poverty, however, these three dimensions can reinforce each other in a negative way.<sup>11</sup>

The challenges of school preparedness and family dysfunction are real, and work is being done to ensure students arrive at school "ready to learn." Some states, such as Michigan, are taking steps toward greater involvement in pre-K education to help children be ready to learn when they arrive at school.

### TEACHER EFFECTIVENESS AND TECHNOLOGY

Teacher quality is widely viewed as one of the most important variables in student success. Numerous reforms have been advanced to improve the situation, from curtailing tenure to just-in-time professional development. Other reforms have focused on measuring teacher performance—something that can be very difficult to do—in order to effectively implement pay for performance.

A combination of live instruction and digital augmentation tools may help to boost the effectiveness of teachers through the enhanced use of technology. Digital education materials include educational software, games, videos, podcasts, and other media that can be accessed through laptop and desktop computers, tablets, and mobile phones.

Deloitte's 2016 Digital Education Survey found that many teachers, parents, and students are embracing these tools with enthusiasm, and a majority of these stakeholders believe that "digital education" makes a positive difference in learning outcomes and experiences.<sup>13</sup>

The survey found that at present 80 percent of teachers use digital education at least once a week, and 75 percent

### ► THE 21ST CENTURY MICHIGAN EDUCATION COMMISSION

In 2016, Michigan governor Rick Snyder issued an executive order establishing the 21st Century Michigan Education Commission. Composed of a wide array of education and business leaders, the commission's report addressed educational issues that go well beyond the traditional classroom.

The commission's recommendations encompassed a broad view of the state's education mandate. The report notes: "Michigan's 21st-century economy and educational goals require an education system that is seamless and accessible to all, from prenatal through career." The report's recommendations included:

- **Connect human services to schools:** "Michigan must embed human services in schools and strengthen links between schools and community-based human services in order to connect children, students, and their families with the right services at the right time."
- **Enhance teacher preparation:** "The state must increase requirements and improve training for preservice teachers. This means that all teacher preparation programs must set higher standards for admission, require a year-long residency, and require evidence of skills in their subject matter, social-emotional intelligence, and pedagogy."
- **Adopt performance benchmarks:** The report advocated the adoption of "statewide P-20 performance measures that are benchmarked against high-performing states and nations."
- **Invest early:** "Support universal pre-K for all four-year-olds."
- **Educational options:** "Ensure that all schools are high-quality and that every student has access to a high-quality school, including traditional public schools, cross-district choice, charters, and online learning options."<sup>12</sup>

of teachers believe that digital content could replace print textbooks within the next decade. The biggest hurdle to adoption? For teachers, lack of training appears to be one of the biggest barriers to use of educational technology inside and outside the classroom.<sup>14</sup>

## DIGITAL STUDENT ENGAGEMENT FOR LIFELONG LEARNERS

Thanks to the advanced technologies available today, it is possible to securely deliver instructional content personalized to an individual student's ability, interest, and learning style. As a case in point, Khan Academy's "anytime, anywhere" educational model delivers personalized learning to students worldwide and even provides diagnostics and dashboards to teachers.

However, merely adding technology to the classroom might not be enough. Participants in the education ecosystem—school administrations, teachers, students, parents, edtech solution providers, and government educational agencies—could work more closely together to create new digital learning environments. Integrated next-generation technologies will likely make it easier for students of all

ages and backgrounds to continue their education for their entire lives, both inside and outside the classroom.<sup>15</sup>

## MAKING EVERY DOLLAR COUNT FOR LEARNING

Roughly 40 cents of every public education dollar goes to noninstructional costs—physical infrastructure, food service, security, and so forth.<sup>16</sup> A variety of approaches exist that could reduce these costs, potentially allowing states to devote more resources directly to learning.

For example, states can provide incentives for school districts to utilize a shared services approach in which, rather than having each district contract separately for items such as bus transportation or heating oil, the districts could join together to realize economies of scale. Oregon's Reset Cabinet report estimated that the state could save \$40 million a year if school districts shared certain services.<sup>17</sup>

# YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

## DELAWARE PATHWAYS

Closing the workforce skills-employability gap could be important to economic competitiveness. In the past, most governors were either "workforce governors" or "education governors," but in some cases, these priorities may converge.

Delaware's Pathways initiative is an integrated collection of programs and services intended to enhance the "academic, technology, and employability skills" of secondary school students in Delaware. As part of the national Pathways to Prosperity network, the Delaware initiative seeks to prepare students for high-demand, high-opportunity jobs by linking education and work experiences.<sup>18</sup>

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# HIGHER EDUCATION

## New models for the future

Jeff Bradfield, Tiffany Fishman, and David Noone

### What is the issue?

**T**O maintain economic prosperity, a state needs well-educated citizens. State governments can help to influence the higher education landscape so that it better serves the needs of students, employers, and the population as a whole. Both directly through state institutions and indirectly through economic development initiatives, loans, and other programs, state leaders can have considerable influence on higher education.

Higher education has changed considerably over the years, shaped by several macro-level trends:

**Student demographics:** Compared with traditional college students who arrive straight from high school, attend college full-time, and graduate in four years, many students today are older, have lower incomes, and carry

more adult responsibilities. Often, they're the first in their families to go to college. A good number speak English as a second language. These individuals often need very different kinds of support than students in the past.

**Workforce needs:** According to the Manpower Group, 46 percent of employers report being unable to find skilled workers to fill open jobs.<sup>1</sup> To acquire skills that match employers' needs, many students today are looking beyond traditional higher education to alternatives such as "nanodegrees" powered by massive open online courses (MOOCs), and short-term, immersive boot camps to provide just-in-time workplace skills.

**Pressure on institutions:** The cost of college tuition has risen by 538 percent since 1985, compared with an

increase of just 121 percent in the consumer price index during that period.<sup>2</sup> According to one Pew Research Center survey, the millennial generation (defined by Pew as Americans aged 18 to 33) is dealing with higher levels of student loan debt, poverty, and unemployment, and lower levels of wealth and personal income, than the two preceding gener-

ations at the same age.<sup>3</sup> Many colleges and universities are under pressure to reduce costs and to document the return on investment (ROI) they provide.

## ISSUE BY THE NUMBERS: HIGHER EDUCATION

**44%**

Today, 44 percent of college and university students are 24 years of age or older. Thirty percent attend class part-time, 26 percent work full-time while enrolled, and 28 percent take care of children or other dependents while pursuing their postsecondary studies.<sup>4</sup>

**52%**

On top of that, 52 percent are the first in their families to seek higher education, 42 percent come from communities of color, and 18 percent are non-native English speakers.<sup>5</sup>

**\$35,000**

The “sticker” price tag for a traditional four-year residential degree program has almost doubled in the last decade. The cost of tuition, fees, and room and board at out-of-state public universities now averages just over \$35,000 per year; for private nonprofit universities, the average cost is more than \$45,000 per year.<sup>6</sup>

**538%**

The cost of college tuition has risen by 538 percent since 1985, superseding household income gains (figure 1).<sup>7</sup>

**16%**

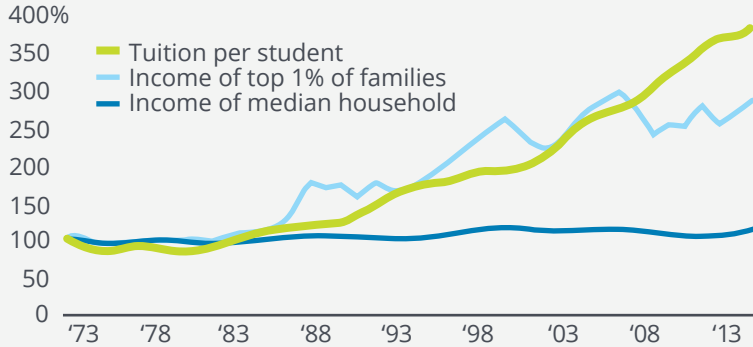
On average, states spent \$1,448 (16 percent) less per student in 2017 than in 2008.<sup>8</sup> Nearly every state has shifted the cost to students in the last 25 years (figure 2).<sup>9</sup>

**10%**

States spent about 10 percent of their general funds on higher education in fiscal year 2015, compared with 11.5 percent in the postrecession period (fiscal year 2009).<sup>10</sup>

**Figure 1. College tuition growth has vastly outpaced income gains**

Inflation-adjusted average tuition and fees at public four-year institutions and income for select groups (1973 = 100%)



Note: Data from the Center on Budget and Policy Priorities based on the College Board and Census Bureau. Tuition per student and income levels, adjusted for inflation, as a percentage of 1973–1974 price levels. Years shown and income data are for the calendar year. Tuition data covers the school year beginning in the calendar year.

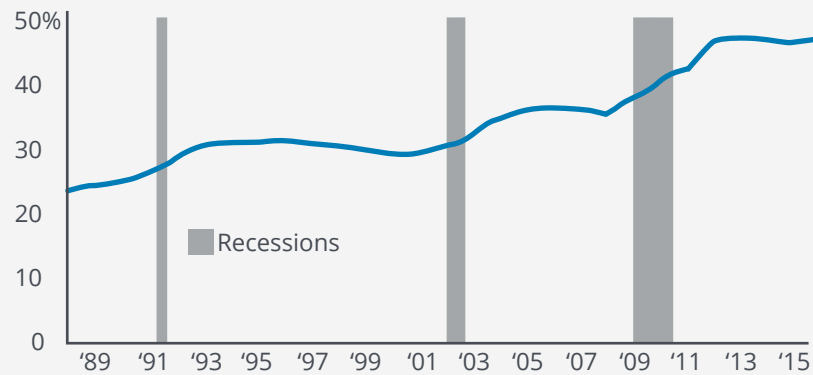
Source: Michael Mitchell, Michael Leachman, and Kathleen Masterson, *A lost decade in higher education funding*, Center on Budget and Policy Priorities, August 23, 2017.

Note: Data from State Higher Education Financing FY2016, State Higher Education Executive Officers Association. Total educational revenue is the sum of educational appropriations and net tuition revenue, excluding any tuition revenue used for capital and debt service. It measures the amount available to public institutions to support instruction (excluding medical students).

Source: Michael Mitchell, Michael Leachman, and Kathleen Masterson, *A lost decade in higher education funding*, Center on Budget and Policy Priorities, August 23, 2017.

**Figure 2. Students funding larger share of education after recessions**

Tuition as a percent of total educational revenue, 1988–2016



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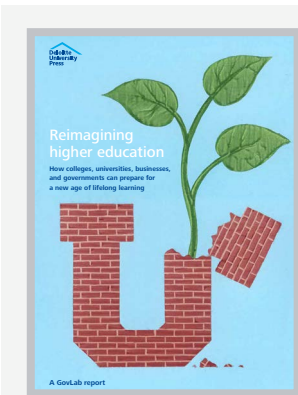
## How can state leadership tackle the issue?

### BE THOUGHTFUL ABOUT COORDINATING ASSISTANCE TO NONTRADITIONAL STUDENTS

Financial aid programs that help with tuition and academic costs are as important as ever. But nontraditional students could also need other support, such as help paying for child care, transportation, and food. States should consider aligning public assistance programs with the needs of adults who attend schools and making public benefits easily accessible for those students who qualify.

### THINK MORE BROADLY ABOUT FINANCIAL AID

In the future, students will consume education in many different ways—in the classroom, online, in full semesters, in short bursts, on the job, and through one-on-one mentoring, to name just a few. Most likely, these learning experiences will continue throughout a person’s career. Given that reality, state financial aid programs should consider making a wider variety of educational experiences eligible for aid.



Read more about how state university systems can explore different models of instruction in *Reimagining higher education* ([www.deloitte.com/insights/reimagining-higher-education](http://www.deloitte.com/insights/reimagining-higher-education)).

### ENCOURAGE STATE UNIVERSITY SYSTEMS TO EXPLORE NEW OPTIONS FOR INSTRUCTION

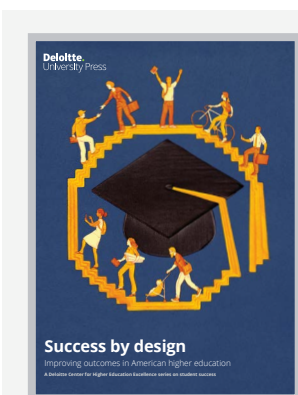
Many institutions of higher learning today are experimenting with a broad range of new approaches, such as blended learning, adaptive learning, and competency-based education. New strategies for keeping non-traditional students on target to succeed are emerging as well. These include data-

driven systems for detecting when a student needs extra help, tutoring, and coaching programs to provide that help, and class schedules that make attending school easier for students who also hold down jobs, manage families, and rely on public transportation. State university systems should promote experimentation to find new solutions.

Steps can be taken to deploy new learning methods, develop comprehensive support services, streamline student-facing operations, and pursue strategic partnerships with employers and other entities. These efforts would help the state to train the workforce of tomorrow, reduce the time to graduation, and decrease the dropout rate.

### STRENGTHEN THE PATHWAYS FROM EDUCATION TO EMPLOYMENT

Early college or dual enrollment programs can provide a bridge for high-school students who want to get a jump on their higher education, including students who need some extra help to prepare for college-level work. Public institutions can smooth students' progress by agreeing on common course numbering and providing clear transfer pathways between two- and four-year colleges. And while students work toward their undergraduate degrees, co-op, internship, and apprenticeship programs can provide opportunities to earn money while honing skills that could make them attractive to employers in their chosen fields.



Read more about how state university systems can effectively support their students in *Success by design* ([www.deloitte.com/insights/student-success](http://www.deloitte.com/insights/student-success)).

### FOCUS ON THE STUDENT

Every year across the United States, a significant number of students fail to complete their college degrees. “While it is true that retention programs abound on our campuses, most institutions have not taken student retention seriously,” noted Vincent Tinto, distinguished university professor emeritus in the School of Education at Syracuse University.<sup>11</sup> Col-

leges and universities should adapt to the needs of a diverse, dynamic, and changing student population by providing flexible services and a greater sense of connection.



## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### COURSE SIGNALS AT PURDUE

At Purdue University, some courses employ Course Signals, a software platform that uses data analytics to calculate and track student progress and provide early warnings to both students and faculty. Students receive notifications about how they are performing in a course as they progress through it. Faculty who receive this performance data are able to identify students who may need additional assistance to succeed and can target interventions to ensure that at-risk students stay on track. Students enrolled in Course Signals classes at Purdue have a 21 percent higher graduation rate than those enrolled in courses that don't use the software.<sup>12</sup>

### LOW-COST COMPUTER SCIENCE AT GEORGIA INSTITUTE OF TECHNOLOGY

Rather than trying to be all things to all people, some universities are beginning to carve out niches in the market for higher education, shedding unnecessary costs and better differentiating themselves from their peers.<sup>13</sup> Georgia Institute of Technology, for example, has focused on providing the lowest-cost options in fields undergoing a rapid growth in demand. MOOC provider Udacity, in collaboration with AT&T, is powering Georgia Tech's first accredited online master's program in computer science with a price tag of just \$7,000.<sup>14</sup>

### ADAPTIVE LEARNING AT ARIZONA STATE

To help new students who were not college-ready in mathematics, Arizona State University (ASU) launched a math readiness program in the fall of 2011. This program uses adaptive learning technology to let students work through the program at their own pace, aided by an instructor.<sup>15</sup> Initial results of the program showed improved outcomes, with fewer student dropouts, increased pass rates, and lower course completion times.<sup>16</sup>

### BUILDING BRIDGES TO COLLEGE IN OHIO

In the Appalachian region of Ohio, Zane State College and the Zanesville City Schools have created a program to help high-school seniors who have grade-point averages of 3.0 or higher, but whose tests shows them to be unprepared for college. The program includes career exploration, tutoring, mentoring, and a one-semester class on college success, taught at the high school by college faculty. Participants also take college math and English courses for dual credit, and each student goes to the college to take a course specific to his or her major.<sup>17</sup>

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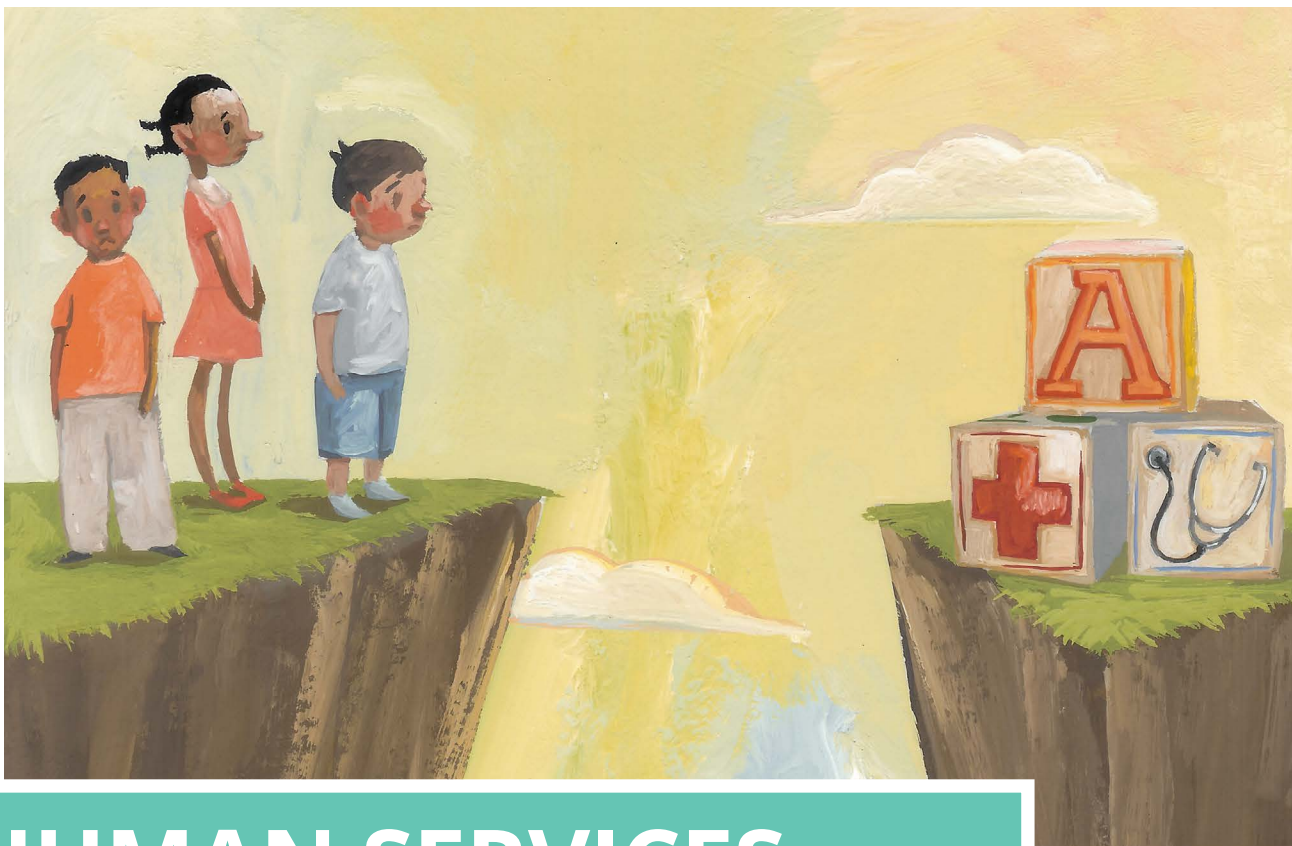
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# HUMAN SERVICES

## Rethinking delivery for greater impact

Sundhar Sekhar, Tiffany Fishman, and John O'Leary

### What is the issue?

**A**LTHOUGH its core mission is to improve the trajectory of people's lives, human services has long been more transactional than transformational.

For most human services programs, the business day consists of programmed actions and reactions, inputs and outputs, moving back and forth among government workers, their data systems, and their clients. In executing complex human services policies, success is defined primarily by the timeliness and accuracy of these transactions rather than their results. This has led to a model in which outcomes are in fact merely outputs: Did we issue food stamps in a timely fashion? Did we respond to 95 percent of our hotline calls within 24 hours?

Rather than identifying and addressing the problems that bring individuals and families into contact with the social safety net, human services programs instead tend to see people through the lens of eligibility: Clients are enrolled in eligible programs, which means there is a particular set of services they can receive, even if those might not be the ones they really need to improve their situation. This program-centric view is a lingering byproduct of the way human services programs were originally created—as stand-alone programs rather than as an integrated safety net.

Thanks to advances in technology and analytical techniques, human services agencies are now poised to move beyond transactional service delivery. If agencies can put

their data in front of both clients and caseworkers in a way that they can readily understand, and in time use the data in a way that affects results, then what was once a transactional business model can become a transformational one,

capable of achieving potentially life-changing outcomes in an efficient and cost-effective manner. Instead of executing mundane tasks, social workers can focus on families and the help they need.

## ISSUE BY THE NUMBERS: HUMAN SERVICES DELIVERY

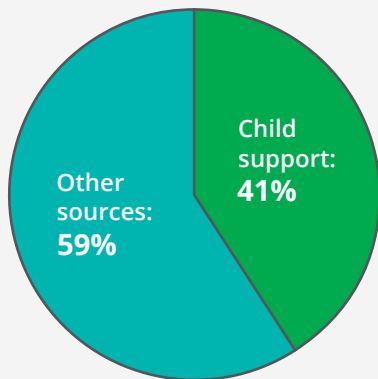
**41%**

Child support has become an increasingly important lifeline for impoverished families. Child support represents 41 percent of the income of poor families that receive child support payments, up from just 29 percent a decade prior.<sup>1</sup>

**1 MILLION**

By introducing no-touch (self-service) and low-touch options for determining eligibility for health and human services programs, one state automated 78 percent of its daily applications, reducing processing times by 35–50 percent and saving a projected 1 million hours in labor.<sup>2</sup>

### Income sources for poor families



**\$200 MILLION**

In Camden, New Jersey, residents in just two buildings accounted for \$200 million in medical services from January 2002 to June 2008. That's more than \$30 million every year from just two buildings.<sup>3</sup> By better coordinating these clients' health care and addressing their social circumstances, the Camden Coalition of Health-care Providers was able to cut these costs by more than half.<sup>4</sup>

## How can state leadership tackle the issue?

### ACCELERATE THE VALUE OF SELF-SERVICE THROUGH AUTOMATION

Advances in technology are significantly reducing manual processes and the need to manipulate reams of paperwork. These advances can free up caseworkers to focus their time and attention on providing specialized case

management for clients, rather than becoming enmeshed in what they need to do to take care of transactional tasks and processes. Automation enables labor-saving innovations such as self-service eligibility portals, and back-end systems that can refer clients to services with little or no caseworker involvement. In some instances, outdated policies haven't kept pace with new technologies, such as allowing for electronic correspondence with photo attachments or tele-interviews, which are more easily automated than paper-based processes.

### IDENTIFY OPPORTUNITIES FOR RPA TECHNOLOGIES TO AUTOMATE ADMINISTRATIVE TASKS

Robotic process automation (RPA) technologies automate repeatable, rules-based tasks. Unlike a typical automated system function, RPA software, also known as a “bot,” operates at the user interface level and mimics the activities of a caseworker as it interacts with multiple applications in the execution of a task.

Take the foster family application process, in which repetitive tasks can eat up hours. Imagine having a bot take a scanned foster family application, enter it into the appropriate system, and even validate in a separate system to determine if a mandatory lead inspection was completed in the home. This not only frees up the caseworker to spend more time determining if the home meets quality expectations, but also retrieves the lead inspection information without needing to build a data link to a separate system.

This is just one example. The challenge is to look for low-risk, high-volume, repetitive tasks that traditionally take valuable time away from the caseworker and support staff, and give those tasks to the bot.

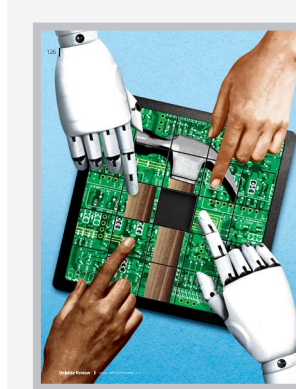
### REDESIGN PROGRAMS TO SERVE UNIQUE CUSTOMER SEGMENTS

Just as businesses break their larger customer populations into subgroups with similar characteristics, human services programs too can segment their client bases. The goal is to deliver the right services to the right people. By rethinking the design and delivery of programs, human services agencies can better understand the diverse spectrum of needs among individual citizens and families. This can move human services systems from a “one-size-fits-all” approach to a “right-size-for-all” way of thinking about customers and what they need.

### TRANSFORM PRACTICE THROUGH ANALYTICS

Enhanced data collection, coupled with the proliferation of agile and inexpensive technologies, is allowing for the in-

creased use of analytics. This shifts the focus of human services from “hindsight” to “foresight and insight,” which can offer unprecedented opportunities for efficiencies and cost savings. It can also make sure that the right solutions get to the right people at the right time.



For more on AI's potential to reconfigure the nature of work, read the Deloitte study *Reconstructing work: Automation, artificial intelligence, and the essential role of humans* ([www.deloitte.com/insights/artificial-intelligence-and-the-future-of-work](http://www.deloitte.com/insights/artificial-intelligence-and-the-future-of-work)).

### EXTEND CASEWORKER CAPABILITIES USING AI-BASED TECHNOLOGIES

The introduction of artificial intelligence (AI) can bring big changes to human services agencies, freeing caseworkers to focus on life-changing work. AI can also help them to do a better job, providing the insights necessary to do the right work, for the right people, at the right time, thus achieving meaningful results for the individuals and families they serve.

To make the most of AI investments, agencies should consider redesigning their talent strategies so that a job is viewed not as an individual production function, but rather as a collaborative problem-solving effort, where a human defines the problems, machines help find the solutions, and the human verifies the acceptability of those solutions.<sup>5</sup> Chatbots are another way to provide clients with smart guidance on questions about eligibility and policy, improving accuracy without tying up human resources. In addition, digital workflows can also augment worker impact through data analytics and behavioral “nudging.”



## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### DATA-DRIVEN CHILD SUPPORT ENFORCEMENT IN FLORIDA

The Florida Child Support Program uses a predictive model to select compliance actions that will produce the best return on investment (ROI), bringing in the most collection money when compared with the costs. The model is based on two specific parameter groups—the financial compliance levels of cases and the indicators of the parents' ability to pay (criminal history, employment, institutionalization status, and disabilities). For each case, the system then identifies the best course of action, selecting and prioritizing actions from a catalog of 11 possibilities. This minimizes the chance of using an expensive remedy, such as contempt, which requires activity by attorneys, in cases where that option is not likely to result in payment.

### SIMPLIFYING ELIGIBILITY VERIFICATIONS IN SAN DIEGO COUNTY

Caseworkers today often must manually verify beneficiaries' eligibility by fetching data from multiple systems. In San Diego County, for example, caseworkers use two different systems for eligibility verifications. The first stores all the required documents to verify eligibility. The second has 500 different application forms; each form, or combination of forms, requires different documents.

Because these two systems don't share information, caseworkers had to open forms from one system and then look for supporting documents in the other. Since there are 500 forms, these requirements create hundreds of business rules, which a caseworker had to verify *manually*. The process was complex and consumed a great deal of time.<sup>6</sup>

To automate the process and connect both systems, the county deployed RPA software. It looks at the open forms on a caseworker's screen, sifts through the verification fields, identifies relevant documents, and then pulls up those documents from the other system. The entire manual task was replaced with the stroke of a hot key. Thanks to RPA, the county slashed the time it takes to approve a SNAP application from 60 days to less than a week.<sup>7</sup>

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# ECONOMIC DEVELOPMENT

## Cultivating prosperity

William D. Eggers, Kurt Dassel, and Scott Malm

### What is the issue?

**W**HAT can state governments do to create jobs and boost economic competitiveness?

Most state economic development strategies fall into two broad categories:

- Driving a skilled, work-ready population for employers to tap into
- Make the state a great place to do business

States looking to revitalize their economies need to think creatively about the steps they can take, and address the one question that really matters: Which policies accelerate talent development, boost economic growth, and catalyze productive employment—and which may impede it?

## ISSUE BY THE NUMBERS: ECONOMIC DEVELOPMENT

## 5 MORE JOBS

**Jobs create jobs:** Some jobs create more jobs than others. A study of 11 million workers in 320 metropolitan areas found that every new high-tech job in a metropolitan area creates five additional local jobs. Every new manufacturing job creates 1.6 additional local jobs.<sup>1</sup>

## 53%

**The “middle skills” gap:** Middle-skill jobs (which require education beyond high school, but not a four-year degree) account for 53 percent of the United States’ labor market, but only 43 percent of the country’s workers are trained to the middle-skill level. Nearly half of all job openings between 2014 and 2024 are expected to require middle skills.<sup>2</sup>

## 2.3 MILLION

**Automation:** Depending on whom you believe, job-killing robots could be coming to take your job<sup>3</sup>—or, conversely, automation and artificial intelligence (AI) will likely drive the next great economic boom. According to an analysis by Gartner, in 2020, AI will become a positive net job motivator, creating 2.3 million jobs while eliminating only 1.8 million jobs.<sup>4</sup> Most economists, however, believe the new jobs created through advanced technology will require higher level skills.

## 30%

**Licensing requirements have increased:** The share of the workforce that falls under some sort of licensing requirement has increased from 5 percent in the 1950s to almost 30 percent in 2015.<sup>5</sup> Excessive licensing requirements can stifle innovation.

## How can state leadership tackle the issue?

For state policy makers aiming to boost economic growth, a two-pronged strategy of strengthening the state’s talent pool and improving the business environment can be a good starting point. But first, it is important to understand some of the factors that drive economic growth in the information age.

In survey after survey, talent often tops the list of the most important factors determining competitiveness. As the World Economic Forum notes: “A strong innovation capacity will be very difficult to achieve without a healthy, well-educated, and trained workforce.”<sup>6</sup>

The notion of what constitutes a “job-ready workforce” has shifted. Today, there is a widening earnings gap between those with and without a college education—what economists are calling the great economic divergence.<sup>7</sup> Middle- and low-skill workers from working-class regions may suffer as automation rises and manufacturing jobs

wane.<sup>8</sup> Automation has the potential to boost economic growth by creating new types of jobs and improving efficiency in many businesses, but its current negative effects can’t be ignored—the loss of some middle-class jobs.<sup>9</sup>

Meanwhile, overly onerous regulatory compliance burdens can cost businesses and citizens, stifle innovation, and have an adverse effect on economic growth and employment. As the innovation economy accelerates, states should focus on fostering a great workforce and an attractive environment for entrepreneurs.

### BUILD A WORK-READY POPULATION FOR EMPLOYERS TO TAP INTO

Talent development by its very nature creates a positive-sum game—everyone benefits when states develop talent more broadly and rapidly.

## Become a magnet for top talent

To remain competitive in the twenty-first century, policy agendas should focus aggressively on growing and attracting talent. Studies show that when it comes to high-paying knowledge, professional, and creative jobs—the ones that drive the economy and innovation—jobs follow people.<sup>10</sup> Increasingly, businesses want to be based where talent wants to be, and for those people, factors such as housing, cost of living, and quality of life influence that decision. In fact, several cities in the United States have seen an influx of skilled talent and businesses due to favorable housing costs, better public transit, and improved quality of life, while traditional tech hotbeds may see an outflux due to these very factors.<sup>11</sup>

## Increase educational attainment

Many of the jobs being created today—and those created tomorrow—can't be filled by lower-skilled workers. Yet a significant portion of the US population doesn't receive formal education after high school. Postsecondary enrollment has declined for the fifth straight year.<sup>12</sup> A key to state competitiveness is to get a much higher percentage of the workforce on the path to a college degree, in a skilled training program for a trade, enrolled in community colleges, or deeply engaged in alternative education options or alternative paths to a degree.

## Make skills, training, and retraining the focus of workforce development

Allocating funds for workforce training instead of just employment services can lead to more effective use of public dollars.<sup>13</sup> Although employment services, such as job search and placement, can facilitate employment in the short term, evidence shows that they do not typically result in an increase in income or better economic opportunities.<sup>14</sup> Participants who receive such services often end up in low-skill jobs. In contrast, those who receive longer-term training services ultimately see greater gains in both employment and earnings.<sup>15</sup>

## Flip the customer: Shift the customer of workforce programs from job seekers to employers

To address the skills gaps, the solution is not simply more education, but *ongoing* and more specifically tailored professional development that aligns more closely to employer needs. Two ways to close the skills gap between employers and workers are just-in-time learning and a modernized accreditation system that objectively evaluates skills gained. State education authorities could identify ways to work with alternative education and training providers—for example, providers of bootcamps, massive

open online courses (MOOCs), apprenticeships, and community college education—as well as with employers and businesses to carve out space and support experimentation with new learning and training models that promote job-to-skill alignment.

Employers can also play a bigger role in training workers through apprenticeships (see *sidebar*, “Direct state investment in apprenticeship to encourage employment participation”), as well as by reskilling existing talent as technologies automate work (as AT&T is doing through the retraining program described later in this article).<sup>16</sup> Anything that states can do to put employers at the center of workforce development and incentivize investing in skill-building is helpful. Several states, including Connecticut, Georgia, Kentucky, Mississippi, Rhode Island, and Virginia, provide training tax incentives between 5 and 50 percent of training expenses.<sup>17</sup>

### ► DIRECT STATE INVESTMENT IN APPRENTICESHIP TO ENCOURAGE EMPLOYER PARTICIPATION

Public investments can influence employer willingness to participate in apprenticeship programs. South Carolina's apprenticeship program encourages and incentivizes employers to sponsor apprenticeships. Often seen as a model for states, the program offers comprehensive support to employers through a host of options:

- A tax credit of \$1,000 per apprentice for employers who sponsor apprenticeships
- Access to apprenticeship consultants at no cost to facilitate the process of registering apprenticeships, connecting companies to high school tech centers, and evaluating apprenticeship performance
- Access to the state's technical colleges through Apprenticeship Carolina, an affiliate of the Division of Economic Development embedded within the technical college system

Similarly, Iowa enacted the Apprenticeship and Training Act in 2014, which established an apprenticeship program training fund with annual appropriations at \$3 million. The apprenticeship training program funds are used to support grants to Registered Apprenticeship program sponsors—which are typically employers, labor-management partnerships, or industry associations—to subsidize the cost of apprenticeship programs.<sup>18</sup>



## Address information mismatches in workforce development

Information gaps between various players in the workforce development system can make workforce development programs less effective.<sup>19</sup> Programs could see better results if information mismatches among all stakeholders—including workforce boards and employers, employers and participants, participants and training providers, and workforce boards and training providers—were corrected. Greater coordination between Chambers of Commerce, youth training programs, and community schools could help further address barriers to education and training, as well as spur innovative partnerships and policy changes.

### ► MICHIGAN'S PROMISE ZONES

To lower the financial barriers to a college education, Michigan created 10 Promise Zone designations through public-private partnerships to provide every high-school graduate in selected low-income communities a tuition-free path to college. Districts identified as Promise Zones are allowed to keep a portion of state revenue to issue scholarships. Many of Michigan's Promise Zone awards are last-dollar scholarships to supplement other aid students receive from Pell Grants, other need-based aid sources, and private contributions.

In Baldwin, the first district to start giving out scholarships, 14 students out of the 23-student graduating class enrolled in college when scholarships were awarded—a 26 percent increase from before the program started. In addition to improving college enrollment rates, the Promise Zone program has improved how these communities think about college and higher education and made students more aware of the opportunities available to them.<sup>20</sup>

## Tailor transition programs to individual needs

Public policies can help in reducing the stresses that workers face when shaping their own careers, learning new skills, and participating in global talent networks. For those caught in challenging and unexpected transitions, the question that should be asked is: How can public policies help to shorten the time spent on the unemployment rolls, support necessary retraining, and ensure the provision of basic necessities such as health insurance?<sup>21</sup> Digital technology infrastructures and greater accessibility to data about individuals can make it more

feasible to tailor transition programs to people's evolving needs. Exploring unemployment policy adjustments such as providing one-time/lump-sum unemployment benefits, linking unemployment benefits to professional development, or subsidizing work rather than unemployment during downturns could incentivize and motivate unemployed workers to get back on their feet faster.<sup>22</sup>

## MAKE YOUR STATE A GREAT PLACE TO DO BUSINESS

Human and economic activity clusters in areas that are highly attuned to the needs of businesses and employees, where people expect to find jobs and opportunity, and where innovation, ideas, and freedom are welcomed, incubated, and encouraged.

### Understand your state's competitive advantage

Not every city or state in America can become Silicon Valley, but all states can build their competitive advantage by playing to their unique strengths. Identify and invest in your state's assets—the factors that differentiate the state in terms of improved competitiveness and economic outcomes (for example, world-class talent and institutions, geographic location, quality of life, and so on). At the same time, supporting geographic clusters of the specialized industries and sectors that have traditionally driven the region's growth and employment can help boost and sustain economic gains from these areas. Firms located in dense clusters of industry along with related or supporting companies tend to be more innovative than isolated enterprises.<sup>23</sup>

### Make it easy for businesses to transact with government

Businesses interact with government in numerous ways—from registering businesses, getting licenses and credentials, and obtaining permits for thousands of activities to reporting on compliance and paying taxes and fees. Making it easier for businesses to transact with government can both reduce compliance costs and boost voluntary compliance. Steps to consider include:

- **Treat businesses as customers:** Treat businesses as customers who want to obey the law but might need some guidance navigating the maze of government rules and regulations. Tools developed in the private sector, such as human-centered design, personalization, data analytics, and the use of feedback loops, can make a powerful difference for governments trying to engage these “customers”—the businesses that operate within their boundaries.

- **Go digital:** Develop user-friendly online systems that make license and permit applications simple, transparent, and predictable for businesses. Digitizing regulatory transactions as much as possible can increase satisfaction and reduce costs for those affected (as well as reduce costs for regulators).
- **Reduce duplication and delays:** Starting a business shouldn't involve spending multiple days completing half a dozen different procedures with five different agencies. For example, in New Zealand, a business owner can register a business in less than a day by interacting with a single government department online.<sup>24</sup>
- **Engage businesses while formulating rules and regulations:** Seek input and create ways to listen to businesses, staff, and the enforcement community—whether through direct contact (“get out of the building” field visits), crowdsourcing, or more traditional outreach activities such as surveys—to understand pain points and successes.
- **Eliminate redundant regulations:** Start with those that may have once provided value, but have remained fixed while the world evolved to a point where they now add little value and could be changed without affecting protection.
- **Consider the TSA Precheck model:** Similar to TSA Precheck, a risk-based system could be applied to regulatory enforcement, allowing for alternative modes and/or frequencies of inspection for pre-certified businesses. A similar practice has been put in place in some assembly plants in the United States, where parts vendors that demonstrate a highly reliable level of process control are pre-certified to ship their components directly to the shop floor without an incoming inspection.
- **Implement an ongoing review process to surface out-of-date regulations:** It is tempting to treat regulatory reform as a one-off project that can be done and forgotten. Unfortunately, our analyses have shown that a large percentage of regulations are never updated after publication.<sup>26</sup> Establishing a clear process to continuously evaluate existing regulations can prevent such buildups from continuing into the future.

### Reassess legal and regulatory policies

Business formation rules could be updated to make it easier for entrepreneurs to launch a business. The future of work will likely involve a higher percentage of start-ups and small businesses, and policy makers will likely find themselves under pressure to update regulations to make starting small ventures easier.

Moreover, reviewing occupational licensing requirements for undue burdens can help policy makers make fixes and chip away at regulatory barriers. State-level licensing requirements can make it hard for licensed professionals such as doctors and lawyers to move from place to place to areas where wages are higher or where their services are in demand. Where licenses *are* necessary, states can evaluate whether their prices can be reduced.<sup>25</sup>

### Reduce and streamline regulatory requirements

Some actions to consider here include:

- **Assess where the challenges lie:** Flag complex or costly regulations, and consider whether a proposed regulation would have a net positive or negative impact on the economy.

### Make public data more accessible to business

States can share their data to help business owners make decisions such as the most appropriate locations for their business. For example, Utah has launched an interactive online economic development map. The site provides information on the state's broadband services, utilities, transportation, workforce, and lifestyle features. It allows businesses to compare and evaluate the features of multiple locations and print personalized reports with summaries of available infrastructure.

States such as Virginia have also embedded interactive DataUSA charts into their economic development portals to make their regions more competitive.<sup>27</sup>

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### NCWORKS: BRIDGING THE GAP BETWEEN EMPLOYERS AND JOB SEEKERS

North Carolina, the ninth-largest US state, has more than 80,000 students attending colleges for degrees who will soon be on the job market. In 2013, the state consolidated its job-training efforts and created an online portal called “NCWorks” to serve as a bridge between employers and job seekers. The portal has enabled employers to partner with universities, such as North Carolina State University, UNC-Chapel Hill, and Duke University, to customize workforce training programs based on their requirements. Through the NCWorks Incumbent Worker Training Grant program, the government not only reimburses the employers’ training costs, but also helps employees build skills that employers require.<sup>28</sup>

### AT&T’S AMBITIOUS RETRAINING PROGRAM

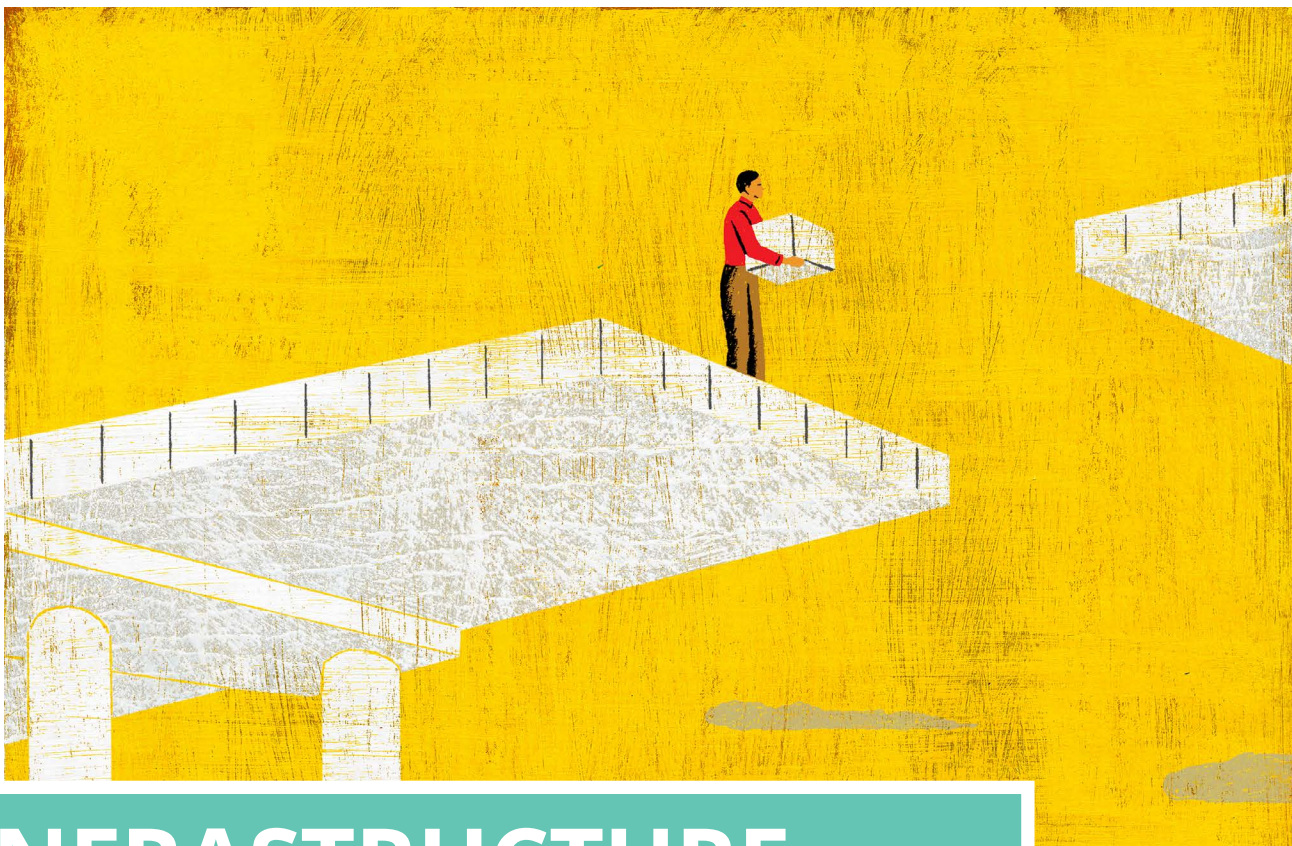
Under its Workforce 2020 initiative, AT&T is investing over \$1 billion to retrain 100,000 employees by 2020. In the face of rapidly changing technology, the company found that its employees didn’t have the necessary skills to run and maintain its changing software and technological infrastructure. Instead of looking outside to address this skills gap, AT&T decided to look within its own workforce and build the skills it would need in the future.

AT&T set out to help employees quantify their skills in terms of competencies and credentials, and launched internal tools that connected them to skills-training options. These include individual online courses and certifications as well as “nanodegrees”—course bundles that deliver specialized training that can, for example, prepare a programmer to upskill to a software engineer. AT&T also partnered with Georgia Tech and Udacity to deliver an online master’s degree through a MOOC. The company partly covers the cost of several of these options.<sup>29</sup>

In addition to building a steady stream of talent, AT&T is beginning to see other benefits, including an increase in speed and efficiency. It has reduced its product-development cycle time by 40 percent and accelerated time to revenue by 32 percent.<sup>30</sup>

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# INFRASTRUCTURE

## Closing the gap

Avi Schwartz, Mark Blumkin, and William D. Eggers

### What is the issue?

**E**VERYWHERE you look, there are visible signs of America's deteriorating infrastructure—congested roads, unsafe bridges, aging schools, water and wastewater treatment facilities in need of repair. The list goes on. These problems, in turn, can impose huge costs on society, from lower productivity to reduced competitiveness to an increased number of accidents.

The American Society of Civil Engineers estimates that to meet future demands and to restore the country's competitive advantage, governments at all levels and the private sector need to increase infrastructure investment from the current 2.5 percent of GDP to 3.5 percent by 2025.<sup>1</sup> Failure

to adequately invest in infrastructure could cost the economy \$4 trillion over the coming decade.<sup>2</sup>

While there is broad consensus that the nation's infrastructure needs attention, state leaders lack the resources needed to upgrade their state's infrastructure. Dwindling federal support and declining gas tax revenues—which are largely earmarked for surface infrastructure—have only exacerbated the resource crunch.<sup>3</sup> This situation is particularly critical because in the future, infrastructure may require more built-in technology, such as IoT sensors and so forth. This embedded technology could not only help facilitate these assets' maintenance, but also enhance the ability to manage their utilization: Think connected vehicles



communicating with their surroundings, or variable road pricing to manage congestion.

Many governments are also struggling to use their infrastructure allocations wisely, sometimes choosing low-return projects, and often failing to deliver projects on time and on budget. Nine out of ten major projects have budget overruns, with costs commonly reaching 50–100 percent above initial estimates.<sup>4</sup> This not only degrades the value of

each dollar spent, but can also diminish public confidence in the government's ability to be a good steward of tax dollars earmarked for infrastructure. This, consequently, may lead taxpayers to become less inclined to support increased funding measures.

Bridging the current infrastructure gap will likely require states to raise additional revenue and find innovative ways to finance and deliver projects.

## ISSUE BY THE NUMBERS: INFRASTRUCTURE

### \$4 TRILLION

According to the American Society of Civil Engineers, it will take approximately \$4 trillion to repair the current state of the US infrastructure by 2025.<sup>5</sup>

### \$416 BILLION

According to the Congressional Budget Office, "Almost all spending on transportation, drinking water, and wastewater infrastructure is done by the public sector. Federal, state, and local governments spent \$416 billion on it in 2014. That amount equaled about 2.4 percent of gross domestic product, a percentage that has been fairly stable for roughly 30 years."<sup>6</sup> About three-quarters of that amount came from state and local governments.<sup>7</sup>

### STATE FUNDING

The sources of state funding for infrastructure (as of 2015) include:<sup>8</sup>

- Dedicated fees, surpluses, and other state funds: 35 percent
- Federal funds: 28 percent
- State bond proceeds: 32 percent
- State general funds: 5 percent

### \$3,400

According to the American Society of Civil Engineers, households will lose \$3,400 in disposable income each year from 2016 to 2025 due to infrastructure deficiencies, in part due to increased congestion, greater vehicle repair costs, and other costs attributable to poorly maintained infrastructure.<sup>9</sup>

## How can state leadership tackle the issue?

### ARTICULATE THE IMPORTANCE OF INFRASTRUCTURE INVESTMENT TO VOTERS

Politically speaking, infrastructure, unlike schools or human services programs, lacks a concentrated constituency—which can make public investment in this area a difficult sell. Yet there are compelling reasons to invest in infrastructure that should be articulated to constituents because of what is at stake for both the local and national economy. Investment in infrastructure can act as a direct economic stimulus. Such investments could boost the

economy in other ways as well—by attracting and retaining business and talent. At the national level, broad infrastructure investment would modernize the foundation of the US economy and could help the country keep pace with foreign competitors.

### SELECT THE RIGHT PORTFOLIO OF PROJECTS

Agencies should implement better decision analytics that can accurately assemble project costs and benefits so that the best decisions can be made about new construction and maintenance programs. Old methods of allocating resources equally or formulaically can result in inefficient deployment.

Developing life cycle cost estimates that take account of all the costs involved over the life of an asset, which is now only a Government Accountability Office (GAO) requirement for federal investments, should become a routine part of all capital projects. Agencies should only build what they can maintain, and they need to design projects with full life cycle costs in mind.

A capital investment framework is becoming more common at the state government level as a tool for scoring projects by value and risk. This process allows an infrastructure investment committee to assess, rank, and prioritize projects across different infrastructure types. With limited funding available, it can be critical to consider the economic returns when selecting infrastructure investments and to prioritize high-return investments.

A capital investment framework can be a powerful and transparent approach to overcome political interests, focus on critical priorities, and balance the overall portfolio of projects—particularly when there are competing priorities between rehabilitating existing infrastructure and investing for economic growth.

#### USE ANALYTICS TO IMPROVE ON-TIME AND ON-BUDGET PERFORMANCE

Large capital projects can be a project management headache. Repetitive reporting, multiple data systems, unprioritized and unorganized data, largely paper-based reporting, and lack of system connectivity all can make it difficult for construction owners to gauge risks to on-time and on-budget performance across their portfolio of projects.

Agencies should turn all this data into insights so they can better manage their construction portfolio. A predictive analytics platform that aggregates relevant data across systems, processes key performance metrics, and senses project risk and performance could allow government agencies to identify and mitigate potential issues, and quickly report anomalies to leadership.

#### BUILD AN ACTION PLAN FOR LEVERAGING PUBLIC-PRIVATE PARTNERSHIPS (PPPs)

If state governments want to pursue their infrastructure goals, the central question they may want to answer is not *whether* or not to partner with the private sector in infrastructure projects, but perhaps *how* to optimally leverage such partnerships to attain their goals and maximize public value.

Creating an action plan for leveraging PPPs can foster a successful relationship between state governments and the private sector. Some of the strategies to consider that could be foundational for creating a balanced program to incorporate PPPs include:

- Establish the necessary legislative and regulatory framework to support a successful PPP program (with clear processes, decision-making criteria, and authority to execute transactions)
- Choose an appropriate partnership model for delivery and funding
- Use a life cycle approach to project delivery that confers attention to all stages of the project

► **TO DIVE DEEPER INTO THESE STRATEGIES, SEE OUR RELATED PUBLICATION *CLOSING STATE INFRASTRUCTURE GAPS*** ([bit.ly/state-infrastructure-gaps](http://bit.ly/state-infrastructure-gaps)).

#### ► CHOOSE THE RIGHT FINANCING MODEL

Several criteria should be considered when determining how to finance new infrastructure projects. Two key factors are the level of urgency and current availability of funds. For example, if the infrastructure needs are not immediate and funds are available over time to make a new capital investment, then the pay-as-you-go model may be a good option. Key questions policymakers should consider include:<sup>10</sup>

- Is there an immediate need for the asset?
- What is the expected useful life of the asset?
- What is the current availability of funds relative to the size of the project?
- Are there multiple projects that need to be completed simultaneously?
- Is inflation expected to increase?
- Is the borrowing rate expected to increase?

#### CONSIDER ASSET RECYCLING FOR FINANCING NON-REVENUE-PRODUCING INFRASTRUCTURE

With most PPP project investors interested in funding user-fee revenue-based projects, asset recycling is gaining traction for funding non-revenue-producing infrastructure projects. Asset recycling involves the sale or long-term lease of existing revenue-generating infrastructure such as airports, seaports, and bridges. The proceeds from the sale or lease are then used to fund non-revenue-generating infrastructure projects (such as schools and municipal buildings). For years, Australia has successfully used asset recycling as a revenue source for funding new infrastructure assets; Brazil recently jumped on the bandwagon, and Canada is actively considering it.<sup>11</sup>

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### USING INNOVATIVE FINANCING AND DELIVERY FOR SCHOOL MODERNIZATION IN THE DISTRICT OF COLUMBIA

Built in the 1920s, the James F. Oyster Bilingual Elementary School was on its last legs by the early 1990s. The school's strong academic record stood in contrast to a structural crisis—leaking roofs, building code violations and accompanying shutdowns, lack of computer hookups, and limited space. The District of Columbia had neither the \$11 million required to build a new school, nor the borrowing power to raise funds from other sources. The district had to make a hard decision—either shut down the decrepit building and relocate students, or find another way to bring the school up to code.

What the district lacked in financial assets, it made up for in physical assets. The school sat on 1.67 acres of prime real estate within walking distance of the Smithsonian National Zoo. The district converted its underused physical assets into a financial asset by dividing the property, half for a new school and half for a new apartment building—both designed and built by the private sector. The private sector entity that partnered the development was given the operation and maintenance rights for the new apartment building, and in exchange, the district got its first new school in 20 years—a state-of-the-art facility with double the space. The bond issue that financed construction is backed by the incremental revenue generated by the project, which consists of the taxes and other payments that the private partner generated from the operation of the apartment building.<sup>12</sup>

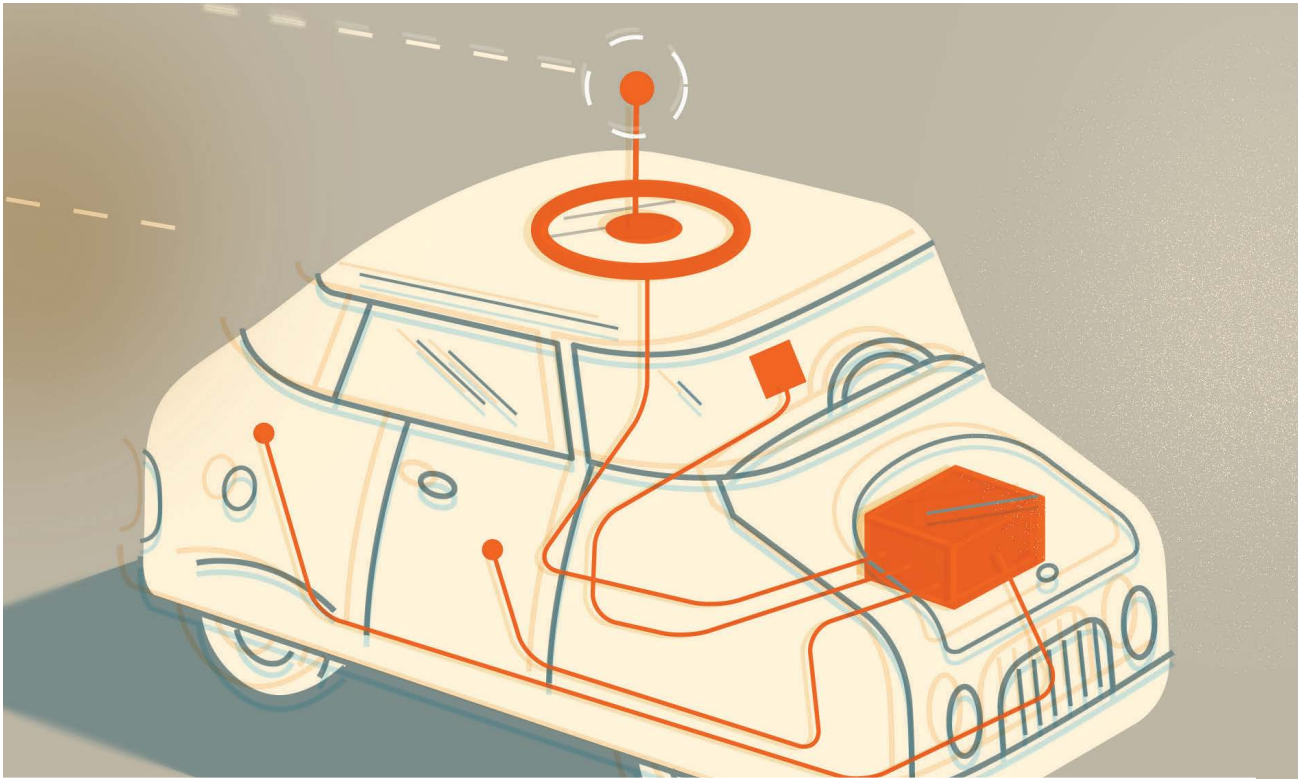
### COST-EFFECTIVE INFRASTRUCTURE DEVELOPMENT THROUGH PPPs

The city of Phoenix, Arizona, saved an estimated \$30 million by partnering with the private sector to design, build, and operate a new water treatment plant.<sup>13</sup> Similarly, the Commonwealth of Pennsylvania used an innovative approach for clearing backlogs in bridge repairs. By bundling 558 small bridges into a single procurement to achieve economies of scale, the commonwealth expects to be able to get the private sector to repair and maintain the bridges for 25 years at 20 percent cost savings.<sup>14</sup>

### PERFORMANCE-BASED PROJECT SELECTION IN CALIFORNIA

With limited budgets, selecting the right portfolio of infrastructure projects—one that yields the highest return on investment (ROI)—can be critical. To streamline the selection process for its transit projects, the Metropolitan Transit Commission (MTC) in California's Bay Area created a performance-based planning process to provide data-driven insights on which projects to fund. The evaluation was based on whether the proposed project's benefits outweighed its costs and on how it performed on what the MTC calls the "Three Es" of economy, environment, and equity.<sup>15</sup> The MTC performed a detailed assessment of around 700 projects and was able to narrow the list down to 500 that yielded the highest ROI and scored highest on other priority parameters.<sup>16</sup>

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# THE FUTURE OF MOBILITY

## Accelerate ahead

Vinn White and Tiffany Fishman

### What is the issue?

**T**HE way people and goods travel from point A to point B is going through a sea change driven by a series of converging technological and social trends: the rapid growth of carsharing and ridesharing; the increasing viability of electric and alternative powertrains; new, lightweight materials; and the development of connected and autonomous vehicles. The result is the emergence of a new ecosystem of mobility that could offer faster, cheaper, cleaner, safer, more efficient, and more customized travel.

The stakes are high, and the implications of these shifts look to be wide-ranging. The extended auto industry alone touches nearly every facet of the American economy. It represents nearly \$2 trillion in revenue—more than 10 percent of US GDP.<sup>1</sup> The commercial trucking industry adds another \$700 billion to that figure.<sup>2</sup> Almost 7 million people

worked in the US auto industry in 2016, with another 3.5 million employed as motor vehicle operators.<sup>3</sup> And those figures, significant in themselves, don't include the many additional jobs that rely on the provisioning of transportation, such as warehouse workers, public works employees, and those in delivery services. At the same time, traffic congestion wastes 7 billion hours a year for commuters.<sup>4</sup> The world should find better ways to move people and goods.

State governments will play a role in shaping this new mobility landscape, regulating new technologies, and sharing critical data to enable a more integrated transportation ecosystem—which is as much an information challenge as it is a transport challenge. States that can help accelerate the future of mobility will likely see economic benefits as well as enhancements to their residents' quality of life.



## ISSUE BY THE NUMBERS: MOBILITY

**31 CENTS/MILE**

The use of shared autonomous vehicles could cut the cost of single-person trips to as little as 31 cents per mile—about a third of the current cost.<sup>5</sup>

**95%**

The average car spends 95 percent of its time parked.<sup>6</sup>

**23 MILLION**

Car-sharing services are expected to encompass 23 million members globally by 2024.<sup>7</sup>

**633 CITIES**

Uber currently operates in more than 633 cities worldwide.<sup>8</sup>

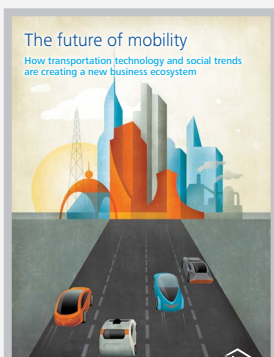
**\$160 BILLION**

Traffic jams cost the US economy about \$160 billion annually.<sup>9</sup>

**\$345**

On average, US drivers spend 17 hours per year searching for parking, at a cost of \$345 per driver in wasted time, fuel, and emissions.<sup>10</sup>

### How can state leadership tackle the issue?



Read more about the future of mobility in Deloitte's report *The future of mobility* ([www.deloitte.com/insights/the-future-of-mobility](http://www.deloitte.com/insights/the-future-of-mobility)).

#### TREAT EXISTING MOBILITY OPTIONS AS ONE BIG ECOSYSTEM

Public policy should focus on getting travelers from point A to point B efficiently, using any and all resources available—private cars, shared cars, ridesharing, bike sharing, and various modes of public transportation. Through public-private partnerships, governments can foster development of multimodal trip

planning services, along with payment systems that let a traveler cover all the costs of a trip—bus and subway fare, parking, tolls, bike rentals, or whatever applies—through a single transaction.

Also, and fundamentally, states should explore creating a digital backbone for the mobility ecosystem: a comprehensive, interoperable system that transcends existing infrastructure, drives standardization and interoperability, enables value creation by key parties, and cultivates technological advancements. Such an integrated mobility platform could bring together physical infrastructure (roads, rails), modes of transport (cars, public transit, ridesharing, bike sharing), and transportation service providers (aggregators, public transport systems) and create greater throughput and optimization system-wide through market-clearing mechanisms. Such a system could not only enable “mobility

as a service” (MaaS), but it could also allow visibility into and dynamic balancing of mobility supply and demand.

There should also be a thoughtful integration of physical infrastructure that facilitates transfer between transportation services. Examples include bus and subway interchanges, or bike and carsharing spaces at stations. Transportation planners should think through how the various modes link up, and states should particularly consider their role as a convener of various participants to promote greater integration.



Read more about enabling seamless multimodal mobility at *The rise of mobility as a service* ([www.deloitte.com/insights/maas](http://www.deloitte.com/insights/maas)).

### CREATE CONDITIONS FOR SMART MOBILITY INNOVATION

State governments can help set the stage for autonomous vehicles and MaaS by considering collaboration and public-private partnerships, as well as by encouraging open architecture technology standards. Governments can help define the vision and set the metrics by which success in mobility is measured.

Governments also can encourage investment in new programs. The US

Department of Transportation (DOT) launched the Smart Cities Challenge, in which 78 cities submitted plans for intermodal innovations.<sup>11</sup> The goal of the challenge was to encourage cities to think creatively about the future and to experiment with new mobility alternatives, with the \$40 million federal contribution ultimately awarded to the city of Columbus, Ohio.<sup>12</sup> Off the back of the challenge, states such as Nevada, Michigan, Pennsylvania, and Florida are now developing their own pilot programs.<sup>13</sup>

### PROTECT THE PUBLIC INTEREST

Governments should play an important role in ensuring that the new transportation environment doesn't compromise safety or security. Autonomous vehicles may be a hot topic, but in creating integrated mobility platforms, governments should also address more prosaic issues around vehicle driving, service provision, consumer protection, data protection, liability, and equal access. Finding the regulatory sweet spot could be key. Too much regulation and the private sector may find it difficult to innovate or participate; too little regulation and the public interest might not be served.

### REVISIT AND REFINE OFTEN

Because of the speed with which the technologies are advancing, a once-and-done approach to rulemaking may be ill-suited to the future of mobility. Instead, governments should review and refresh regulations frequently, with an emphasis on outcomes rather than only process or product. This can become especially important as policies evolve from high-level guidance to increasingly detailed—and binding—rules.

### EXPLORE CREATIVE FINANCING OPTIONS

Could MaaS, cost sharing, or other approaches allow state agencies to introduce new technologies without requiring a huge upfront investment? In some cases, private sector players eager to create viable in-market proof points might be willing to provide technology or services at reduced cost. Are there ways to make better use of purchased assets? For example, could a ridesharing service for state employees be created rather than assigning cars to individuals? What about setting up charging stations for state-owned electric vehicles and then letting members of the public pay to use them?

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### JAPAN'S SEAMLESS TRANSPORTATION PAYMENTS SYSTEM

JR-East, one of Japan's largest railway companies, introduced a rechargeable, contactless farecard in 2001. In 2004, NTT DOCOMO, a Japanese mobile phone provider, created the "wallet mobile," which served as electronic money, member card, credit card, and a ticketing mechanism for air travel and events. In 2006, the two companies joined together to launch Mobile Suica, moving payments from smart cards to cellphones.<sup>14</sup> Since then, they have built an extensive ecosystem of transportation operators, retailers, and service providers, and attained interoperability across most of the country's transportation systems. Japan aims to extend the interoperability of the Suica card across all train lines nationwide in time for the Tokyo Olympics in 2020.<sup>15</sup>

### CONTRA COSTA COUNTY'S CARPOOLING APP

In Contra Costa County, California, the Contra Costa Transportation Authority (CCTA) has partnered with Scoop Technologies to develop an app that encourages carpooling. The app allows users to find rides, generate driving directions, and make payments. CCTA will pay commuters \$2 each way each time they find a ride through the system instead of using their own cars.<sup>16</sup>

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## LAW AND JUSTICE

# New options for public security

Angel Quinones and Stephen Lee

### What is the issue?

**P**ERHAPS a governor's most sacred responsibility is his or her commitment to safeguard citizens' lives and properties. In today's times—with terrorism and civil unrest often joining crime and disaster response as key citizen concerns—security is typically a top-of-mind priority with voters.

Justice and security can encompass a broad range of public safety issues, including law enforcement, emergency management, the courts, and homeland security. Constituents want the state to uphold its obligation to protect them and ensure the administration of justice in each of these areas—no easy task.

The costs associated with justice and security are not small. Over the last 30 years, spending on the criminal jus-

tice system has increased at triple the rate of public school funding.<sup>1</sup>

How can governors meet this challenge without breaking the bank? One way is to consider using new technology and new approaches to break traditional trade-offs. Government can look for innovative solutions by expanding the “ideas space” for addressing these thorny challenges.<sup>2</sup> Instead of more of the same, approaches such as adopting good ideas from other states or partnering with cutting-edge private sector firms have the potential to save money and enhance public safety.

The possibilities are endless. But there are three areas that seem ripe for new thinking: **embracing virtual incarceration, streamlining court proceedings, and digitizing emergency management.**



## ISSUE BY THE NUMBERS: LAW AND JUSTICE

**600%**

In the last 40 years, inmates in federal and state correctional facilities have increased by nearly 600 percent, as reported by the Bureau of Justice Statistics (figure 1).

**2/3**

A study on recidivism found that about two-thirds of released prisoners are re-arrested within three years, and three-fourths are rearrested within five years.<sup>3</sup>

**\$64,642/YEAR**

As of 2015, an inmate in California costs the state an average of \$64,642 per year; in New York, the cost per inmate is \$69,355 per year.<sup>4</sup>

**50%**

Close to 50 percent of inmates are non-violent offenders (figure 2).<sup>5</sup>

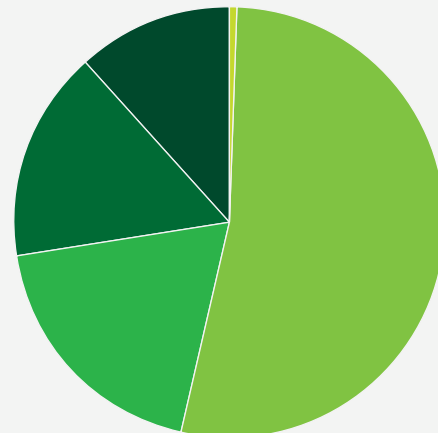
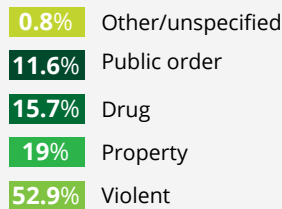
**Figure 1. Prisoners under the jurisdiction of federal and state correctional authorities, 1975–2015**



Source: Bureau of Justice Statistics, US Department of Justice.

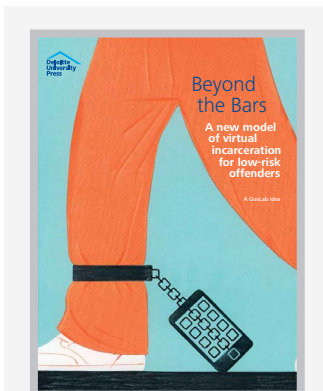
**Figure 2. Percentage of sentenced prisoners under the jurisdiction of state correctional authority, by most serious offense, 2014**

Source: Bureau of Justice Statistics, US Department of Justice.



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## How can state leaders tackle the issue?



Learn more about virtual incarceration in *Beyond the Bars: A new model of virtual incarceration for low-risk offenders* ([www.deloitte.com/insights/beyond-bars](http://www.deloitte.com/insights/beyond-bars)).

### VIRTUAL INCARCERATION

Many state governments around the country face the problem of a prison system that is too crowded, too expensive, and often doesn't succeed in reducing recidivism. Over the past 40 years, state and federal prison populations have increased nearly 600 percent,<sup>6</sup> and a National Institute of Justice study finds that over 50 percent of inmates are rearrested within one year of their

release and 75 percent are rearrested within five years.<sup>7</sup>

Women constitute one of the fastest-growing prison populations, increasing from 8,000 in 1970 to 110,000 in 2014.<sup>8</sup> This is an incredible 1,300 percent increase, four times the increase rate of male prisoners. As one can imagine, this isn't the sort of growth that states want to see, and it certainly doesn't come cheap. The impact isn't just budgetary; incarceration can have an immense impact on children, families, and communities.

One potential solution is virtual incarceration, which could use an Internet of Things (IoT) device for certain low-risk, nonviolent offenders. Instead of going to a physical jail or prison, convicted persons could remain in their communities or in some sort of low-cost shared housing—either of which would permit them to maintain family connections, jobs, and support systems while serving time—while their location is monitored with GPS-enabled devices that alert authorities if the wearer moves out of a specific geographic area. This technique would limit inmates' freedom of movement by confining them to specific geographic locations; in essence, it would be a form of house or community arrest, which could be expanded from its primary present-day use as a pretrial confinement tool to one that supplants physical incarceration. This system—elements of which are already being used in a number of states—can be expanded to include advanced risk modeling, geospatial analytics, smartphone technology, and principles from the study of human behavior to achieve superior outcomes at a lower cost.<sup>9</sup>

Evidence suggests that this sort of program could save states significant amounts of money—and could be even more effective than traditional imprisonment. A 2012 study of electronic monitoring devices in Washington, DC, found a drop in recidivism by 24 percent and an overall net benefit to society of \$4,800 per person across the criminal justice system.<sup>10</sup> And in Florida, virtual incarceration reduced the failure rate of offender compliance with probation terms by 31 percent.<sup>11</sup>

Unresolved questions surrounding the ethics of virtual incarceration remain, including when it is appropriate and whether those being monitored should be charged for the use of the devices. But state government can explore this technology as a potential way to reduce prison overcrowding and recidivism, decrease the budgetary burden, and improve the chances of rehabilitation. That said, technology alone likely won't be enough. Coupling these programs with counseling, skills training, and work transition programs can help head off issues early and assist in getting offenders the right help to keep them on track.



Read more about collaborative approaches to law and justice in *A solution economy for justice reform* ([www.deloitte.com/insights/justice-reform](http://www.deloitte.com/insights/justice-reform)).

### SPEEDY TRIALS

Courts are where the laws of the state and the rights of the citizenry meet. The Sixth Amendment to the US Constitution grants citizens the right to a speedy trial, and if courts become an inefficient vehicle for the delivery of justice, the resulting problems can extend far beyond the justice system. Research has shown that one of the most effective means of deterring criminal behavior, or recidivism in the case of probationers, is to implement

“swift and certain” punishment.<sup>12</sup>

An example of this approach's success is found in Hawaii's Opportunity Probation with Enforcement (HOPE). This program provides convicted persons and probationers a set of guidelines that govern their daily reporting requirements to state officials. If the agreed-upon rules are broken, punishment is swift, certain, and “sends a consistent message about personal responsibility and accountability.” This concept revolves around the idea that citizens respond better to certainty than severity. The results seem promising: 61 percent are less likely to miss supervisory appointments, 72 percent are less likely to use drugs, 55 percent are less

likely to be arrested for a new crime, and 53 percent are less likely to have their probation revoked.<sup>13</sup>

Another approach is the use of new technologies and innovation competitions that crowdsource solutions from outside the courts. For example, in 2014, the city of Philadelphia launched a \$100,000 challenge called FastFWD that invited entrepreneurs, businesses, and academics to develop innovative solutions to crime and justice. “We wanted to open up the solution space,” explains Story Bellows, who led the initiative for the city.<sup>14</sup>

And in North Carolina, an electronic filing system at local assistance centers allows victims of domestic abuse to file a complaint, provide sworn testimony via webcam, issue a summons, automatically index the case, and transmit protective orders to all parties. A process that used to require time and travel to several locations can now be accomplished in one trip and 90 percent faster.<sup>15</sup>

Opening systems to external ideas has the potential added bonus of an engaged citizenry that feels some sense of ownership of its institutions, and the use of performance data to identify procedural flaws can help spur efforts to resolve those issues. Ultimately, more efficient administration of the court system can improve outcomes, reduce state prison and tax costs, and perhaps strengthen the constituency’s faith in the state’s ability to protect and serve.

#### DIGITIZING EMERGENCY MANAGEMENT

Some of the toughest security challenges a governor can face are emergency situations that occur with little or no warning. While certain natural disasters, such as hurricanes, are foreseeable, others, such as tornadoes, provide little warning. A peaceful protest can quickly escalate into a riot, and an act of terror can occur in the unlikeliest of places at any time. State government must be ready to respond quickly and coordinate all the resources of the emergency response.

Between 2005 and 2015, the Federal Emergency Management Agency spent \$67.7 billion to assist communities devastated by natural disasters, including winter storms, tornadoes, and wildfires.<sup>16</sup> And this cost doesn’t account for

lost productivity and revenue streams, emergency state expenditures such as overtime and National Guard activation, or the immeasurable loss some communities suffer. While few governors campaign on a platform of better disaster response, failure in this area can define an administration.

While this task can become overwhelming, having the right tools ahead of time can better prepare state governments to be more resilient and recover more quickly. Here again, leveraging IoT devices and the power of data collection can prove invaluable.

Some states are already using advanced analytics to more efficiently respond to severe weather—techniques that could be extended to disaster response. Saginaw County, Michigan, for example, now uses data analytics to improve the efficiency of salt trucks preparing roadways for snowstorms, and has saved over \$500,000 by reducing salt use. Keeping the public informed during a disaster is important, and in 2016, locals of Howard County, Maryland, could see exactly which streets had been plowed on a website that could be viewed through their mobile devices. Additionally, the website displayed relevant data, such as “highway traffic camera views, weather alerts, and real-time traffic information”—providing residents with a one-stop shop for storm recovery information.<sup>17</sup>

From these early applications to address inclement weather, it is not a huge leap to consider how advanced analytics could be used to improve other aspects of emergency response services. The same technology that efficiently stations snowplows can be used to position police (as is already being done in Santa Cruz, California),<sup>18</sup> firefighters, or ambulances. In this way, advanced data analytics can transform the way governors are able to manage emergency responses to better keep their citizens safe. In fact, in a more distant future, augmented reality (AR) could allow agencies to enhance search and rescue efforts. From using virtual compasses to trace the direction of a target location to three-dimensional mapping of the surrounding environment, AR capabilities could improve and aid emergency management in a big way.<sup>19</sup>

## YOU DON'T NEED TO LOOK TOO FAR FOR INSPIRATION

### USING GEOSPATIAL MAPPING TO MICRO-TARGET REENTRY PROGRAMS AND SERVICES IN NEW YORK CITY

For more than a decade, New York City's Justice Mapping Center has tracked the residential addresses of inmates in various prison systems—the address they gave when they went into prison. The center found that offenders often are concentrated in particular census blocks, some of them costing state and local governments more than \$1 million a year in incarceration costs alone.<sup>20</sup> Such findings are spurring some cities around the nation to design reentry initiatives for specific neighborhoods, with services such as transitional housing and job training for ex-offenders.

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## Afterword

# Smart government, bright future

By Mark Price

## A time for “grounded optimism”

Is the state government glass half full or half empty? From where I sit, the glass is half full and rising, as technology ushers in an era of “smart government” that has tremendous positive potential.

I began my career working for a strategy firm in the high-tech industry in the United Kingdom. After three years, I realized that I wasn’t satisfied professionally. I wanted to do something that held more meaning for me personally, something where I could have a more direct impact on the world.

I left that job to join the UK National Health Service, which was then embarking on its major reform effort of the early 1990s. As a young professional, I wasn’t necessarily doing the most glamorous tasks—I seem to remember a lot of spreadsheets—but I was much happier knowing that the work I was doing could ultimately have a real impact on the health and well-being of so many others, including relatives, friends, and neighbors.

Today, I live in Boston, and I am still driven by that mission of public service and the belief that government can have a transformative impact on people’s lives. I have been part of Deloitte’s government practice for close to 25 years now, and I am proud to work at an organization that puts clients first.

In working with state leaders, I have noticed a distinct shift over the last two years. It seems as though everything is accelerating, and our clients are innovating like never before. They are seeking out new ways to do things and embracing transformative technology and new approaches, with a strong focus on digital government.

I believe we may be at an inflection point. We seem to be facing fundamental shifts in the world around us—just consider the changes associated with the future of work, the future of mobility, and the impact of blockchain. These and other transformative technologies may have the potential to change the world around us over the next five years. Technologies such as the cloud, software as a service, cognitive technologies, natural language voice interaction, machine learning, and robotic process automation are leading to new digital operating models that can break trade-offs to deliver better services at lower costs. Add in the availability of unprecedented amounts of data combined with human-centered design, and we could well be redefining the government of the future.

Most of us are familiar with the term “smart cities,” which refers to the way in which many city leaders are using technology in an integrated manner to more efficiently serve residents. Given what is going on within state government, we may be entering an era of truly *smart government*. This future vision of government is predictive rather than reactive, and focuses less on transactions and more on intelligence. Instead of just getting more efficiency in operations, smart government is about intelligently delivering better outcomes for the right investment.

Several trends could drive this change, perhaps beginning with a focus on the customer experience. Increasingly, state governments are using analytics and integrating across government as well as within the broader ecosystem. Many state governments are embracing new technologies and innovative operating models in order to deliver a better experience. Taken together, this is moving us to a future state of smart government that will be more intuitive, integrated, and intelligent:

- **Intuitive:** In a world of rapid change, intuitive governments can harness the power of analytics and digital technology to sense and respond to citizen needs as they evolve. Feedback loops and performance analytics could help to continuously refine and improve services.
- **Integrated:** Integrated governments can replace vertical divisions with a horizontal model that could align an enterprise to create a streamlined, personalized, and engaging citizen experience.
- **Intelligent:** Governments that learn from behavioral economics, psychology, and analytics can use data to manage risk, empower their workforces, and continuously reconfigure themselves in pursuit of better outcomes.

While great potential exists, execution won’t be easy. Do elected officials have the tools, the resources, and the people they need to execute in today’s environment? Can government keep up with the pace of change? For any of us, it can be overwhelming at times.

Perhaps the single most important attribute that state officials need to be successful is an attitude of grounded optimism. Grounded, because we shouldn’t ignore the constraints of the public sector that can make it difficult to

drive positive change. Optimism, because despite the obstacles, things can always be made better. While you likely won't read about them in the newspaper, the bright spots highlighted in this compendium are inspiring:

- The District of Columbia's Child and Family Services Agency's use of analytical modeling to enhance family reunification. (See "Smart government: Unleashing the power of data.")
- New Mexico's digital workflow tool developed through human-centered design that reduces error rates in the unemployment insurance system. (See "Smart government: Unleashing the power of data.")
- Michigan's MILogin identity management system, which allows users to access state information and applications from multiple agencies with a single sign-in. (See "Delivering the digital state.")

We are at a turning point for government where the confluence of exponential technology advances in several different fields offers the promise of a fundamentally better operating model. State governments, through digital transformation, may have the chance to deliver the "smart government" of the future—today. I hope that you find this compendium of articles helpful as you forge a brighter future for your state.

## ABOUT THE AUTHORS

### MARK BLUMKIN

Mark Blumkin, based in New York, is a managing director in Deloitte Transactions and Business Analytics LLP's Capital Projects practice. He has more than 30 years of experience in the engineering and construction industries, focusing on helping construction advising project owners improve the management, control, and execution of their capital projects. His experience includes working with many public sector agencies, including state departments of transportation, airports, housing agencies, hospitals, academic medical centers, and higher education institutions, as well as advising on grant management related to several large disasters. He is currently providing capital project consulting services to several state and local governments, universities, hospitals, and private sector owners across several industries. He was instrumental in developing Deloitte's construction cost assessment methodology. Contact Blumkin at [mblumkin@deloitte.com](mailto:mblumkin@deloitte.com).

### JEFF BRADFIELD

Jeff Bradfield leads Deloitte's Higher Education consulting practice. With more than 22 years of experience, he has served a range of clients in the federal, state, and local government markets as well as an assortment of health care and higher education clients. He leads large multifunctional transformational projects that encompass a wide range of services, including technology, strategy and operations, and human capital. Contact Bradfield at [jbradfield@deloitte.com](mailto:jbradfield@deloitte.com).

### KURT DASSEL

Kurt Dassel is a managing director at Monitor Deloitte, where he specializes in strategy, economic development, and inclusive business at the bottom of the pyramid. He has led economic development and competitiveness projects in a number of regions across North America and around the world, including Europe, the former Soviet Union, Africa, the Middle East, and South and East Asia. These efforts have focused on growing national/regional economies, fostering more entrepreneurship and innovation, achieving economic diversification, sustainably delivering goods and services to the poor, and aligning the implementation efforts of government, business, and nongovernmental organizations. Contact Dassel at [kdassel@deloitte.com](mailto:kdassel@deloitte.com).

### CHRISTINA DORFHUBER

Christina Dorfhuber is a principal with Deloitte Consulting LLP and a leader in Deloitte's Core Government Services practice. She worked for both the US federal and state governments before joining Deloitte in 1996. She provides business advisory and strategic consulting services aimed at improving government and services to key constituents in areas such as new service delivery models, cost containment, revenue maximization, customer operation solutions, operating model redesign, and finance transformation. She has presented numerous talks and papers on these topics on national forums and has authored several papers on government reform and cost and revenue optimization in a state government environment. Dorfhuber holds an MPP from Harvard University's Kennedy School of Government and was a Truman Scholar, recognized for her commitment to public service. Contact Dorfhuber at [cdorfhuber@deloitte.com](mailto:cdorfhuber@deloitte.com).

### WILLIAM D. EGGERS

William D. Eggers is the executive director of Deloitte's Center for Government Insights, where he is responsible for the firm's public sector thought leadership. His newest book is *Delivering on Digital: The Innovators and Technologies that are Transforming Government* (Deloitte Insights, 2016). His eight other books include *The Solution Revolution: How Government, Business, and Social Enterprises are Teaming up to Solve Society's Biggest Problems* (Harvard Business Review Press, 2013). The book, which the *Wall Street Journal* calls "pulsating with new ideas about civic and business and philanthropic engagement," was named to 10 best books of the year lists. Eggers's commentary has appeared in dozens of major media outlets, including the *New York Times*, *Wall Street Journal*, and the *Chicago Tribune*. Contact Eggers at [weggers@deloitte.com](mailto:weggers@deloitte.com).

### TIFFANY FISHMAN

Tiffany Fishman is a senior manager with the Deloitte Center for Government Insights. Her research and client work focuses on how emerging issues in technology, business, and society will impact organizations. She has written extensively on a wide range of public policy and management issues, from health and human services reform to the future of transportation and the transformation of higher education. Her work has appeared in

a number of publications, including *Public CIO*, *Governing*, and *EducationWeek*. Contact Fishman at [tfishman@deloitte.com](mailto:tfishman@deloitte.com).

### JIM HARDY

Jim Hardy is a specialist leader in Deloitte's State Health practice. He has over 30 years of Medicaid and health care experience, including serving as Pennsylvania's Medicaid director. He helps states improve the performance of their managed care programs and develop new payment and delivery models that increase value, improve quality, and control costs for Medicaid's most complex populations. He also works with states to improve the organizational efficiency of their Medicaid programs. Contact Hardy at [jihardy@deloitte.com](mailto:jihardy@deloitte.com).

### LINDSAY HOUGH

Lindsay Hough is a leader in Deloitte's Government Health Transformation Services practice. She supports state governments in health care (Medicaid/CHIP), public health, human services, and workforce development programs, and leads Deloitte's services related to supporting state and local governments in their efforts to address opioid abuse. Contact Hough at [lhough@deloitte.com](mailto:lhough@deloitte.com).

### STEVE HURST

Steve Hurst, a managing director in Deloitte Consulting LLP's US Public Sector practice, has 30 years of experience in public sector consulting. He leads Deloitte's Digital Government market offering and is responsible for helping state and local governments adopt and expand their digital capabilities, including constituent portals, business portals, digital studios, identity management, master data management, and advanced personalization and interaction methods. Contact Hurst at [shurst@deloitte.com](mailto:shurst@deloitte.com).

### STEPHEN LEE

Stephen Lee is a managing director with more than 20 years of experience in serving public sector entities across the United States and Canada. He leads large technology implementation projects as well as technology strategy and advisory engagements, helping public sector organizations apply complex technology. He examines service delivery business models and organizational capabilities and develops technical solutions to support specific environments. He has conducted large cross-government service delivery reviews and completed assignments in core business areas of government agencies across North America, including transporta-

tion, justice, homeland security, and public safety agencies.

Contact Lee at [slee@deloitte.com](mailto:slee@deloitte.com).

### ALLAN LUDGATE

Allan Ludgate is a managing director of Deloitte Consulting LLP within Monitor Institute by Deloitte. He works with schools, education nonprofits, public/private partnerships, and funders to create scalable, sustainable solutions that strengthen student pathways "from cradle to career." He leads a group that is working to boost educational attainment among low-income youth. Ludgate holds a BS from New York University and an MBA from New York University's Leonard Stern School of Business. Contact him at [aludgate@deloitte.com](mailto:aludgate@deloitte.com).

### MELISSA MAJEROL

Melissa Majerol, Deloitte Services LP, is the health care research manager for the Deloitte Center for Government Insights. Prior to joining Deloitte, she served as a health policy analyst at the Kaiser Family Foundation, where she conducted research and analysis on Medicaid, the uninsured, the Affordable Care Act (ACA), and the impact of health reform on low-income populations. She also produced and directed a number of video segments for the foundation about Medicaid enrollees' experiences with the program and the issues facing people living with HIV as they transition to ACA insurance plans. Majerol received her bachelor of arts in philosophy from Binghamton University and her master of science in health policy from the Harvard T. H. Chan School of Public Health. There, she was selected for the distinguished Rappaport Public Policy fellowship and served as a fellow at the Massachusetts Health Exchange. Contact Majerol at [mmajerol@deloitte.com](mailto:mmajerol@deloitte.com).

### SCOTT MALM

Scott Malm is a principal in Deloitte's Public Sector practice. He serves as the Workforce and Employment market offering lead, which encompasses the program domains of unemployment insurance, workforce, worker's compensation, disability, and paid family leave. He has worked with US and international public sector agencies for 25 years and has completed award-winning business and system modernization projects for multiple workforce and employment clients. Contact Malm at [smalm@deloitte.com](mailto:smalm@deloitte.com).



## DAVID NOONE

David Noone is a senior manager in the research and insights group of Deloitte Services LP. He works with governments and universities to better understand and implement emerging technologies and business models that can address their most pressing challenges. Prior to this role, he spent nine years with Deloitte Consulting LLP leading organizational assessment and transformation projects. Contact Noone at [dnoone@deloitte.com](mailto:dnoone@deloitte.com).

## JOHN O'LEARY

John O'Leary, a senior manager with Deloitte Services LP, is the state and local government research leader for the Deloitte Center for Government Insights. Prior to joining Deloitte, he served as the vice president of communications and executive reporting with State Street Bank. O'Leary previously served in multiple senior leadership roles for the Commonwealth of Massachusetts and was a distinguished research fellow at the Kennedy School of Government at Harvard University. He is the co-author of the 2009 *Washington Post* bestseller *If We Can Put a Man on the Moon*. Contact O'Leary at [jpoleary@deloitte.com](mailto:jpoleary@deloitte.com).

## MARK PRICE

Mark Price is a Deloitte vice chairman and leads the US Public Sector practice. He has more than 25 years of experience in the United States, United Kingdom, Australia, and New Zealand across a range of complex and often high-profile strategy, business operations, digital transformation, and large-scale technology implementation projects. Contact Price at [maprice@deloitte.com](mailto:maprice@deloitte.com).

## JULIE QUINN

Julie Quinn is Deloitte Consulting LLP's Sacramento office managing director. She serves a variety of state government clients and is the national Government Transformation market offering leader for Deloitte's Public Sector (state and local government) practice. She has more than 25 years of consulting experience in business process management, enterprise transformation, organizational design, and project management for large, complex public sector organizations. She helps these state government agencies and departments improve the efficiency and effectiveness of their internal operations by redesigning processes, developing short- and long-term organizational strategies, providing change management services, and managing the implementation of complex transformation projects. Contact Quinn at [juquinn@deloitte.com](mailto:juquinn@deloitte.com).

## ANGEL QUINONES

Angel Quinones is a Deloitte Consulting LLP principal with more than 22 years of consulting experience serving state and local governments. He has led large-scale engagements for the entire system development life cycle, quality assurance engagements, strategic information systems planning engagements, and operations assessment engagements. His industry experience includes the delivery of projects for human services, homeland security and emergency preparedness, justice and public safety, finance and administration, transportation, labor and human resources, and education clients. Quinones is currently the lead consulting partner for the state of New York. Contact Quinones at [aquinon-escardona@deloitte.com](mailto:aquinon-escardona@deloitte.com).

## CHRISTOPHER ROSE

Christopher Rose is a principal with Deloitte Consulting LLP's Strategy & Operations practice. He specializes in the execution of complex strategy, enterprise cost reduction, and service delivery model transformation using automation in the state government and higher education markets. He currently serves as one of the leaders of the robotics and cognitive automation (R&CA) offerings for Deloitte's Public Sector practice. He has served a diverse client base that includes local, state, federal, and international public sector clients. His goal is to help the public sector and higher education institutions find the right balance between mission effectiveness and delivery efficiency. Rose holds a BS in business from Wake Forest University and a master's degree in public administration from NC State University. Contact him at [christopherrose@deloitte.com](mailto:christopherrose@deloitte.com).

## AVI SCHWARTZ

Avi Schwartz is a principal leading Deloitte's government infrastructure and capital projects team. He has over 20 years of experience working in the construction industry helping organizations gain confidence in project selection, finance, and delivery. He maintains a special focus on large-scale public-sector construction and infrastructure projects, integrating leading practices from public, private, and global entities so that government projects can be built better. Contact Schwartz at [avschwartz@deloitte.com](mailto:avschwartz@deloitte.com).

## SUNDHAR SEKHAR

Sundhar Sekhar is a principal with Deloitte Consulting LLP and a public sector human services leader. With more than 25 years of experience, he serves state health and human services (HHS) clients in the areas of trans-

formation, service delivery, eligibility, enrollment, and case management across various HHS program areas, including Temporary Aid for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Medicaid, childcare, child welfare, child support, and workforce development. He has worked in more than a dozen states to help transform their HHS systems and programs. Contact Sekhar at [ssekhar@deloitte.com](mailto:ssekhar@deloitte.com).

### **RANA SEN**

Rana Sen is a managing director in Deloitte Consulting LLP's Public Sector practice, leading Deloitte's smart city initiative in the United States and supporting Deloitte's smart city work globally. He has more than 18 years of experience in implementing and leading major government transformation initiatives in public health, human services, transportation, and finance and administration. His work with government agencies includes the development of strategic smart city road maps, the implementation of smart transportation solutions, operations and maintenance of one of the federal government's largest civilian financial administration solutions, and automation of long-term care case management. Contact Sen at [rsen@deloitte.com](mailto:rsen@deloitte.com).

### **DEBORAH SILLS**

Deborah Sills is the national managing principal for Deloitte Consulting LLP's Public Sector practice, responsible for Deloitte's services to state, local, and higher education clients in the United States. Sills collaborates with clients to help drive government innovation and technology transformation. She is a member of Deloitte's US Consulting Management Committee, and previously served on Deloitte's US Consulting Board as well as several other national leadership committees. Contact Sills at [dsills@deloitte.com](mailto:dsills@deloitte.com).

### **VINN WHITE**

Vinn White is a specialist leader at Deloitte Consulting LLP and a former deputy assistant secretary at the US Department of Transportation. He delivers holistic, innovative solutions to states and cities aimed at helping them meet their most pressing transportation technology challenges. White has been recognized for his Hurricane Sandy rebuilding efforts and for producing the Department of Transportation report *Beyond Traffic*, which outlines a 30-year planning approach to long-term and emerging trends shaping the transportation system. Contact him at [vinwhite@deloitte.com](mailto:vinwhite@deloitte.com).

## CONTACTS

**WILLIAM D. EGGERS**

Executive director  
Deloitte Center for Government Insights  
Deloitte Services LP  
+1 571 882 6585  
weggers@deloitte.com

**MARK PRICE**

US public sector leader  
Principal  
Deloitte Consulting LLP  
+1 617 585 5984  
maprice@deloitte.com

**DAN HELFRICH**

Government and public services leader  
Principal  
Deloitte Consulting LLP  
+1 571 882 8308  
dhelfrich@deloitte.com







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### Contributors

**Editorial:** Krishna Kumar, Junko Kaji, Preetha Devan, Nikita Garia, Abrar Khan

**Creative:** Kevin Weier, Beth Anderson

**Promotion:** Amy Bergstrom, Shraddha Sachdev

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