

# Talent Analytics Quarterly

---

Q3 2017

## In This Issue:

How to Shape Your  
Talent Analytics  
Technology Strategy

---

Embedding a Culture  
of Analytics in HR

---

The Wrong Analytics  
Priorities Will Squander  
Your Investments

---

Improving Data  
Quality One  
Relationship at a Time

---

Workforce Planning  
That Really Is Strategic

---

Asking *When* Not *If* in  
Predictive Modeling:  
Applying Survival  
Analysis to Common  
Talent Questions

---

Build to Be Better:  
How to Avoid Automating  
Bias with Algorithms

# Contents

---

Q3 2017

- 
- 3 **Letter from the Editor**
- 
- 5 **Talent Analytics Innovations Bullseye**  
Infographic
- 
- 7 **How to Shape Your Talent Analytics  
Technology Strategy**
- 
- 10 **Embedding a Culture of Analytics in HR**  
An Interview with Melissa Arronte
- 
- 13 **The Wrong Analytics Priorities Will  
Squander Your Investments**
- 
- 18 **Improving Data Quality One  
Relationship at a Time**
- 
- 24 **Workforce Planning That Really Is Strategic**  
Featuring Alec Levenson and Alexis Fink
- 
- 32 **In the News**
- 
- 36 **Asking *When Not If* in Predictive Modeling**  
Applying Survival Analysis to Common  
Talent Questions
- 
- 43 **Build to Be Better**  
How to Avoid Automating Bias with Algorithms

## Talent Analytics Quarterly

Q3 2017

### CEB Corporate Leadership Council™

#### Editor

Brian Kropp

#### Authors

Behailu Bekera

Becca Brown

Marcus Chiu

Alexis Fink

Alexandra Gatziou

Blakeley Hartfelder

Cory Kind

Andrea Kropp

Bryan Kurey

Fiona Lam

Alec Levenson

Malcolm Murray

Susannah Schools

Lynne Tappan

Peter Vail

#### CEB Creative

#### Graphic Designer

Stacey Phipps

#### Editor

A. Kate MacDougall

# Letter from the Editor

---

A year has passed since we launched the first issue of *Talent Analytics Quarterly*, and I couldn't be more proud of the progress we've made.

Over the past 12 months, we interviewed dozens of talent analytics leaders, identified best and emerging practices, and hosted live events around the world to share these insights with the community. It is an exciting time for talent analytics, and there is much more to come.

On the following pages, you will see our talent analytics bullseye, which maps over 40 innovative technologies that organizations are investing in. We also examine the challenges that other analytics teams face—in Quality and Audit—to draw insights from peers across the business. We then take a deeper dive into how talent analytics teams can improve data quality by leveraging their relationships in HR.

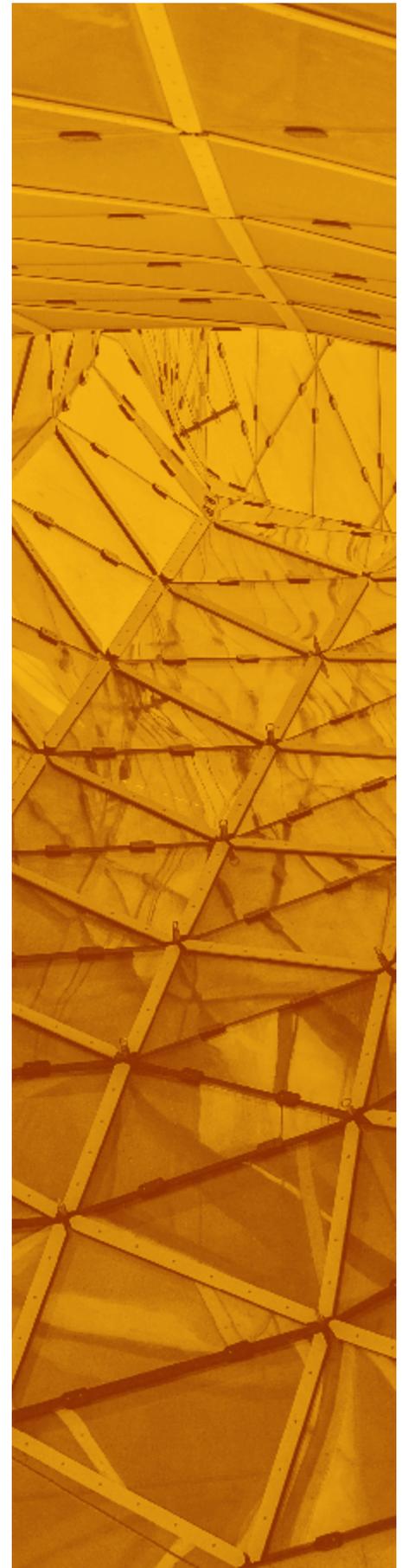
This quarter, we spoke with Melissa Arronte, senior vice president for HR Analytics at Citizens Bank, about how her team managed to embed a culture of analytics in HR. We also feature an opinion piece by Alec Levenson, economist and senior research scientist at the University of Southern California, and Alexis Fink, general manager for Talent Intelligence and Analytics at Intel, on how HR can make workforce planning truly strategic.

Lastly, this quarter's publication presents two thought-provoking articles from CEB's Talent Management Labs on how to prevent algorithms from being biased and how talent analytics can apply survival analysis, a common method in medicine, to employee retention.

As always, we welcome your feedback and suggestions on how we can improve this publication for you and your teams. Please direct any comments and questions to [TalentAnalyticsHelp@cebglobal.com](mailto:TalentAnalyticsHelp@cebglobal.com).

Sincerely,

Brian Kropp  
Practice Leader  
CEB Corporate Leadership Council™



# Build a Continuous Listening Strategy

---

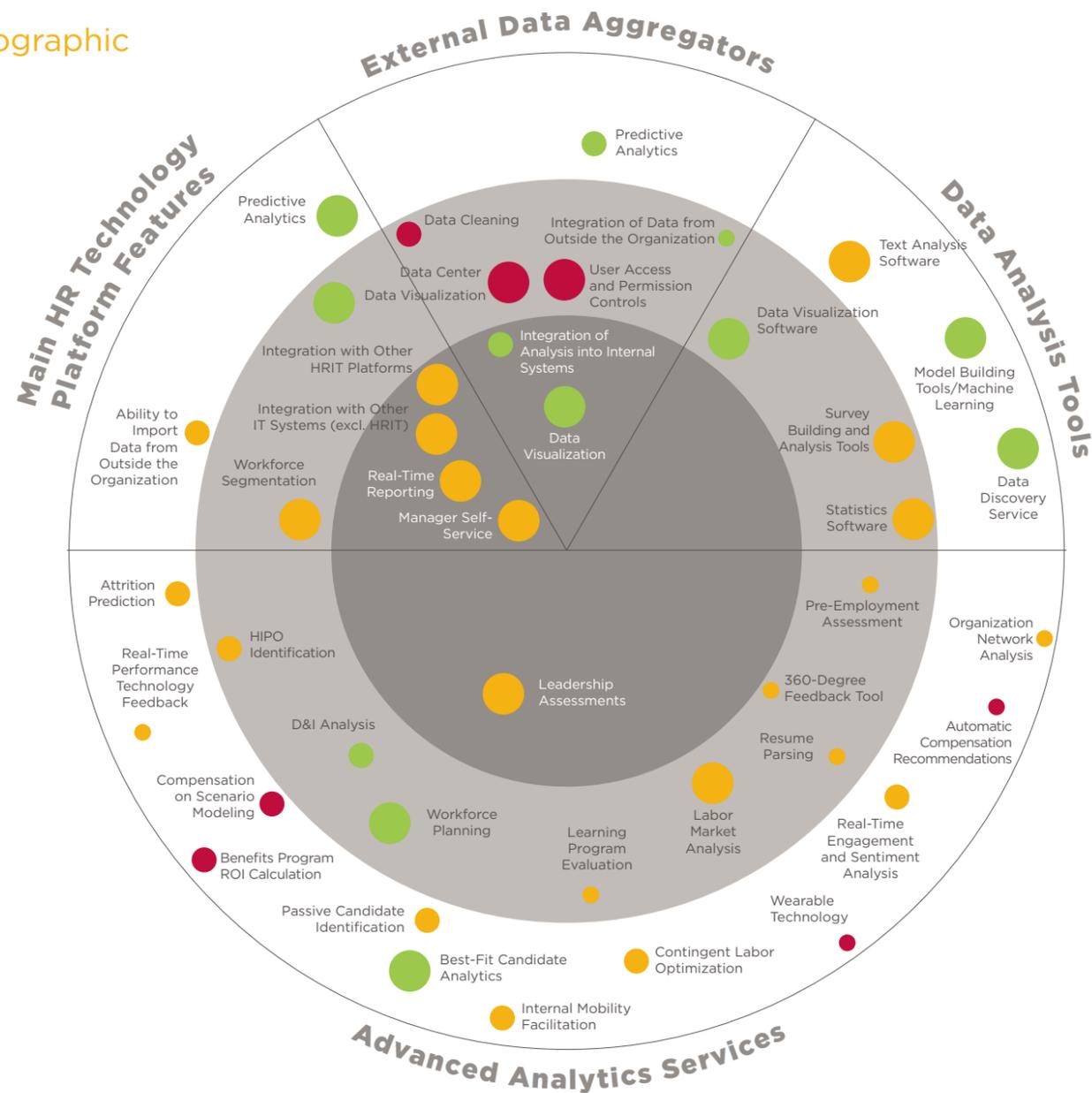
The pace of change in business has never been faster. Develop an ongoing strategy to gauge employee sentiment on new and emerging issues with our Pulse Surveys.

**Learn More at**  
[cebglobal.com/Pulse-Surveys](https://cebglobal.com/Pulse-Surveys)

 **CEB**  
is now Gartner.

# Talent Analytics Innovations Bullseye

Infographic



The Talent Analytics Innovations Bullseye maps adoption, impact, and future investment for 42 talent analytics technologies and innovations.

For example, text analysis software is categorized as a data analysis tool.

- The dot for text analysis software is in the outer ring, showing that organizations are just starting to use this technology.
- The dot for text analysis software is large, showing that current impact levels are high, and yellow, showing expected future investment is moderate.

## Assessment Factors

### Adoption Level



Degree of adoption is measured by the extent and nature of deployment across organizations.

### Current Impact



Current level of impact is based on the level of value delivered by the talent analytics process.

### Future Investment



Future outlook is based on the projected level of investment in the next two years.

### Main HR Technology Platform Features

The core HR administrative system for collecting data such as simple demographics, hiring dates, and payroll

### External Data Aggregators

Providers that gather data from different sources or systems for purposes such as data analyses

### Data Analysis Tools

Tools organizations purchase to analyze data internally

### Advanced Analytics Services

Services that organizations purchase to either externally perform advanced analytics analysis on their behalf or to partner on developing advanced analytics solutions

 Main HR Technology Platform Features	Definition 
<b>Manager Self-Service</b>	Allows managers to access talent data about their teams without asking HR
<b>Integration with Other IT Systems (Excluding HRIT)</b>	Integrates with other IT systems at the organization, excluding other HRIT (e.g., ERM)
<b>Integration with Other HRIT Platforms</b>	Integrates with the organization's other HRIT platforms (e.g., ATS, LMS)
<b>Real-Time Data Reporting</b>	Can produce reports with real-time data
<b>Predictive Analytics</b>	Provides pre-programmed predictive features that can be used to predict talent outcomes
<b>Ability to Import Data from Outside the Organization</b>	Allows users to import data from outside the organization for analysis or comparison
<b>Data Visualization</b>	Provides interactive data visualization tools to search and compare data
<b>Workforce Segmentation</b>	Quickly filters data across multiple categories such as location, division, performance, and tenure

 External Data Aggregators	Definition 
<b>Data Center</b>	The provider connects an organization's workforce data across systems in one place (e.g., in a data warehouse or cloud).
<b>Data Cleaning</b>	The provider cleans data collected to ensure accuracy, reliability, and comparability before use in analysis.
<b>Predictive Analytics</b>	The provider uses the organization's data to make predictions about the workforce.
<b>User Access and Permission Controls</b>	The provider ensures users only see the data they have permission to see.
<b>Integration of Data from Outside the Organization</b>	The organization's internal data is combined with external data (e.g., from third-party sources) to provide additional analysis and insight.
<b>Integration of Analysis into Internal Systems</b>	The analysis provided by the vendor can be integrated back into internal systems for ease of access for end users.
<b>Data Visualization</b>	The provider offers dashboards and visuals to help users understand and present their data.

 Data Analysis Tools	Definition 
<b>Statistics Software</b>	Statistical packages that can perform highly complex data manipulation and analysis with simple instructions
<b>Data Visualization Software</b>	Tools that enable teams to create dashboards and visuals to understand and present their data
<b>Text Analysis Software</b>	Tools that help teams derive high-quality information from text
<b>Model Building Tools/Machine Learning Platform</b>	Software that trains, tests, and compares data models to identify the right ones to use
<b>Survey-Building and Analysis Tools</b>	Tools that help teams write, design, and deploy surveys and/or analyze results produced by surveys
<b>Data Discovery Service</b>	Software that guides data exploration so that teams can quickly identify trends and insights from large datasets

 Advanced Analytics Services	Definition 
<b>Engagement and Retention</b>	
<b>Real-Time Engagement/Sentiment Analysis</b>	Solutions that measure and monitor the mood, culture, or level of engagement in an organization using short, frequent employee surveys
<b>Attrition Prediction</b>	Solutions designed to identify employees who are at risk of leaving the organization based on analytics
<b>Sourcing and Recruiting</b>	
<b>Résumé Parsing</b>	Solutions that convert free-form CV/résumé documents into structured information suitable for storage, reporting, and analysis
<b>Pre-Employment Assessment</b>	Tests designed and validated to understand candidate competencies, skills, or personality before hiring to improve the hiring decision
<b>Best-Fit Candidate Analytics</b>	Services that rank candidates or predict candidates' fit with the role or organization based on analytics (e.g., processing video interviews or assessment results)
<b>Passive Candidate Identification</b>	Solutions that allow recruiters to identify or assess availability of previously unknown passive candidates based on activity and publicly available information
<b>Productivity</b>	
<b>Real-Time Performance Feedback Technology</b>	Solutions that allow managers and employees to continuously request and provide feedback and track success or opportunities for development
<b>Organization Network Analysis</b>	Solutions that analyze and map relationships and employee influence within an organization
<b>360-Degree Feedback Tool</b>	Tools that allow organizations to collect appraisals of and feedback about employees from people who work around them
<b>Wearable Technology</b>	Accessories embedded with advanced electronic technology to track and produce data on employee activity or behaviors
<b>Learning and Leadership</b>	
<b>Learning Program Evaluation</b>	Solutions that collect and analyze data to assess the impact of training
<b>HIPO Identification</b>	Tests designed to assess employees' capability and potential
<b>Leadership Assessments</b>	Tests designed to understand employee competencies, skills, or personality to support development or placement decisions
<b>Internal Mobility Facilitation</b>	Solutions to recommend suitable internal roles
<b>Workforce Planning</b>	
<b>Labor Market Analysis</b>	Solutions that provide insight into the real-time job market, including location or competitive intelligence, to help with talent planning and recruitment
<b>Workforce Planning</b>	Solutions to understand the gap between current and future talent needs and enable scenario planning to understand the implications of workforce plans
<b>Contingent Labor Optimization</b>	Solutions to analyze and access specialized skill sets on an as-needed basis at the right cost
<b>Compensation and Benefits</b>	
<b>Automatic Compensation Recommendations</b>	System that creates compensation recommendations based on pay grade, performance rating, etc.
<b>Compensation Scenario Modeling</b>	Solution to analyze the potential impact of compensation decisions
<b>Benefits Program ROI Calculation</b>	Solution to calculate ROI on employee benefits
<b>Diversity and CSR</b>	
<b>Diversity and Inclusion Analysis</b>	Solution to track improvement in diversity and inclusion

# How to Shape Your Talent Analytics Technology Strategy

---

By Alexandra Gatziou

**A**dvances in talent analytics technology and methodologies provide new opportunities for HR to support the line and improve critical business decisions.

The marketplace of emerging technologies in the talent analytics space is rapidly expanding, offering everything from real-time reporting to text analytics software and attrition predictions. However, there are just too many vendors and tools, and each requires substantial investment of your time and resources.

## **The Talent Analytics Innovations Bullseye**

To help you navigate the changing talent analytics landscape and determine where to make future investments, we collected data on 42 talent analytics innovations and technologies from over 110 talent analytics and HR leaders globally. The majority of these innovations are still not widely used across organizations; in fact, only 17% are well embedded, and most talent analytics professionals are still uncertain about where they should be placing their bets.

The [results from our survey](#)<sup>1</sup> provide an objective map of how organizations are adopting these innovations, their current impact, and which ones will be increasingly important in the future. Talent analytics professionals can use this insight to:

- Shape their current approach to talent analytics technology,
- Prioritize technologies that are currently impacting talent analytics effectiveness, and
- Understand where talent analytics functions are investing for the future.

We identified four main categories of talent analytics innovations—from foundational to advanced analytics tools—that you should consider as you define your talent analytics strategy and needs:

- **Main HR technology platform features used for talent analytics** (e.g., real-time reporting and workforce segmentation)—Organizations have invested the most in this area so far.
- **External data aggregators** (e.g., data cleaning and integration of data from outside the organization)—We see conflicting trends in terms of impact and investment in this area.
- **Data analysis tools** (e.g., statistics or text analysis software)—We see the highest future investment here relative to the other categories.
- **Advanced analytics services** (e.g., widely varying from labor market analysis to attrition prediction and résumé parsing)—Talent analytics professionals are still evaluating their added value.

### What You Need to Know About Five Emerging Talent Analytics Technologies

Instead of covering all 42 technologies, this article focuses on five that have been widely discussed lately and that you are likely to consider in the near future:

#### 1. Data Visualization—Make the business case for data visualization tools.

Raw data is often boring and difficult to make sense of. Simplifying and presenting data in a way that users can easily understand should be a key priority for talent analytics professionals. Data visualization, whether accessed as stand-alone software or as a feature of your main HR platform, is no longer a “nice to have.” It therefore comes as no surprise that data visualization is perceived as the most impactful talent analytics innovation thus far.

##### Data Visualization

-  **Adoption Level:** Used by 48% of talent analytics teams
-  **Impact:** 66% report high impact
-  **Future Investment:** 51% plan high investment

**As demand for workforce predictions increases, so does the pressure to invest in predictive analytics.**

As you are building your talent analytics capabilities, prioritize data visualization tools over other technologies. For example, if your organization is in the process of upgrading its main HR system, use this data to build the business case for an integrated data visualization feature. Knowing that 78% of your peers will increase investments in data visualization as part of their main HR system should give you the confidence to do the same.

#### 2. Predictive Analytics—Start your predictive analytics journey with confidence based on current value and future investment.

The possibilities of predictive analytics are endless, from predicting consumer behavior to election results. In the HR world, talent analytics professionals understand the unique opportunity that predictive analytics offer to identify future talent trends so organizations can make better decisions, such as who to hire or retain. Although organizations are not yet widely using predictive analytics, most recognize their potential impact and are planning for further deployment and investment.

##### Predictive Analytics

-  **Adoption Level:** Used by 27% of talent analytics teams
-  **Impact:** 56% report high impact
-  **Future Investment:** 54% plan high investment

As demand for workforce predictions increases, so does the pressure to invest in predictive analytics. Understanding the extent to which other organizations use similar tools, and whether they have internal capabilities or depend on external providers, will help you better evaluate your own organization's needs for these services and make faster and more credible decisions.

#### 3. Text Analytics—Carefully consider whether to invest in text analytics compared with other data analysis tools.

Words make up a very large part of the ever-increasing data that organizations must find ways of managing, such as documents, e-mails, call transcripts, résumés, and social

### Text Analytics

-  **Adoption Level:** Used by 22% of talent analytics teams
-  **Impact:** 45% report high impact
-  **Future Investment:** 29% plan high investment

media. So when you begin to think of words as data, new analytical possibilities emerge across all major HR domains. Text analytics software helps organizations methodically analyze text to do things such as predict how well a person will perform in a role from their interview responses, or assess how well a team is working together based on their exchanges during a meeting.

However, these types of big ideas are a difficult starting point for teams delving into text analysis for the first time. As a result, current deployment of text analysis tools is low and future investment is moderate. Talent analytics professionals plan greater investments in other types of data analysis tools such as model-building tools and data discovery services. That being said, the future of text analytics is not all grim. If you are considering any text analysis tools, you should know that one-third of your peers are planning to use them in the near future, and nearly half see them as highly impactful.

#### 4. Best-Fit Candidate Analytics—Drive conversations with talent acquisition leaders on data-driven recruitment.

The ability to identify and attract the right talent can be a key differentiating factor in today's world. Data-based recruiting has progressed to using machine learning and predictive analytics in the form of best-fit candidate analytics. Therefore, we see the emergence of different tools and services that can help organizations quickly identify which candidates are the best fit for a role based on analytics (e.g., processing video interviews or résumés).

### Best-Fit Candidate Analytics

-  **Adoption Level:** Used by 17% of talent analytics teams
-  **Impact:** 58% report high impact
-  **Future Investment:** 24% plan high investment

Less than 20% of organizations are currently adopting these tools, but our data shows this is changing. Talent analytics professionals already see the potential of such services, with nearly 60% reporting high impact of best-fit candidate analytics and 65% increasing their investments going forward. As data-based recruiting shapes the future of talent acquisition, talent analytics professionals should be driving the conversations with their Recruiting counterparts to evaluate services such as best-fit candidate analytics.

#### 5. Wearable Technology—Be wary of investing in wearables just for talent analytics.

Wearable technology is already part of our everyday lives, and we now see its use expanding in enterprises as well. According to Gartner,<sup>2</sup> by 2021, 20% of employees in mature economies will use a wearable device wholly for work purposes. A potential use case for talent analytics is the wearable health and fitness tracking technology. These devices provide the opportunity for employers to collect and analyze data on employee activity that can then support workplace wellness programs or encourage healthier employee behavior.

### Wearable Technology

-  **Adoption Level:** Used by 3% of talent analytics teams
-  **Impact:** 50% report high impact
-  **Future Investment:** 16% plan high investment

However, it seems that wearable technologies have failed to impress talent analytics leaders so far. We are often pressured to employ the latest innovation. But in the case of wearables, keep in mind that only 3% of organizations are currently using data from such technologies for talent analytics, and nearly 80% are not planning to use them in the near term.

### Conclusion

New technologies are driving innovation and disruption in the talent analytics space while we are constantly bombarded with the latest tool or vendor promising us substantial improvements. In a world where time, money, and people are limited, objectively assessing when and if it makes sense to deploy such tools is key to achieving your talent analytics priorities and improving talent analytics effectiveness.

**As data-based recruiting shapes the future of talent acquisition, talent analytics professionals should be driving the conversations with their Recruiting counterparts to evaluate services such as best-fit candidate analytics.**

<sup>1</sup> CEB, "The Talent Analytics Innovations Bullseye," 2017, <https://www.cebglobal.com/member/corporate-leadership-council/research/report/17/the-talent-analytics-innovations-bullseye.html>.  
<sup>2</sup> Annette Jump and Nick Jones, "Wearables in the Smart Workspace: Steps for Device Provider's Success," 6 December 2016, Gartner, <https://www.gartner.com/document/3534826?ref=solrAll&refval=187469948&qid=f37f379146803720a0218c0e44436003>.

# Embedding a Culture of Analytics in HR

---

## An Interview with Melissa Arronte

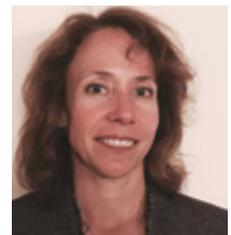
### **About Citizens Bank**

Citizens Financial Group, Inc., is one of the nation's oldest and largest financial institutions, with \$151.4 billion in assets as of June 30, 2017. Headquartered in Providence, RI, Citizens offers a broad range of retail and commercial banking products and services to individuals, small businesses, middle-market companies, large corporations, and institutions. Citizens helps its customers reach their potential by listening to them and by understanding their needs in order to offer tailored advice, ideas, and solutions.

### **About Melissa Arronte, PhD**

Senior Vice President,  
HR Analytics

Melissa is Senior Vice President of HR Analytics at Citizens Bank. She is currently developing a new HR Analytics function at Citizens that includes research, business intelligence, and reporting. She has a PhD in Industrial Relations from the University of Wisconsin at Madison and an extensive background in workforce analytics.



**E**very quarter, we interview talent analytics leaders to gain their perspectives on issues facing them and their teams. This quarter we spoke with Melissa Arronte about her work at Citizens Bank.

**To get started, could we hear a little bit about your background in the talent analytics realm and about the talent analytics function at Citizens?**

I moved to Citizens to create their talent analytics function. Prior to Citizens, I created an analytics function at another organization but was often frustrated by the difficulty of getting management to take action as a result of our findings. Citizens has been eager and open to analytics, which has been such an appealing factor of working here. My goal has been to embed a culture of analytics and data-driven decision making in HR at Citizens. I want people to know they can and should come to our team for help when making big decisions. Developing a data-driven mind-set is a big part of getting there. We need to get people in HR to a point of thinking, "I need data to help me make a good decision."

**How have you gone about creating that culture?**

I started with a function of 10 people who were spending most of their time on reporting, mainly because every internal client was getting their own customized report. The staff were spending their time creating custom reports, which resulted in requests to reconcile reports. So I decided to shut off reporting and see who spoke up; that way, I could determine who was really using the reports. We worked from the needs of those who spoke up to create a set of standardized reports. Now we have every function using the same reports with the same data; that way, everyone can enter a meeting with the same numbers, and we don't waste any time arguing over them, which has really increased the use of data in many people-related conversations. I've been really fortunate that there's been so much interest from HRBPs and Recruiting managers in analytics. Building those partnerships has been vital to our success. We've standardized reporting and pushed out interactive dashboards. We've also been able to reduce our number of employees to only about 1.5 doing reporting and allocating everyone else for more strategic design and analytical work.

**What kinds of projects have you been able to shift your attention to? Any examples of successful projects you can share?**

We've had great success with our flight risk model that led to real action being taken. We had a new business leader start, and he made it one of his priorities to reduce turnover. After a conversation with him, I suggested we create the flight risk model. We created it and customized it as a pilot for one of our business units, and we started with the high-performance employees.

So we ran the model, and the business conducted a stay interview with each high-risk high performer. The stay interviews pinpointed the factors that were most likely to drive turnover as identified by the model, so the conversations were relevant to the factors that have the biggest impact. The stay interviews were also conducted by a manager two levels above the high-risk high performer. It was a great opportunity for high performers to have these high-profile conversations, and it resulted in customized actions for each turnover situation. It was the first time some people had a retention conversation, and it really showed them how valued they were.

The first interview with an identified high-risk high performer was with a senior manager, and the employee walked in and said, "I'm glad we're talking, because I actually need to tell you I'm leaving." That gave huge credibility to the model, and because of the conversation, we were able to retain that person who had planned to leave. Since we've started the flight risk model, high-performer business unit turnover has decreased by 40%.

**That's sounds like a great success! What else have you been working on?**

Another project we've had great success with and that's really helped build our reputation within the organization is our in-house custom recruiting assessments.

**"Now we have every function using the same reports with the same data; that way, everyone can enter a meeting with the same numbers, and we don't waste any time arguing over them, which has really increased the use of data in many people-related conversations."**

After using the assessments for over a year, we've found that the candidates who score high earn 15% more revenue on average than those who score low, and those who score low are also twice as likely to turn over.

**I imagine implementing a new data-based process like that felt challenging for your recruiters. How did you solve for that?**

Actually we work very well with our Recruiting team. They are one of our biggest advocates. We never could have been successful without their support and advocacy. Both the business and Recruiting requested an assessment, but some were very supportive and some were unsure. We brought in recruiters from the start. We used them as subject matter experts to review and test questions for the assessment. We kept them along throughout the process to show them what we were learning and how we were learning. We also had the recruiters take the assessment so we could get their thoughts and input; we wanted to build that culture of transparency.

At first, some people weren't completely bought in to the assessment process. They respected it but would disagree occasionally with the results of the assessment. They would think someone who scored low would still, for example, make a great banker. We told them that the data was there to assist, not to make the decision for them. The test can't replace their skills and expertise. In the end, when the low scorers were still hired, they ended up turning over more and earning less; these results were very validating for our team. After seeing these results over time, most people are much more comfortable. And after earning our credibility with that original assessment for universal bankers, both the business and recruiting requested that we create assessments for other key roles.

**Getting that credibility is definitely a challenge we hear about a lot. What would you say is the most vital part of having talent analytics accepted?**

Make it so your clients' only investment is time. It all comes back to bringing them something to try that's very low risk. Every time we run a model or create anything, the hardest part is getting someone to use it. But once we get clients to use what we create, we've bought accountability and built credibility.

The second piece is that I think people create artificial barriers when setting up the talent analytics functions. For example, they think that data can't be reported until it's perfect. At Citizens, we have a system of reporting data "as is" to build accountability and ownership of data quality. (See the case profile on [Presenting Data "As Is."](#))

**"We brought in recruiters from the start. We used them as subject matter experts to review and test questions for the assessment. We kept them along throughout the process to show them what we were learning and how we were learning. We also had the recruiters take the assessment so we could get their thoughts and input; we wanted to build that culture of transparency."**

**Do you have any advice for those starting a talent analytics function?**

- **More data is not necessarily better.** It's important to dig into business context when people ask for data. You need to understand their world to be able to show them what is possible. Always ask, "What is the least amount of data that's needed to help someone make a decision?"
- **Frame data as a way to enhance judgment, not replace it.** I don't want people ignoring their gut; instead, I want them to use data and their instincts together. There's so much value in instinct, and adding data enhances judgment; it doesn't replace it.
- **Look for different opportunities to show the power of analytics.** It's easy for people to argue in the abstract, so I like to just put the data out there. Putting the data out there not only helps drive accountability for cleaning it up but also helps stakeholders see how the data could be useful for them. Get their attention and make a case for how talent analytics can help them.

*This interview has been edited for brevity and clarity.*

# The Wrong Analytics Priorities Will Squander Your Investments

By Lynne Tappan, Bryan Kurey, Malcolm Murray, Blakeley Hartfelder, and Marcus Chiu

**C**orporate and support functions have torrents of new data available, and they're starting to recognize that delivering value to the business requires digitizing.

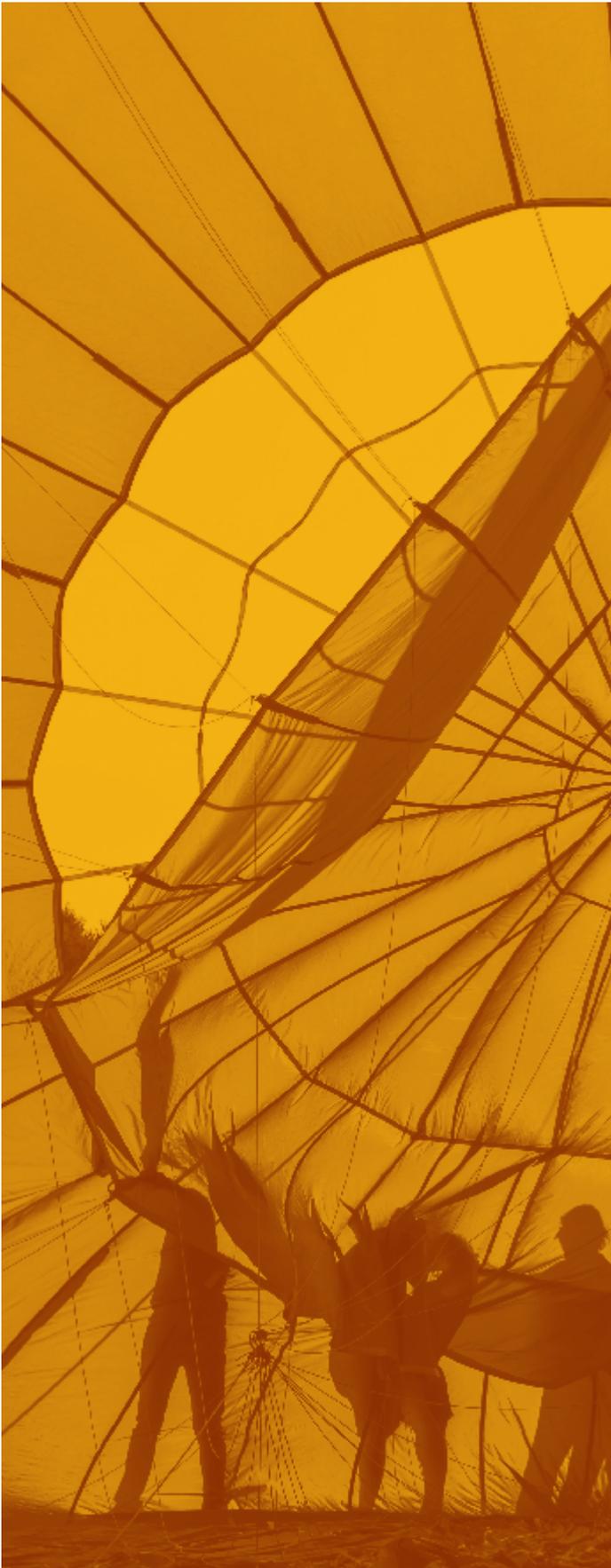
This is why our leadership councils serving heads of Quality, Audit, and HR have embarked on a concurrent research effort to look into how emerging analytics teams across the business can maximize their investments.

Analytics teams across the business must move rapidly to keep up with the company's vast harvests of information and its need to make business decisions with data. Some functions are already there, but others have been slow to make the necessary investments to move at the speed of the business (figure 1).

**Figure 1: Sales and Marketing Three Times as Likely as HR to Use People Data**



Source: PwC, "CEO Pulse on Personal Data," <http://www.pwc.com/gx/en/ceo-agenda/pulse/personal-data.html>; CEB analysis.



**A second misstep is concentrating too hard on building and, if they have reached a certain level of quality already, scrubbing datasets.**

Unfortunately, these functions tend to reflexively assume the answer is more technology. Audit departments, for instance, spend an average of \$100,000 each year on analytics systems. That assumption can be costly, according to our research this year on the three functions' efforts to catch up.

A second misstep is concentrating too hard on building and, if they have reached a certain level of quality already, scrubbing datasets. Leaders of Quality, Audit, and HR all rank limited access to data and low-quality data as key impediments to data analytics progress.

That way of thinking risks squandering money, effort, and—perhaps most importantly—time. These functions can't afford to spin their wheels, and they are better served by doing more with currently accessible data.

Instead of making additional investments in technology or focusing on the state of the data, departments should set up their staff for success. To do so, they must tackle often-overlooked (and more prosaic) tasks:

- Get employees more comfortable working with imperfect data (which has twice the impact on Quality effectiveness that getting access to better data has, and 1.5 times the impact that getting better technical skills has).
- Adapt and resequence workflows (which has four times the impact for Audit than technology, staff skills, or access to data).
- Improve relationships with stakeholders across the enterprise (which can improve talent analytics effectiveness in HR by 40%).

Three of our research teams provided detail.

## The View from Quality

Quality and analytics go way back. In the early 20th century, Quality launched statistics in business with the introduction of statistical process control in manufacturing (it all started with a chemist at Guinness who wanted to standardize batches of stout).<sup>1</sup>

One hundred years later, the amount of available data is exploding—pouring in from machine performance, Internet of Things for products, social media, and customer calls.

Quality organizations that effectively use this data are reaping the benefits: they see a 9% reduction in the frequency of recurring quality errors and take 30% fewer days to complete an investigation.

But Quality is about accuracy and precision. Of course, these attributes are critical given the potential risks to employees, customers, and consumers of a product that doesn't meet specifications. But as a result of them, large datasets, particularly with unstructured data, inspire little confidence among Quality staff.

The function's employees must develop what we call "analytic comfort"—the ability to use these new troves to spot trends, generate insight, and effectively communicate insight. Analytic comfort allows Quality staff to ask questions starting with, "I wonder if..." It means they can use their intuition to drive better quality outcomes through analytics.

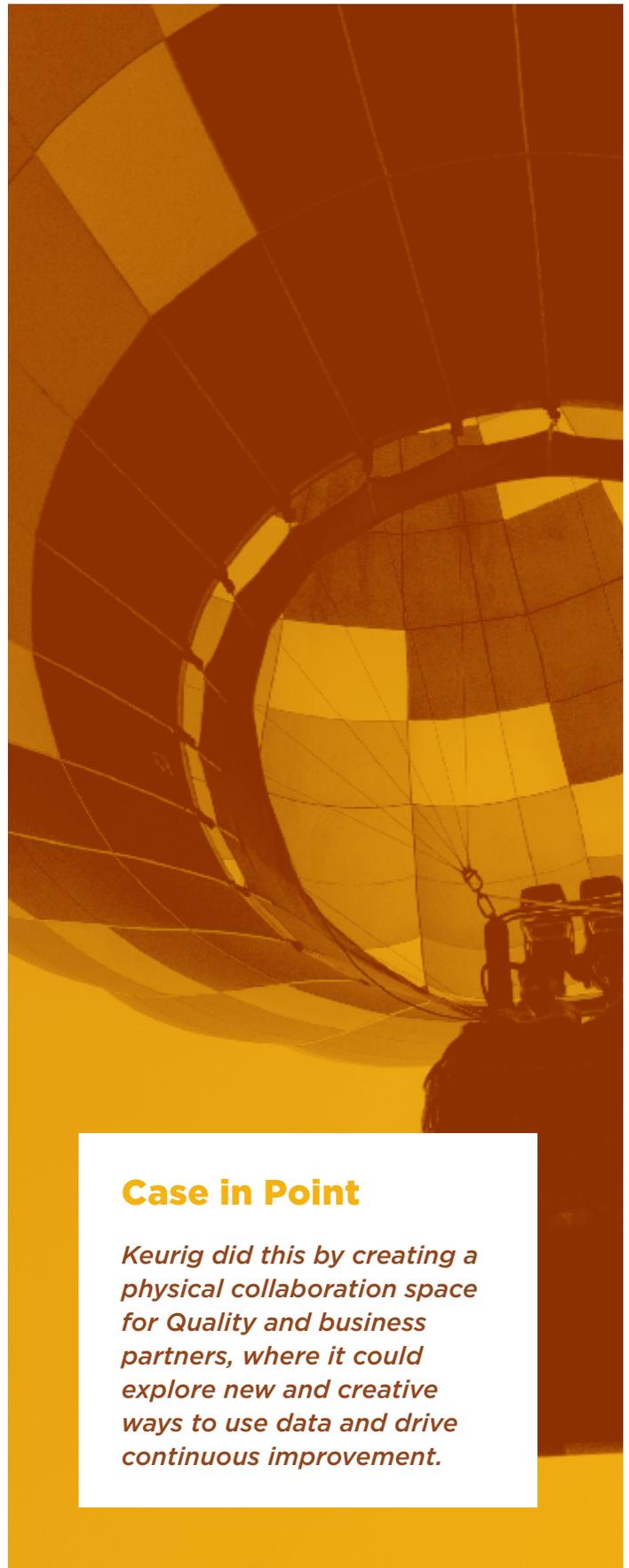
**To build analytic comfort, Quality should focus on three sets of activity:**

- 1. Develop** a framework for prioritizing potential data sources, differentiating between what needs precision and what doesn't and determining what is insight and what is merely interesting or simply noise.
- 2. Reduce** apprehension about using new data sources, create a lower-risk investigative approach to analytics, and carve out space for ideas that may fail.
- 3. Spur** creativity for analytics insight.



### Case in Point

*Keurig did this by creating a physical collaboration space for Quality and business partners, where it could explore new and creative ways to use data and drive continuous improvement.*



## The View from Audit

As early as the 1960s, Audit started trying to use computers in its work. But it took user-friendly software and access to data in organizations for Audit's analytics efforts to take off. Now it is at the top of the agenda for Audit departments worldwide.

Analytics is a smart priority. In fact, Audit departments that embed data analytics into their daily work are seeing significant progress toward their goals, including the ability to cover a larger part of the audit universe, deliver on their board mandate, and influence management to take action. But only 16% of Audit departments have reached this level.

Virtually all (98%) Audit departments participating in our recent benchmark said they have made at least one such investment in analytics technology. Yet even for those that have made an above-average number of investments in technology, talent, and training—sustained for a year or longer—only 26% use analytics routinely.

The key to success, it turns out, is addressing the process and methodology that auditors follow.

Audit departments don't need a process overhaul; they just need an update. Considerations of data analytics must be inserted at key points. This applies both to the department-level process of risk assessment and audit planning and to the methodology that auditors follow in individual engagements.

Reinforcement is also essential. Signals of the importance of these changes should come from the chief audit executive, managers, and peers.

Addressing process and methodology doubles the likelihood of success over investments in technology and talent alone.

**The key to success, it turns out, is addressing the process and methodology that auditors follow.**

## The View from HR

HR is still chasing the analytics dream. Three out of four HR organizations plan to increase their investments in talent analytics, but only 12% of talent analytics leaders believe their organizations are effective at using talent data to make decisions.

To improve ROI, talent analytics leaders have set aggressive priorities for 2017:

- Improve data quality.
- Enable the use of talent analytics among clients.
- Make the talent analytics function more strategic.

How can they deliver? In a world full of data, the most important strategy that talent analytics leaders can deploy is strengthening relationships. These relationships may be with data owners throughout the organization to gain access to datasets that talent analytics teams need. Or they could be relationships within the team—understanding who has which roles and responsibilities and how the team works together to meet shared objectives. Or it could be the relationships talent analytics professionals have with clients, whether those are colleagues in HR or executives elsewhere in the organization.

Talent analytics teams must learn how to interact with, influence, and align priorities with their stakeholders to build better relationships and meet their goals for 2017. In fact, talent analytics teams should take a relationship-focused approach to their priorities.

For example, instead of striving to build clean datasets on their own, the best talent analytics teams enable other data quality stakeholders to input and maintain clean data in HR systems continually. To enable the use of talent analytics among clients, think about restructuring workflows to establish solid relationships with clients at the start of analytics projects and to bring action planning (or even pre-action planning) into those relationships as early as the scoping phase.

Overall, these investments in relationships create a ripple effect that will go a long way in transforming talent analytics work and impact.

### Next Steps

Members of CEB Corporate Leadership Council™ can view our [research](#) and [register](#) for a series of small-group meetings through November 2017 to discuss these findings with counterparts.

<sup>1</sup> Stephen T. Ziliak, "Retrospectives: Guinnessometrics: The Economic Foundation of 'Student's t,'" *Journal of Economic Perspectives*, 22 (2008): 199–216, <https://www.aeaweb.org/articles?id=10.1257/jep.22.4.199>.

# Join Us!

---

## HRBP Masterclass Series: Talent Analytics 101

Join or watch replays of our HRBP Masterclass series on talent analytics, and learn directly from your peers.

### Session 1 >

#### **Understanding an HRBP's Role in Talent Analytics**

1 August, 11:00 a.m.–Noon EDT

### Session 2 >

#### **Shaping Data: Asking the Right Questions About Talent**

22 August, 11:00 a.m.–Noon EDT

### Session 3 >

#### **Demystifying Data: How to Spot Trends and Build Basic Data Skills**

12 September, 11:00 a.m.–Noon EDT

### Session 4 >

#### **Telling a Story with Data**

26 September, 11:00 a.m.–Noon EDT

This interactive, virtual Masterclass series will help HRBPs identify their role in talent analytics and find practical opportunities to improve their skills and confidence using data at work.

Four sessions focus on building HRBP confidence and understanding of data, asking the right questions about talent, gathering and interpreting data, and telling a story with data.

# Improving Data Quality One Relationship at a Time

By Susannah Schools

This article is inspired by our recent talent analytics research, with ideas that originally came from our members who attended the workshop series *Maximizing the Impact from Talent Analytics Investments*. For more ideas and easy-to-use tools to help you improve your data quality, check out our [Data Quality Toolkit](#), which includes our full list of ideas, each of which is paired with an accompanying tool.

Seven out of ten heads of talent analytics cite data quality as a top objective for the year, which is not surprising given that 54% of organizations say that data quality is their primary barrier to maximizing the business impact of their talent analytics. The average talent analytics team spends 7.2 hours per week cleaning data,<sup>1</sup> and very few teams have data that is in easy-to-use form. In fact, just 15% of talent analytics teams have precise data, 17% have complete data, and

**Data Quality:** Data's fitness to serve its purpose in a given context; includes data availability, consistency, accuracy, precision, and completeness

only 18% have consistent data. So for many teams, inadequate data quality is clearly an urgent problem.

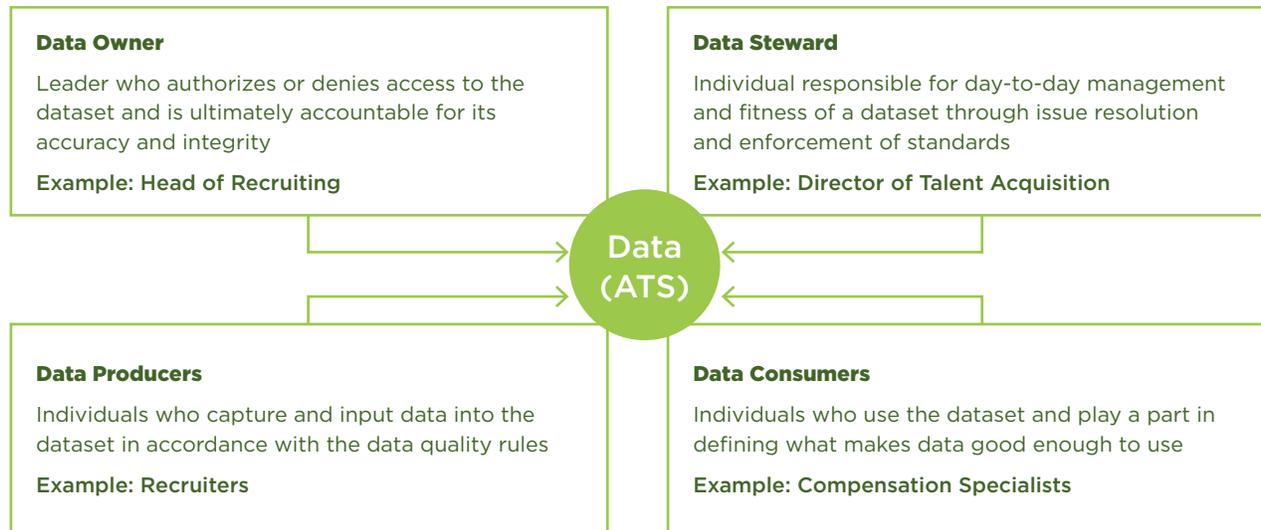
The main reason that improving data quality is so difficult is that the quality of talent data is affected by so many stakeholders, each of whom struggles to prioritize and improve data quality for their own unique reason (figure 1). Talent analytics teams cannot afford to waste time chasing these stakeholders around after they've made a mess of their data.

Right now, only 48% of talent analytics teams are effective at standardizing data themselves. Knowing that one of your most complicated challenges to improving data quality comes from this intricate web of data stakeholders, the best thing you can do is improve your relationships with them and build your data stakeholder network. This process involves

many smaller steps, but it can be simplified into three main tasks: access, standardize, and manage (figure 2).

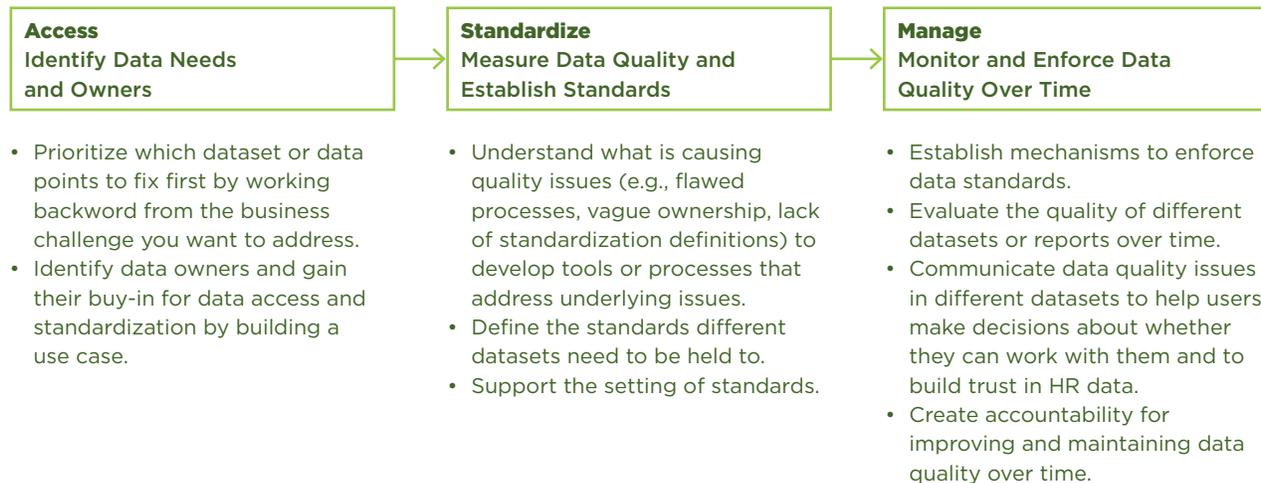
You can do a number of things to help yourself gain access to, standardize, and manage datasets. By using feedback from many of your peers in the talent analytics community, we've detailed a few ways to help you get started.

**Figure 1: The Access, Standardize, and Manage (ATS) Framework**



Source: CEB analysis.

**Figure 2: Sample Talent Analytics Stakeholders**



Source: CEB analysis.

## Access

### Clarify Your Data Use Case

**Challenge:** Convincing data owners that you need their data for productive outcomes can be difficult.

**What to Do:** Build a use case to convince data owners to work with you and grant you access to their datasets. The use case should clarify how and why you will use the data owner's data (figure 3).

### Be Open to Review

**Challenge:** It can be scary for data owners to relinquish some control over the use of their data.

**What to Do:** Allow the data owner to be the first to review the report or analysis you are producing with their data so they see how it is being used and can ensure consistency with their own use.

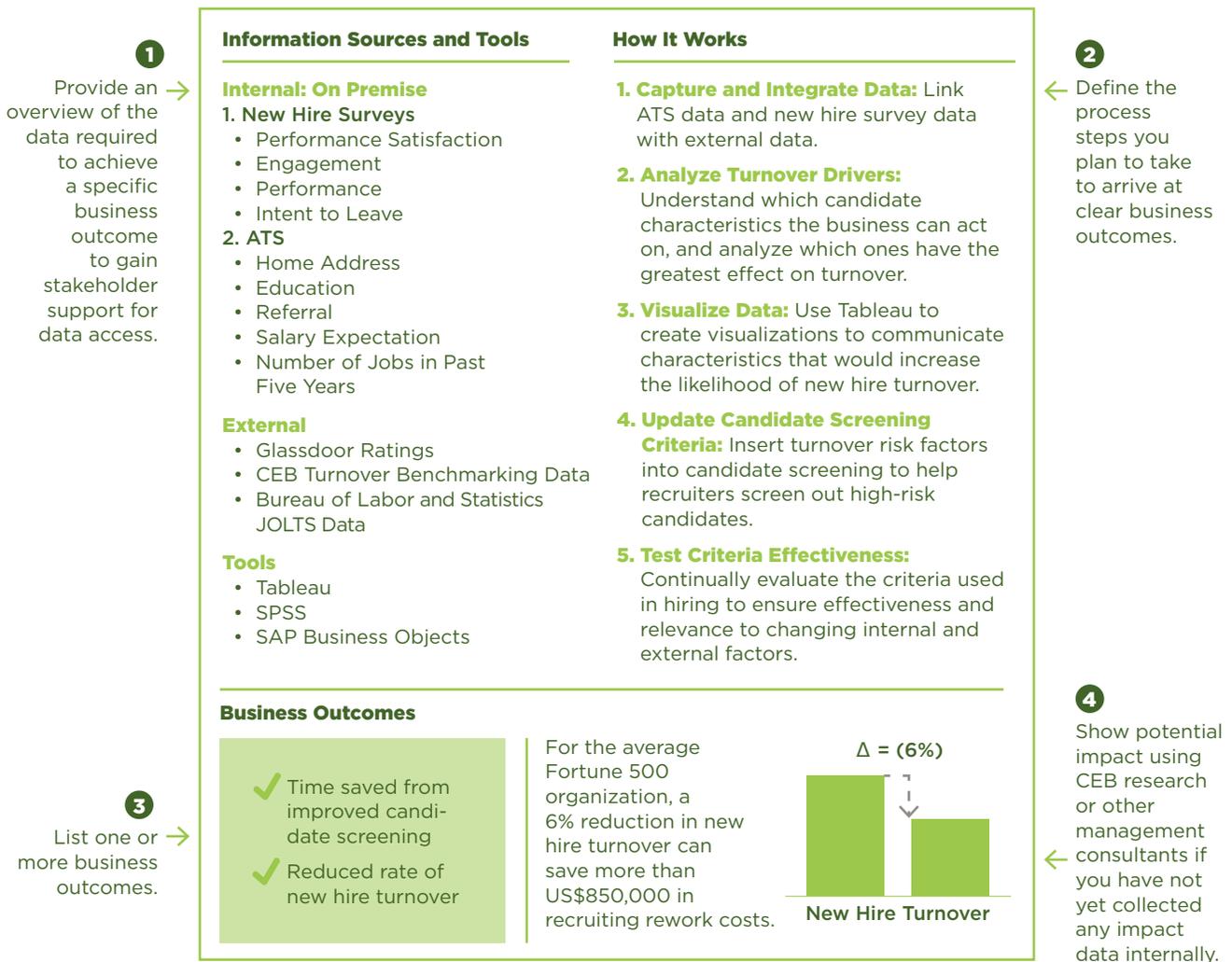
## Standardize

### Define the Many Dimensions of Data Quality

**Challenge:** It can be difficult for data stakeholders to establish a common definition of "high-quality" data.

**What to Do:** Help your stakeholders understand that data quality has more dimensions than just accuracy, including usability, consistency, and timeliness. Not every dataset has

**Figure 3: Example Use Case—New Hire Turnover**



Source: CEB analysis.

**Figure 4: Data Definition Working Group (Full-Time Employee [FTE] Example)**



- Discussion Agenda for Definition of FTEs**
- Are offshore staff included?
  - Are contractors included?
  - Are Shared Services staff included?

**Working Group Decision-Making Principles**

- 1 Identify Quick Wins Early**
  - Identify metrics with consistent hierarchies across the business.
  - Move to the unstructured hierarchies after quick wins are complete.
- 2 Adopt “Straw-Man” Strategy**

One subject matter expert leads with a straw man for the group to debate and discuss.
- 3 Escalate Early If Deadlocked**

Refer to senior business unit management for final decision to break a deadlock.

Source: CEB analysis.

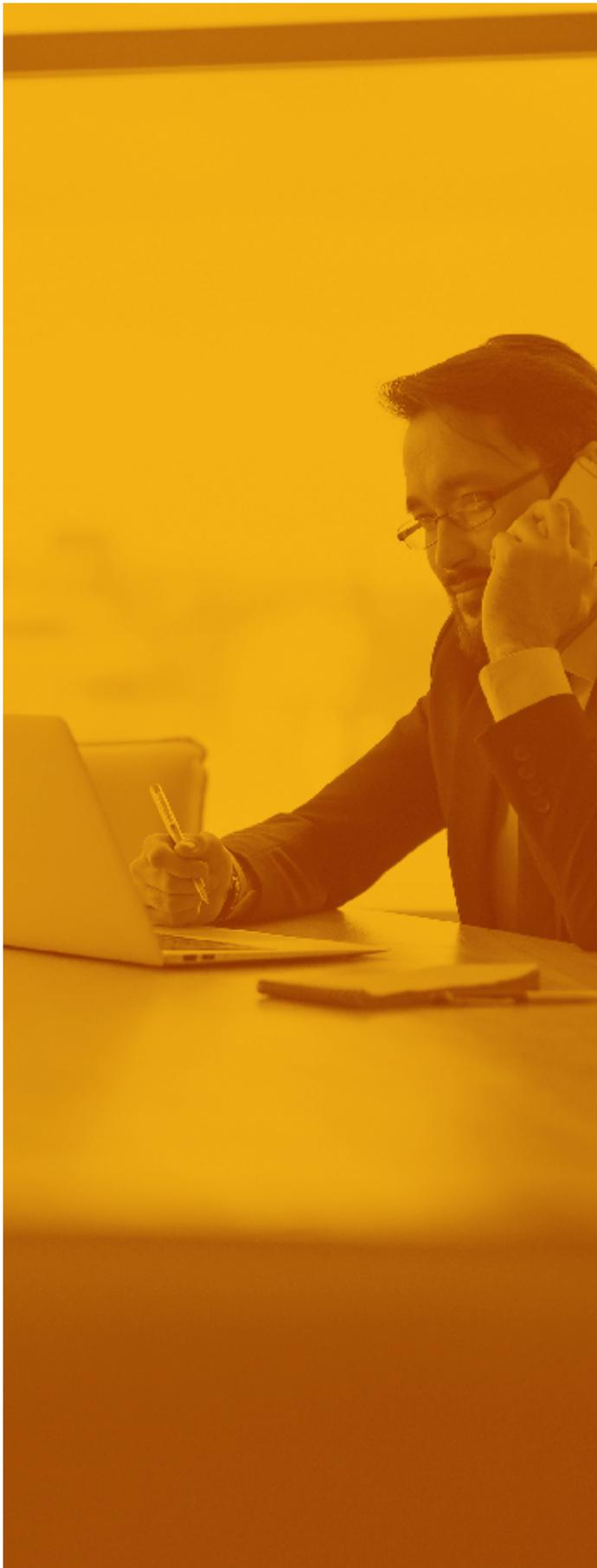
**Figure 5: Data Producing Rework Notification Template**

To: (Data Producer)  
 CC: (Data Producer’s Manager)  
 Dear (Data Producer),  
 We found \_\_\_\_\_ (issue) \_\_\_\_\_ with \_\_\_\_\_ (data)\_\_\_\_\_ that you produced. This e-mail is to inform you of your error, the hours it took to remediate your error, the business decisions that depend on this dataset, and the impact (or potential impact) of your error.

Data Producer: \_\_\_\_\_  
 Data Producer’s Manager: \_\_\_\_\_ Date: \_\_\_\_\_  
 Data Issue: \_\_\_\_\_  
 Hours Required to Remediate: \_\_\_\_\_  
 Business Decisions Dependent on Problematic Dataset: \_\_\_\_\_  
 Impact/Potential Impact of Error: \_\_\_\_\_

We ask that you reply to us if you do not understand how to avoid making a similar error in the future. We look forward to partnering with you to improve our overall data quality in HR!

Source: CEB analysis.



to meet all data quality attributes. Customize data quality dimensions for different datasets to help your stakeholders understand the time investment required for cleaning them.

### **Seek Agreement on Standard Data Definitions**

**Challenge:** Data stakeholders at many organizations do not have organization-wide standards for data-related definitions and processes.

**What to Do:** Host working sessions to set enterprise-wide definitions. Discuss what each field means and also how to use those fields for common calculations and what processes should be followed to keep the fields up to date (figure 4). Limit exceptions and be sure to have guidelines on when they can be made.

### **Manage**

#### **Notify Producers of the Effect of Errors**

**Challenge:** Data producers do not feel accountable for upholding data quality standards because they do not see the impact poor data has on their colleagues or the business.

**What to Do:** Increase accountability by documenting and notifying data producers of rework time. Document the hours it takes to deal with incorrect input, and quantify that impact (e.g., time lost, impact on business decisions) to the fullest extent possible. Then notify the person responsible about this information (figure 5). Also consider alerting an employee's manager or broader team to create greater accountability.

#### **Create a Data Governing Body**

**Challenge:** It can be difficult for data stewards to keep definitions and processes up to date.

**What to Do:** Create a cross-functional data governance board to review data definitions and processes regularly. The board can also be used as a forum to discuss common challenges related to data security, privacy, and overall quality in the organization.

### **Concluding Thoughts**

Using the access, standardize, and manage framework, talent analytics teams can strengthen their relationships with other data quality stakeholders to enable them to continuously input and maintain clean data in systems. As talent analytics teams continue to teach and influence other stakeholders, this effort will lead to better data in your systems and more day-to-day maintenance, which means less data cleaning at a project's start.

<sup>1</sup> Estimated based on 40-hour work week. (n = 132. Source: CEB 2017 Talent Analytics Effectiveness Survey.)

# You're Invited

# ReimagineHR 2017

---

## Leading Through Volatility

18-20 October, Washington, DC

Attend ReimagineHR 2017 to learn key insights into talent analytics and learning with six specific sessions:

- A New Framework for World-leading Learning Analytics
- Peer Benchmarking with Talent Analytics Professionals
- Discussion with Arun Chidambaram, VP of Analytics at Pfizer
- Aligning L&D Value to Business Outcomes: The Portfolio Evaluation Approach
- CEB Talent Analytics Leaders Academy Experience
- Shifting the Measurement Paradigm: Capturing the Value of Informal Learning

### Event Location

Gaylord National Resort & Convention Center  
201 Waterfront Street  
National Harbor, MD 20745

### Ticket Price

Individual Rate	\$1,795
Group Rate (3 or More)	\$1,395 (each)

### Register Now:

[cebglobal.com/ReimagineHR-Washington](http://cebglobal.com/ReimagineHR-Washington)



# Workforce Planning That Really Is Strategic

Featuring Alec Levenson and Alexis Fink



## About Alec Levenson, PhD

Alec Levenson, PhD, is an Economist and Senior Research Scientist at the University of Southern California's Center for Effective Organizations. His action research and consulting work with companies optimize job and organization performance and HR systems through the scientific application of organization design, job design, human capital analytics, and strategic talent management. Alec's work with companies combines the best elements of scientific research and practical, actionable knowledge that companies can use to improve performance. He has trained HR professionals from a range of Fortune 500 companies in the application of talent analytics and has been featured in numerous academic and business publications. Alec is also the author of *What Millennials Want from Work*; *Strategic Analytics: Advancing Strategy Execution and Organizational Effectiveness*; and *Employee Surveys That Work*.



## About Alexis Fink, PhD

Alexis A. Fink, PhD, is currently General Manager, Talent Intelligence and Analytics at Intel. Her organization is working at the leading edge of data-driven talent practices and provides original organizational effectiveness research, HR analytics, talent marketplace analytics, HR systems and tools, and strategic workforce planning. Prior to Intel, Alexis spent seven years at Microsoft, where her roles included Director of Talent Management Infrastructure. Her career has been characterized by an integrative approach to HR, including developing and implementing competency systems and integrated talent management systems. Her background also includes work in large-scale organizational transformation and managing acquisitions. Alexis earned her PhD in Industrial/Organizational Psychology and is a Fellow of the Society for Industrial and Organizational Psychology (SIOP). In addition to practicing and leading in organizations, she continues to teach, is a frequent SIOP contributor, and is an occasional author and journal editor.

**S**trategic workforce planning is extremely popular these days, as it should be. In today's just-in-time world, making sure you have the right talent in the right place at the right time and at the right price is essential for business success.

In practice, most workforce planning efforts are fairly shortsighted and narrow and could more accurately be called "12-month hiring plans." Strategic workforce planning promises to deliver greater value by using a longer time horizon and a talent supply chain approach. The problem, however, is that even then it's still too narrowly focused on getting "butts in seats"—making sure positions are filled with people. To really raise its game, HR must focus workforce planning much more on holistically addressing the systemic talent issues that impede business performance.

Workforce planning traditionally has meant annually forecasting how many people are needed in a role, with the forecasts happening less than six months before the end of the fiscal year as part of the budget-setting process. Strategic workforce planning focuses further out on how the business's needs will evolve over two or more years to anticipate and solve talent gaps that are too hard to address in six months or less. For example, strategic workforce planning often includes identifying roles staffed with a large number of older employees who are on the verge of retirement and making plans in advance to ensure a stable talent pipeline of people to succeed them. Another common example is identifying key areas where the business plans to grow and calculating how to meet the talent demands and avoid shortages.

That type of analytics is essential to avoiding big gaps in the number of people needed to do the work. But

it only focuses on who does the work, not how it gets done. Most of the people-related issues that arise from the work design cannot be easily addressed through adjusting head count. Uncovering the how is essential for true strategic workforce planning because it opens the door to reconsider the barriers to strategy execution rooted in how roles and responsibilities are designed and to reexamine the competency and recruiting profiles used to evaluate how talent contributes to organizational success.

Heads of talent analytics and their teams have a great opportunity to play an important role in positioning their organizations for success through this work. But it requires a different orientation than thinking about the problem as workforce planning—one that looks beyond the job to the system of work in which the job is embedded. This approach includes considering business objectives such as capacity utilization and cost minimization, among others. For people working in talent analytics, the issue is not much different from the business coming to you and asking for help on how to optimize productivity and employee engagement. The challenge is learning how to do so by looking at the bigger picture of the system of work and incorporating perspectives such as job design and organization design that go beyond the data typically available for talent analytics.

**Heads of talent analytics and their teams have a great opportunity to play an important role in positioning their organizations for success through this work.**

## “Strategic” Workforce Planning Today

Strategic workforce planning focuses on existing or new roles, matching labor forecasts with analysis of the talent supply to fill those roles. For example, consider account managers at a bank. Strategic workforce planning would look at where the bank’s services are growing the most, taking into account which lines of business and geographies are expected to have the greatest increase in demand. It would then plan on hiring more account managers where the forecasted gap is highest.

Yet forecasting the number of account managers and where they need to grow the fastest does not address any root causes of performance that come from how the work is designed. The ultimate goal is not necessarily avoiding vacancies in the account manager role; instead, the bigger picture is how the bank delivers its products and services cost-effectively. When talent analytics leaders accept the way roles are currently defined, they perpetuate inefficiencies in the work design that can lead to hiring people who are over- or underqualified for the work and to overpaying for unnecessary skills or underpaying for ones that are needed. Any future-looking strategy must take into account aspects such as redesigning the work to boost efficiency and increasing opportunity for automation as a disrupter of work processes.

In the bank’s case, the ultimate objectives are improving customer service, selling more high-margin products and services, and getting customers to use the bank for a greater proportion of their banking needs. Customer service is important because it keeps people from leaving, lowering the acquisition cost of the bank’s assets. Higher-margin products and services increase the bank’s profitability. And getting customers to use the bank for a greater share of their banking needs increases retention and lowers acquisition costs.

**Forecasting the number of account managers and where they need to grow the fastest does not address any root causes of performance that come from how the work is designed.**

branch also contribute to customer service. Just focusing on the account managers alone through traditional workforce planning almost always won’t be enough to meet the bank’s objectives for customer service. Improving those business metrics often requires other changes in the work system that complement what account managers do.

### Apply Job Analysis for Better Workforce Planning

The fundamental problem for talent analytics leaders is that “strategic” workforce planning focuses only on the number of people needed to fill anticipated vacancies. Taking a broader horizon look and considering the talent supply chain are two useful innovations over traditional workforce planning, and those significant advances in the field have increased its relevance and contribution in recent years. Yet they are still too narrowly focused on the job as it currently exists. A much better approach diagnoses the job design to find the bottlenecks to performance and uses that analysis to design more holistic solutions.

**A much better approach diagnoses the job design to find the bottlenecks to performance and uses that analysis to design more holistic solutions.**

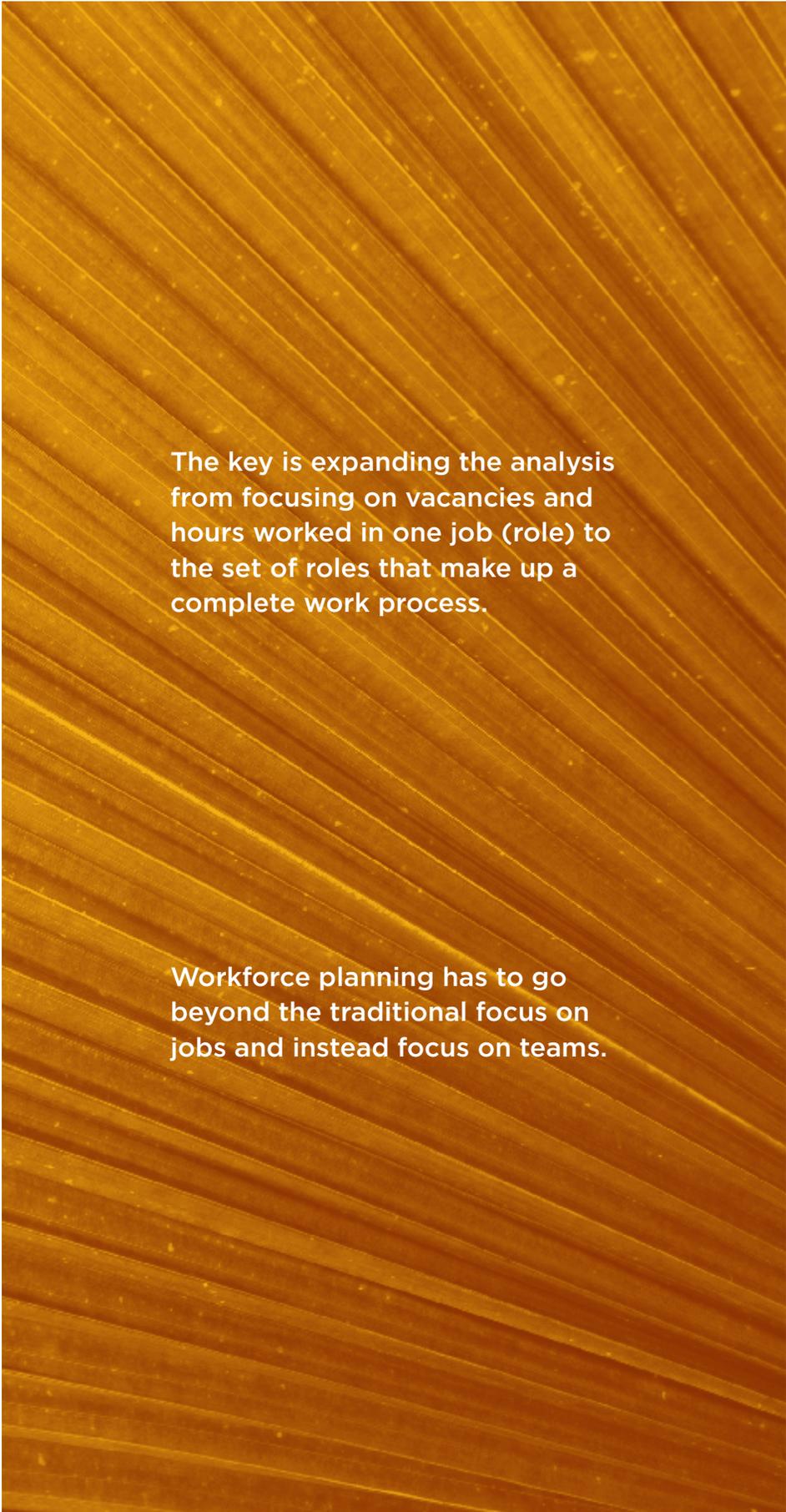
Consider the example of health care. Doctors are the most expensive, highest-skilled labor in health care delivery and the main bottlenecks to improved, cost-effective performance. Having doctors spend more time on patient care is key to improving health outcomes in many settings, yet typically it is too expensive to just add more doctors.

That's why, centuries ago, the health care system created the nurse role—a less expensive counterpart to doctors. For the longest time, nurses were the main workforce planning solution used to solve the problem of increasing the number of patients treated per hour each doctor works.

However, in more recent decades nursing shortages have pushed the health care industry to innovate further, increasing the use of roles such as physician assistant to free up both doctors and nurses to treat more patients per hour. The insight of creating the role of physician assistant never came from a traditional workforce planning approach. It also never would have emerged from what passes for the current state of the art in “strategic” workforce planning, which focuses on existing roles. Instead, the analysis that led to creating the physician assistant role required a holistic diagnosis of the health care delivery system and the constraints on both doctors' and nurses' time.

The key is expanding the analysis from focusing on vacancies and hours worked in one job (role) to the set of roles that make up a complete work process. So rather than focus solely on the physicians and how many hours they work, the diagnosis hones in on the number of patients served per hour the physician works. The key question is how to optimize the number of patients treated per hour by the entire system of roles, not just the single role of physician. If the total labor cost per patient served can be lowered, then the total number of patients treated per hour can be expanded more cost-effectively than by simply adding additional physician hours.

The larger point here is that the focus must start with the business objectives. In a health care system, for example, the strategic objectives are treating patients effectively and efficiently to minimize costs and optimize health outcomes. Workforce planning focuses only on jobs, not the other parts of the system that need to be optimized. In a hospital, capacity utilization (i.e.,



**The key is expanding the analysis from focusing on vacancies and hours worked in one job (role) to the set of roles that make up a complete work process.**

**Workforce planning has to go beyond the traditional focus on jobs and instead focus on teams.**

## Strategic Workforce Planning in Other Industries

Using our health care example, even today with the team approach of doctor, nurse, and physician assistant, physician time is still the bottleneck to improved performance in many cases. If we could just free up doctors to spend more time with patients, we could further improve efficiencies and patient outcomes. The roles of nurse and physician assistant evolved as ways to take parts of the health care delivery system out of doctors' hands and give them to others with different skill sets but who nonetheless can perform many skilled tasks without needing a doctor in the room at the same time. The question is what additional changes or innovations can free up doctors further.

The most recent answer is medical scribes. These are people who accompany doctors as they do their patient visits, transcribing the details of the patient's condition and the doctor's instructions for care. Using scribes frees up doctors from the very time-consuming task of writing up the notes from the patient visit.

Today's strategic workforce planning approaches would never have identified the job of medical scribe. Instead, a systems diagnostic of the work and the challenge of doctors' time being very expensive led health care organizations to realize there was another way to cheaply solve the bottleneck of physician time. The solution lay in adding lower-priced skilled labor that frees up the doctor to spend more time on what only they can uniquely do: diagnose and treat patients. The job of physician assistant, like nurse, is a traditional extender role that requires medical training and decision making. The scribe role, in contrast, broadens the focus to include nonclinical roles. Medical scribes must be skilled enough to write down accurately what they hear but do not have to be trained and certified as medical providers to add value. Medical scribe roles are a lot like court reporter roles: court reporters have to know enough about the legal process to record everything accurately, yet they are not as highly skilled on legal issues as lawyers or even law associates.

keeping the beds full) is a critical objective, ensuring that the fixed costs of running the building can be spread over as many patients per day as possible. In a medical practice, the same principle applies: keep the exam rooms full and minimize the amount of time doctors need to treat each patient.

The key for talent analytics leaders who want to improve the strategic relevance of workforce planning is to take the perspective of a forward-thinking business partner: going beyond looking at the existing jobs and engaging in the "what if" questions about how best to optimize the work design. In the medical practice case, taking this approach broadens the scope of the analysis to include questions such as, "How can we free up doctors to spend more time on effective patient care per hour?" Viewed this way, the solutions can come from many different approaches, not all of which involve traditional health care jobs. For example, electronic medical records cut down on the amount of time doctors have to spend reading paper records on patient care and increase the amount of information doctors can access while treating each patient; this happens through aggregation of medical records that previously were located in each doctor's office and not instantaneously accessible by other physicians treating the same patient. Advocating for electronic medical records would never emerge from today's strategic workforce planning approaches, and yet any conversations about implementing electronic medical records should include talent analytics representatives because of the new jobs needed to make it happen.

### Take a Holistic View of the Team, Not Just One Job

The main message is that workforce planning has to go beyond the traditional focus on jobs and instead focus on teams. Rather than think about the work one role at a time, talent analytics leaders must consider specific tasks and bottlenecks to performance that are rooted in parts of the job.

**The key for talent analytics leaders who want to improve the strategic relevance of workforce planning is to take the perspective of a forward-thinking business partner.**



The team-based diagnostic approach takes into account how the work is performed and considers reconfiguring tasks across jobs to make more robust talent systems. These more robust systems can increase flexibility and efficiency by identifying the optimal way for the organization as a whole to function. For example, supply chain operations involve many different tasks and roles. Optimizing the supply chain includes determining which tasks and roles can be outsourced when there

are suppliers that have expertise complementing or even exceeding what the organization can do on its own. Yet the decision on outsourcing is not a simple one of the cost of services and availability of people to provide them. Even more critical is how those services fit into the creation and preservation of the company's competitive advantage.

Consider warehousing and the movement of goods, which are standard supply chain operations. For many industries, these are "commodity" services, meaning they do nothing to create competitive advantage and they can be sourced either internally or externally depending on whichever approach produces the right mix of cost and performance. For example, in grocery retailing and drug stores, warehousing and supply chain for the bulk of products sold on their shelves are not big sources of competitive advantage, and those activities are often shared or outsourced to third

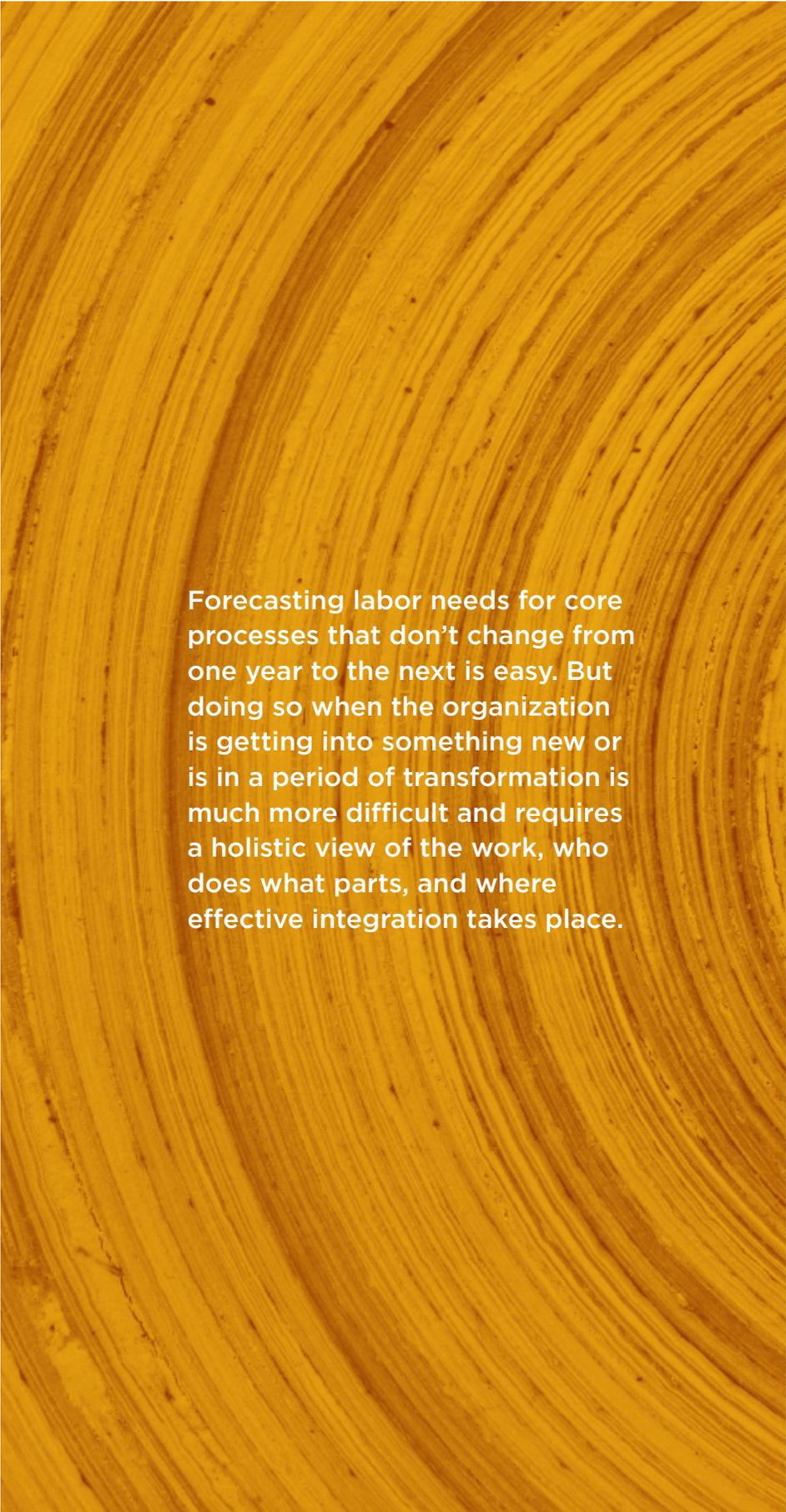
**The team-based diagnostic approach takes into account how the work is performed and considers reconfiguring tasks across jobs to make more robust talent systems.**

parties or the manufacturers who create the products they sell. For Amazon, in contrast, warehousing and managing the entire supply chain of goods it sells to its customers are principal sources of competitive advantage, so it has built and manages in-house the vast majority of its warehouses.

The implications for talent analytics leaders and workforce planning are quite different in those two cases. For grocery and drug stores, the talent analysis must be

broad enough to include the insourcing versus outsourcing decisions. And although talent analytics professionals never solely complete that analysis, they must be part of the process to ensure the best decisions are made with respect to insourcing and staffing those warehouse roles. The scope of decision making also extends to the design of the job itself, including the level of responsibility and target compensation, because those are critical aspects of the job that impact people's ability to perform to the expected standards. The skill level and compensation rate for warehouse jobs often need to be higher when that activity is a core part of the company's competitive advantage, like in Amazon's case.

For Amazon, the analysis also has to be broader than traditional workforce planning and must include consideration of how warehousing contributes to its competitive advantage. Being able to handle incredibly high volumes of products



Forecasting labor needs for core processes that don't change from one year to the next is easy. But doing so when the organization is getting into something new or is in a period of transformation is much more difficult and requires a holistic view of the work, who does what parts, and where effective integration takes place.

in the warehouse at high speed and precision is a core part of Amazon's competitive advantage. That view is critical for understanding how to staff the roles and even what roles should exist in the first place. For example, automation is a major emphasis in Amazon's warehouses, even though the technology is not yet to the point where everything can be automated cost-effectively. In that case, talent analytics must address the options for rolling out greater warehouse automation faster versus slower, as well as the trade-offs with maintaining tasks and roles done in the traditional way by humans and not robots. That type of analysis is much broader and comprehensive than simply forecasting how many jobs of types X, Y, and Z will be needed in Amazon's warehouses. And that's precisely the point: the analysis has to be more systematic and comprehensive.

Evolution in organizational size, complexity, product offerings, competitive threats, and technology combine to create a dynamic reality for organizations. The perfect solution two years ago may be suboptimal today. Something impractical two years ago may offer significant competitive advantage today. Workforce needs are not static. To succeed, organizations must continually adapt and adjust their workforce planning.

To be more strategic, when talent analytics professionals lead workforce planning, they must recognize that forecasting involves different degrees of certainty. Forecasting labor needs for core processes that don't change from one year to the next is easy. But doing so when the organization is getting into something new or is in a period of transformation is much more difficult and requires a holistic view of the work, who does what parts, and where effective integration takes place.

## Further Examples

### Supply Chain

Consider the supply chain people responsible for sourcing the inputs to production. Many highly specialized products (e.g., semiconductors and many electronics) require relatively unique materials such as rare earth minerals or chemicals that must have very high levels of purity to meet manufacturing specifications. The supply chain professionals responsible for securing reliable access to the inputs typically must have deep technical skills, in addition to intimate knowledge of the limited number of vendors capable of meeting the technical specifications, delivery time, volume, and reliability requirements. Those roles need to be designed and planned for (via workforce planning) using a much more holistic assessment of the risks involved in having extended vacancies or a candidate who isn't a good fit for the job.

### Go-to-Market Systems and Delivery Drivers

Another example comes from go-to-market (GTM) systems and delivery drivers, such as the ones employed by FedEx and UPS. For a variety of historical and business reasons, UPS drivers are all employees of the company, whereas FedEx makes significant use of contract drivers. A traditional workforce planner would ignore the reality of the insourcing versus outsourcing decision for delivery drivers and instead focus on how to keep the pipeline full of people to minimize vacancies. A more strategic workforce planning approach acknowledges that insourcing and outsourcing are always potential options for the business to consider. So the talent analytics needed to holistically assess the workforce needs should extend to the specifics of the GTM system the company currently uses, including the decision to employ drivers as direct hire employees as opposed to contractors.

## Conclusion

Strategic workforce planning holds enormous potential to position organizations for long-term competitive success. Although the term and the aspiration have been around for many years, the ways that strategic workforce planning has been applied have largely been disappointing, cumbersome, and ineffective. This is not because the ideas behind strategic workforce planning are inherently flawed; it is because of ineffective implementation.

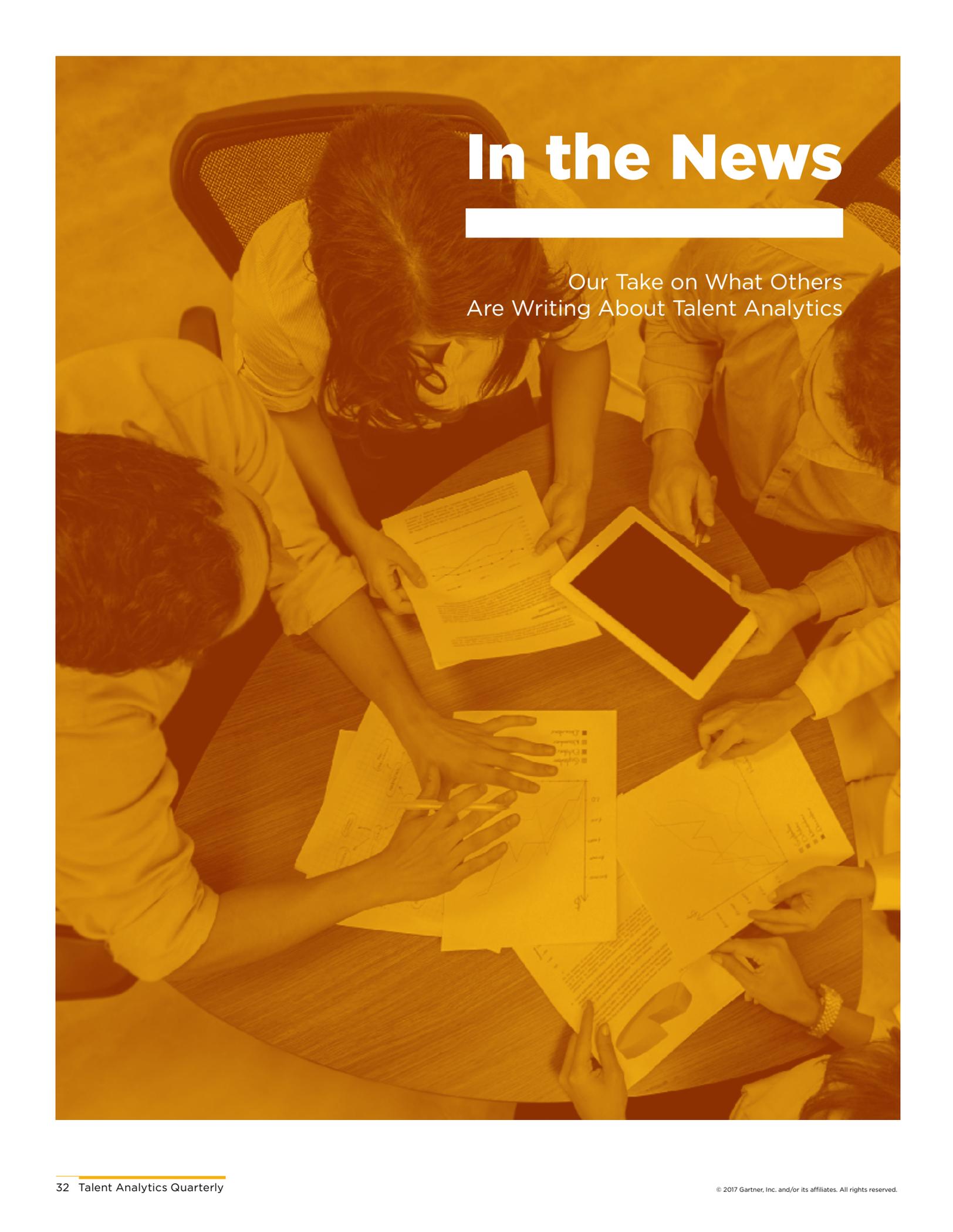
For workforce planning to provide real, strategic insights, talent analytics leaders must move the approach beyond forecasting butts in seats. The problem is that "strategic" workforce planning today is mired in that narrow view of talent optimization. The solution lies in taking a more holistic view of what work needs to be accomplished and who is best suited to accomplish what parts, in addition to not sticking with traditional job boundaries just because that's the way it's always been done.

Talent analytics leaders and professionals must take specific steps today to embrace this more holistic approach. They must engage much more deeply with the business and be a part of all key discussions of business strategy, structure, and process. Virtually every big, strategic business decision has a workforce planning implication, yet talent analytics leaders typically are not sufficiently tied into those discussions to influence the assumptions that are made about talent price, availability, and productivity. As talent analytics leaders learn about potential changes in organization strategy, structure, and/or processes, they can bring in other parts of HR as

needed to assess the potential talent needs from those changes and to better position the organization to have the right talent in place at the right time and price. They also can push back where appropriate when business leaders make incorrect assumptions about the kinds of talent that can be found at the desired cost and timing.

Talent analytics professionals on the front lines of workforce planning don't have the same line of sight into business strategy and organizational change as talent analytics leaders do. However, they nonetheless have critical roles to play in this more holistic approach to workforce planning. Any time they get a request from a business partner for a workforce planning analysis, talent analytics professionals should think about the bigger picture of what the business objectives are and what issues could be at play beyond putting butts in seats. This approach includes determining whether a broader view of the job is needed to address the strategic and operational issues the business is trying to solve.

Addressing an organization's work product and processes holistically, and from a strategic perspective, can significantly change its competitive positioning. Applying a talent supply chain lens to anticipate future talent needs, and the optimal way to staff an organization, is more than rote backfilling of the people you have today. Instead, use a systems diagnostic approach and consider how tasks and roles could be redefined to free up high-valued talent to spend maximum time contributing as best they can.



# In the News

Our Take on What Others  
Are Writing About Talent Analytics

## HR Must Walk Before It Can Run a Talent Analytics Program

Originally appearing on *Talent Daily*

By Brian Kropp

**A**cross the past few years, most organizations have been rushing to make significant investments in talent analytics.

In fact, in a recent survey we conducted, 74% of organizations said they were planning on increasing their investments in talent analytics in the next year.

Although the use of talent analytics certainly has great potential, Wharton management professor Peter Cappelli argues in *Harvard Business Review* that companies shouldn't simply be throwing money at it with the hope that something good happens. Most HR functions, he points out, don't have enough high-quality data to justify a sophisticated analytics project:

“As with most of ‘the next big thing’ stories in business, big data is really important in some areas, and not so important in others. As a literal definition, HR does not actually have big data, or more precisely,

almost never does. Most companies have thousands of employees, not millions, and the observations on those employees are still for the most part annual. In a company of this size, there is almost no reason for HR to use the special software and tools associated with big data.

For most companies, the challenge in HR is simply to use data at all—the reason being that the data associated with different tasks, such as hiring and performance management, often reside in different databases. Unless we can get the data in those two databases to be compatible, there is no way to ask even the most basic questions, such as which applicant attributes predict who will be a good performer. In short, most companies—and that includes a lot of big ones—don't need fancy data scientists. They need database managers to clean up the data. And they need simple software—sometimes even Excel spreadsheets can do the analyses that most HR departments need.”<sup>1</sup>

This data quality problem is truly the big (and not at all sexy) problem most talent analytics functions are facing. Our survey also revealed that 70% of talent analytics executives cite data quality as the biggest barrier to doing their work. Which raises the question: What can you do to improve the quality of data in your organization?

Although most companies turn to buying new systems and new technologies, the best talent analytics executives are building better relationships across the HR function and the broader organization to improve the quality of the data entered into their systems. Building the right relationships is more than twice as effective as buying new technology when it comes to improving organizational effectiveness at talent analytics.

<sup>1</sup> Peter Cappelli, “There's No Such Thing as Big Data in HR,” *Harvard Business Review*, 2 June 2017, <https://hbr.org/2017/06/theres-no-such-thing-as-big-data-in-hr>.



## When Cybersecurity Competes Against Efficiency, Efficiency Wins

Originally appearing on *Talent Daily*

By Peter Vail

**T**he headline finding of the recently released Dell End-User Security Survey<sup>1</sup> is that 72% of employees said they were willing to violate data security protocols and share confidential company information under certain circumstances, such as if a manager asked them to or if it would help them do their jobs more easily.

*Computerworld* editor Matt Hamblen takes a closer look at the findings, which illustrate the fine line employees often walk between maximizing their productivity and safeguarding sensitive data:

“Creating a security culture at a company can be complicated. The survey found that 65% of employees recognize their responsibility to protect confidential information, but many said security programs

limit their productivity. Of those who received cybersecurity training at work, 24% admitted they went ahead and used unsafe behaviors anyway in order to complete a task...

The survey found that unsafe behaviors for accessing, sharing and storing data are common in the workplace. Forty-six percent of employees admitted to connecting to public Wi-Fi to access confidential information, while 49% admitted to using a personal email account for work tasks. The survey found 35% said it was common to take corporate information with them when leaving a company.”<sup>2</sup>

One of the many interesting things we’ve found in our ongoing research into the development of organizational cultures is that employees often don’t engage in behaviors because they must make underlying trade-offs to do so. In recognition of this, one company we spoke to explicitly details the “dualities” associated with a desired behavior (in this case, efficiency vs. data security).

Dell recommends that employers respond to this challenge by improving enforcement of cybersecurity policies and providing more education for their staff. But this training should not focus solely on how and why to protect data; instead, organizations should provide employees guidance to actively manage the actual trade-offs they need to make in their daily workflow and reinforce that guidance using talent processes.

For example, if an employee needs to access information but lacks a way to get on a secure network, then they are going to use public Wi-Fi, creating a security risk. Instead of blaming these employees for taking shortcuts, organizations must identify the barriers preventing employees from following these policies efficiently to more effectively manage these trade-offs.

<sup>1</sup> Dell, “Dell End-User Security Survey 2017,” 2017, <http://dellsecurity.dell.com/dell-end-user-security-survey/>.

<sup>2</sup> Matt Hamblen, “How Your Company Needs to Train Workers in Cybersecurity,” *ComputerWorld*, 25 April 2017, <http://www.computerworld.com/article/3192346/security/how-your-company-needs-to-train-workers-in-cybersecurity.html>.

## Talent Analytics Is More Than Just the Data

By Fiona Lam

In an article from *Personnel Today*, Michael Carty referenced an observation from Ross Sparkman at the Tucana People Analytics World conference held at Facebook:

“People analytics is ‘50% cold, hard statistics and 50% common sense.’ A number of other speakers touched on this theme, arguing that effective people analytics activities must be informed by both data and intuition.”<sup>1</sup>

Most organizations report data in a way that overcomplicates it and takes away from the analysis of the main story. This approach shifts the burden of interpreting the data from the talent analytics team onto the audience. As a result, the audience struggles to connect their business goals to talent analytics insights and, therefore, are unable to translate them into actions or business outcomes. To obtain more value and enable action

on their data, talent analytics teams should communicate data that is not only consumable but also relevant to the client. Talent analytics teams should focus on answering questions that are aligned to key business goals and strategic initiatives, rather than reporting overcomplicated data.

At Facebook, Ross Sparkman, head of Strategic Workforce Planning, uses a data-driven approach for succession planning, where he and his team tie available people data to Facebook’s recruitment and retention strategies. His team asks “who’s driving the value?” to determine which roles will cause the business to lose money if they stopped coming to work. Asking a simple and easy to understand question while using facts and data to support it allows the audience to both empathize and understand the challenge they have to tackle, thus enabling action.

Facebook was able to use this simple question and support from available data on people, performance, and productivity to predict the demand

levels and changes for critical roles in forthcoming years. While most organizations simply report data, the best organizations are able to interpret and communicate it to the audience in a consumable way. Being able to extract value from the data is as, if not more, important than the data itself.

<sup>1</sup> Michael Carty, “People Analytics Success = Data + Common Sense,” *Personnel Today*, 3 May 2017, <http://www.personneltoday.com/hr/people-analytics-success-equals-data-plus-common-sense/>.

# Asking *When* Not *If* in Predictive Modeling

---

## Applying Survival Analysis to Common Talent Questions

By Behailu Bekera and Andrea Kropp  
CEB's Talent Management Labs

**T**he employee life cycle consists of a number of time-stamped events, such as the application date, start date, training course dates, promotion dates, and termination date.

Understanding the drivers and measuring the effects of these life-cycle events leads to better insights and better talent management solutions to drive business performance. But very few analyses we discuss with members make time an explicit part of the analysis.

Attrition is inevitable. It will eventually happen to 100% of your hires for various reasons. When you hire a new person, what you really want to know is how long this person is likely to stay (along with performance, potential, etc.), not if they will stay. When you craft attrition interventions, you would like to measure by how much the intervention extends employee tenure, not just whether there is an overall positive ROI. And when you implement a new sourcing or selection

program, you want to compare the full life cycle of people hired through the new process to those hired with the previous process.

Conventional approaches in both statistics and machine learning employ methods that predict if an event of interest occurs. The outcome is typically defined as a binary variable (i.e., yes/no) requiring the analyst to define only one time period for the study. These methods are, therefore, not well suited for answering when these events are most likely to occur, providing a very incomplete view of events that unfold over time. This is where survival analysis can help.

### **What Is Survival Analysis?**

Survival analysis is an analytical method that provides dynamic insight on the likelihood of attrition, retention, promotion, customer churn, system failure, death, or any other event of interest. The method originated from medical clinical trials where the event of interest is often death, an adverse drug reaction, or

the development or recurrence of a disease. When applying this method to HR, “survival” is the time period free of an event of interest.

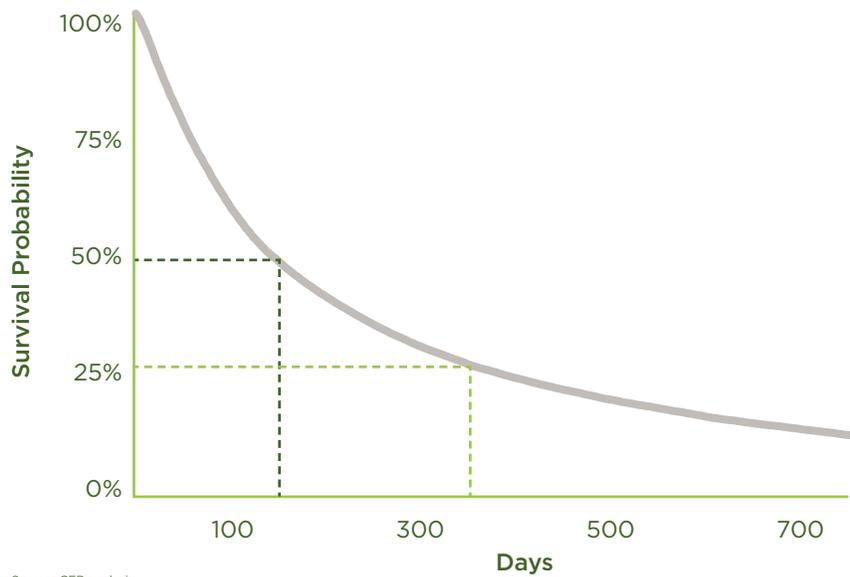
Because it is specific to time-based questions, survival analysis has two very unique advantages over the modeling approaches typically applied to attrition problems:

1. One model allows you to estimate individual-level risk at any chosen point in time (e.g., 30-day, 180-day, one-year, and five-year attrition likelihood) without repeating the analysis.
2. It is possible to use more recent, right-censored data, which would have to be excluded using other methods. This raises your sample size and improves overall accuracy.

**Right-censored data** are cases in your dataset where the event has not yet happened. For example, if a person was hired 45 days ago and is still employed, you don't know yet if they will stay past 180 days. All you know is that they were “event-free” for 45 days. This person must be excluded in most studies where the goal is to model 180-day attrition because you don't yet know the correct answer: zero or one. But they can be included in survival analysis because they are known to have survived the first 45 days. Because medical clinical trials are so expensive to run, the developers of these techniques couldn't discard precious data if a person moved away or had to discontinue the trial for some reason. They developed survival analysis to properly account for all known “event-free” time in the equations so that all the data can be used.



**Figure 1: Survival Probability for Sales Associates**



Survival Probability	Days
75%	55
50%	139
25%	382
62%	90
43%	180
26%	365

Source: CEB analysis.

### Case Study: Retail Sales Associates

This case study focuses on attrition modeling, but this technique is suitable anywhere you wish to analyze dynamic likelihoods, including time to first promotion, time to full productivity, and time to first deal closure or first \$1 million in revenue (in sales roles). This technique is also very helpful when everyone experiences a certain event on the same day. For example, you can model attrition among existing employees following the announcement of an acquisition as Day 1, or you can model the time to the first sale among existing sellers after the introduction of a new product line as Day 1.

To illustrate the power and superiority of survival analysis for attrition modeling, we present a case study that examines the sales associate role at a major North America-based retailer. For 53,494 sales associates hired between January 2013 and January 2016, this retailer collect-

ed a variety of information pre-hire, including education level, prior employment, days available, and desired hours, as well as the results of a psychometric test battery. The retailer then supplied the termination date for each sales associate or indicated if they were still employed as of the data extraction date.

The data illustrates that turnover in the sales associate role is rapid (figure 1). Only 75% of new hires survive past 55 days, and at 139 days, only 50% remain. For workforce planning purposes, it is sometimes better to ask what percentage of employees remain after X days. A plot of the survival probability compared with the number of days can help

answer this question for any time period of interest. For example, the dotted green line shows that at 365 days, 26% of new hires remain.

### Finding the Risk Factors Visually

The human eye is very adept at spotting patterns, and we encourage you to explore your data visually using hypotheses about your own attrition risk factors. To illustrate how to conduct a visual exploration, we tested six hypotheses for the sales associate role.

#### Attrition Risk Varies by:

1. Whether the person applied to the sales associate role or the sales leader role originally,
2. Highest level of education obtained,
3. Psychometric assessment score,
4. Rehire status,
5. Times available for work, and
6. Store location.

By examining the survival curves visually, the risk factors and their relative importance begin to reveal themselves even before creating a mathematical model (figure 2).

Over time, different “hazards” can decrease the survival percentage (thereby increasing attrition) of sales associates. These hazards include (left to right, top to bottom, figure 2):

- Having applied to a more senior sales leader position,
- Having not worked at this retailer previously (not a rehire),
- Having a highest education level of high school or associate's degree,
- Being available only on weekends,
- Having a high psychometric assessment score, and
- Working in a US-based store

### Effects Across Time

By plotting the survival curves for a two-year period (figure 2) and also for a 30-day period (figure 3), we see that some of these hazards are more significant and pronounced in the first 30 days of the role, while others begin to exert their effect later. This level of insight is only available from a time-based study of attrition and is one of the reasons we favor survival analysis over traditional point-in-time turnover models.

For example, compare the two-year and 30-day Available Times chart in the lower left corner of each set (figures 2 and 3). Although stating on your application that you are available only on weekends makes it essentially certain that you will not stay for two years (0% survival rate), there is no difference in attrition based on availability across the first three weeks of employment.

Examining the effects at different time periods can also help answer different business questions. Recruiting costs are driven more by “quick quits” (i.e., people who’ve barely started and are already gone) than by other types of attrition. Conversely, your future leadership bench might be the group with advanced degrees and high assessment scores.

Examining the data visually also allows you to conduct a better mathematical analysis in the next stage. The Cox proportional hazards model we created assumes that hazards are consistent over time. When you plot the survival data and see lines crossing, you know that this assumption is violated.

**Figure 2: Set 1 Survival Curves for Two Years Based on Six Hypotheses**



Source: CEB analysis.

**Figure 3: Set 2 Survival Curves for 30 Days Based on Six Hypotheses**



Source: CEB analysis.

**Once you've generated a model, it can be used to predict survival rates for new job applicants.**

### Mathematical Modeling

We fit a Cox proportional hazards model to the data. A small portion of the output is shown in figure 4. The  $\exp(\text{coefficient})$  column can be interpreted as the hazard ratio associated with each application trait. Values less than one indicate lower relative risk (higher probability of surviving), while values above one indicate greater relative risk (lower probability of surviving). The p value indicates whether the result is significant.

As expected from the visual study, being available on weekends only is the greatest hazard (relative hazard ratio 1.26), while being a rehire is beneficial (relative hazard ratio 0.83).

### Predicting Survival Rates for New Applicants

Once you've generated a model, it can be used to predict survival rates for new job applicants. This is where the time-

**Figure 4: Cox Proportional Hazards Model Parameters**

Variable <sup>a</sup>	exp(coefficient)	p Value <sup>b</sup>
Assessment Scores 0-30	0.86	<0.001
Assessment Scores 30-70	0.92	<0.001
Assessment Scores 70-100	n/a	n/a
Weekends Only	1.26	<0.001
Weekdays Only	0.99	0.62
Both	n/a	n/a
Applied as Associate	0.92	0.004
Applied as Leader	n/a	n/a
Rehire	0.83	<0.001
High School	1.26	<0.001
Associates	1.19	<0.001
Bachelors	1.11	0.01
Masters	1.10	0.05

Source: CEB analysis.  
<sup>a</sup> Three rows appear as "n/a" because the variables are linear combinations of other variables entered into the model and therefore carry no unique new information.  
<sup>b</sup> A p value of 0.01 indicates that the effect is only 1% likely to occur by chance.

**Figure 5: Cox Proportional Hazards Model Parameters**

	10 Days	30 Days	90 Days	180 Days	365 Days	730 Days
Candidate 1	0.96	0.85	0.60	0.41	0.24	0.11
Candidate 2	0.97	0.88	0.67	0.50	0.33	0.18
Candidate 14	0.96	0.83	0.56	0.45	0.28	0.08
Candidate 16	0.96	0.87	0.64	0.45	0.28	0.14
Candidate 21	0.97	0.89	0.70	0.53	0.36	0.21

Source: CEB analysis.

based aspect of the model becomes the most powerful and where this approach truly sets itself apart from regression or clustering models created for a single point in time. Using the Cox model, it is possible to predict survival rates for job applicants for multiple points in time.

Figure 5 shows the results from applying the Cox model to five specific job applications at 10, 30, 90, 180, 365, and 730 days. Candidate 21 has the highest probability of surviving at all time periods. In fact, at the two-year mark, Candidate 21 is almost three times as likely to still be employed as Candidate 14 (0.21 vs. 0.08, respectively).

Many different teams within HR can use this type of output in many different ways:

- **The recruiting team** can implement the model for automated application screening and set red, yellow, or green bands for applicants based on their probabilities of surviving past a target date.

- **The training team** can use it to estimate the attendance in classes that align with employee tenure.
- **The benefits team** can use the model to estimate costs and utilization for any benefits that have tenure minimums.
- **The leadership development team** can refine this model by zooming in on the period past 365 days and restating the question as, "Given that someone has already stayed for 365 days, what factors determine their continued survival or their likelihood of promotion?"
- **HR Business Partners** can build on this model by looking for examples where certain departments, managers, or locations are deviating (positively or negatively) from the expected survival curves and conducting interviews, site visits, or further analysis to understand why.

## Engaging Business Leaders

As it turns out, individual states and metro areas have their own unique survival patterns (figure 6). HR Business Partners should alert store operations leaders about this type of analysis because attrition drives cost and quality in their stores, and clearly some regions are performing better than others.

When the overall United States (green line) is separated into states, you see that at the 365-day mark, the survival rate is highest in California (gold) and lowest in Tennessee (mint). Zooming in on the first 90 days reveals that Washington (dark blue) has the best and Wisconsin (brown) has the worst

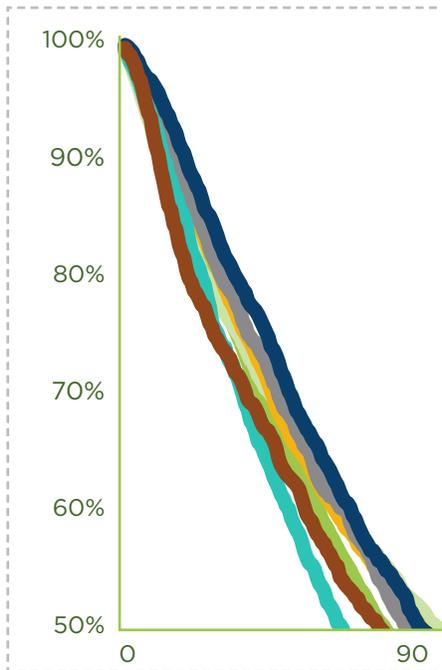
30-day retention. Washington gives up this leading position to California at close to 90 days, and by approximately 250 days, Washington is below the overall United States line. Wisconsin improves to be close to the US average at 90 days, but by one year, it is second worst after Tennessee.

## Getting Started

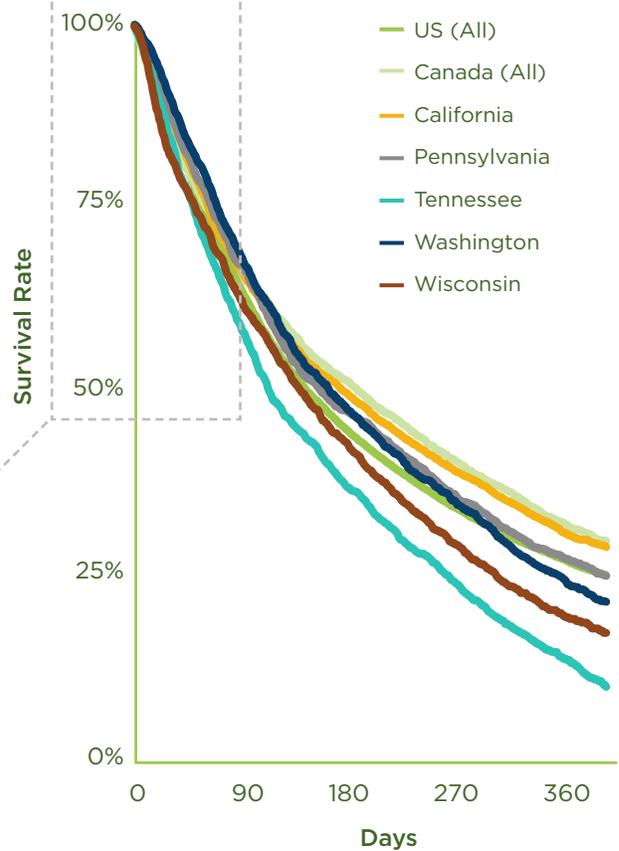
This case study intentionally tested only six hypotheses to simplify the concept for teaching purposes. Survival analysis can handle many more variables, including time-dependent variables. If you are new to this type of analysis, we suggest that you work with fewer than 10 initial hypotheses and build up from there as you learn and gather feedback.

**Figure 6: Survival Curves in Selected States**

**Sales Associate Survival Estimate by State Over 90 Days**



**Sales Associate Survival Estimate by State Over 300 Days**



Source: CEB analysis.

# Build to Be Better

## How to Avoid Automating Bias with Algorithms

By Cory Kind  
CEB's Talent Management Labs

**K**ey insight: By training algorithms to mimic the work of talent professionals, we can better understand how decisions are being made, make predictions based on employee data that can improve performance or tenure, and measure key indicators such as engagement.

“We shape our tools, and thereafter our tools shape us.”

Marshall McLuhan

### A Thought Experiment

Let's start with a thought experiment, likely a familiar one. Imagine a team with a strong culture and the habit of hiring only those applicants who “fit” that culture. Over time, that culture is perpetuated: new hires reinforce it. If new hires don't fit with the strong team culture, that can affect their engagement and how they are seen by others, ultimately affecting their performance. Unintentionally or not, a cycle forms.

However, there's a risk in teaching algorithms to think like humans: humans are biased.

Recruiters and line managers constantly make decisions based off of their training, past experience, and, unfortunately, bias. By training an algorithm on data generated by humans, we effectively program the algorithms with those same human biases. Algorithmic decision making is an incredibly powerful tool that can be used to advance the goals of diversity and inclusion (D&I) strategies. However, the burden should be on those developing algorithms to show that they're fair, not on recipients to prove that they're not.

Talent professionals should take six steps to ensure that the algorithms they use challenge bias rather than reinforce it.

So what happens when an algorithm is introduced that screens applicants based on predicted performance? The algorithm might sort through the educational and work histories of high performers—those who fit the culture—and identify the characteristics that lead to high performance. The algorithm codifies the cycle and provides an objective coating, reinforcing the team's existing patterns. What started off as a human bias has now become an algorithmic one.

### Why Now?

The importance of mitigating bias in algorithms is hardly a new idea; on the contrary, it's a major focus of D&I professionals. What's new is the data available, the algorithms being used to understand it, and the use cases that the algorithms are feeding.



Many examples exist of early adopters struggling to balance the benefits of algorithmic efficiency with their unintended effects. In 2015, the *New York Times*<sup>1</sup> shared an anecdote in which a columnist struggled to use an automatic photo booth. The machine, which locates the subject's face using a computer vision algorithm, kept positioning the photo wrong. It turns out the algorithm was confused by the columnist's bald head, and it couldn't position the head correctly because it was searching, unsuccessfully, for his hair.

This example is trivial, but others have much higher stakes. *The Atlantic* shared the example of tech startup *Gild*,<sup>2</sup> which helps companies find software engineers. *Gild* uses a huge number of variables available online to predict the skill levels of these engineers—anything from involvement in open-source programming communities to behavior on social networks. One highly predictive feature is affinity for a specific Japanese website frequented overwhelmingly by men. Despite its predictive value, the model implicitly conveys information about the gender and extracurricular habits of the engineer, reflecting and perpetuating the gender imbalance in software engineering.

The ability to learn from large quantities of data is what makes these algorithms so effective. However, there's a dark side to this benefit. We understand intuitively that humans are biased and subjective; our decision-making ability is affected by our emotions and mood, cognitive biases, and even whether we're hungry or not. Algorithms offer efficiency improvements as well as the veneer of objectivity.

However, algorithms can be no more objective than the data on which they were trained. They work by learning the statistical patterns and intricacies of this training data: if it reflects existing social biases against protected classes or socioeconomic groups, the algorithm will learn those as well. Note that this is true whether or not those features are explicitly included in the dataset. *Google researcher Moritz Hardt put it this way*: “The whole appeal of machine learning is that we can infer absent attributes from those that are present. Race and gender, for example, are typically redundantly encoded in any sufficiently rich feature space whether they are explicitly present or not.”<sup>3</sup>

### **The Importance of Combining Analytic Evidence with Domain Expertise**

So what's the solution? Improving the accuracy won't necessarily solve the problem. In our introductory example, using an algorithm to predict high-performance would result in a feedback loop: the predictions would get better and better over time as it learned to estimate “culture fit” more accurately. This approach would reinforce any existing racial or gender bias on the team rather than challenge it.

We think the right answer is to engage in something we call “steering.” Algorithms should be considered neither a miracle cure nor a creeping menace. They provide an opportunity for valuable new insight and outsized results, but they can also be flawed—just like the human decision making on which they are based. Through steering (i.e., intentionally guiding algorithms with domain expertise and establishing checkpoints to test for bias), talent professionals can ensure that algorithms used in their organizations support talent goals safely and responsibly.

## Key Steps for Leaders

When models are used to make decisions, they go beyond measuring reality and actually play a role in creating it. They are self-perpetuating. However, being intentional about how algorithms are developed and used can help mitigate some of these concerns.

Here are six key steps to use when building or using an algorithm for talent decisions:

- 1. Carefully vet your features.** This is surprisingly hard to do. Excluding features such as gender, ethnicity, religion, and socioeconomic status is an obvious first step. However, that does very little if you include other features that are proxies for them. For instance, attendance at a major public university may not convey demographic information about a candidate, but attendance at a specialized university that serves specific demographic groups (e.g., based on race or gender) does. Institute a vetting process to make sure that the variables being included in the model convey only the information that you want them to.
- 2. Check for adverse impact or accidental discrimination.** Build a QC process in which you actively look for bias in your automated tools, particularly those that were modeled after human decision makers. Your algorithm is only as good as the data on which it was trained; no sophisticated modeling steps can fix that. Test for adverse impact in the same way that you would with any other selection process.
- 3. Involve domain experts.** Facilitate collaboration between technologists and domain experts. Your domain experts are your first line of defense—the people who are most likely to notice when an algorithm does something unexpected or counterintuitive.
- 4. Prioritize transparency.** Your process should be transparent enough that you can understand it and defend it if needed. Push hard for solutions that are explainable and interpretable. References to neural networks and deep learning litter the pages of business magazines these days. These methods are known in industry as “black box”: data goes in, magic happens, and predictions come out. However, you should be skeptical of anyone who doesn't provide you a way to explore an algorithm's decision-making process.
- 5. Overall accuracy isn't enough.** Think carefully about the metrics you use to evaluate an algorithm. Look also at model accuracy for protected classes and groups. In practice, an algorithm that makes more mistakes overall may be preferable to one that makes fewer but does so disproportionately for minority groups.
- 6. Avoid automation unless you have enough data.** Machine learning systems acquire knowledge from large quantities of data: more data, better predictions. Unfortunately,



that also means the reverse is true: less data, worse predictions. By definition, there will always be less data available on the people who are minority groups in your workforce. If you have heterogeneous groups in your data, the algorithm may not be as accurate for the smaller groups.

## Concluding Thoughts

As algorithms become increasingly embedded into talent management processes, so will the impact of their bias. Without adequate input from domain experts, biases could be the final determinant of major talent decisions, from who gets a job interview to who is at risk of being laid off. As HR becomes a more technology-driven function, companies that prioritize both quality and efficiency will thrive—not one at the expense of the other.

<sup>1</sup> David Segal, “Hairless Head in a Clueless Photo Booth,” *The New York Times*, 18 July 2015, [https://www.nytimes.com/2015/07/19/your-money/hairless-head-in-a-clueless-photo-booth.html?\\_r=0](https://www.nytimes.com/2015/07/19/your-money/hairless-head-in-a-clueless-photo-booth.html?_r=0).

<sup>2</sup> Don Peck, “They're Watching You at Work,” *The Atlantic*, December 2013, <https://www.theatlantic.com/magazine/archive/2013/12/theyre-watching-you-at-work/354681/>.

<sup>3</sup> Moritz Hardt, “How Big Data Is Unfair,” Medium, 26 September 2014, <https://medium.com/@mrtz/how-big-data-is-unfair-9aa544d739de>.

# Learn with Your Peers

## Upcoming Live Events

### Maximizing the Impact from Talent Analytics Investments

#### CEB Talent Analytics Workshop

Join us at a 2017 talent analytics workshop. Learn about the latest insights from our research on growing talent analytics capabilities, and collaborate with your peers to solve the resourcing and capability challenges most critical to your organization.

Collaborate on questions such as:

- How do we train and hire the right **people** to build an analytics team?
- How do we ensure the quality and usability of our **data**?
- How can we identify the right **structure** for talent analytics at our organization (e.g., centralized, decentralized)?
- How can we build **relationships** to take advantage of analytics capabilities elsewhere in the organization?

#### Event Dates

Brussels: 10 October 2017

*Eligibility: The most senior person whose primary responsibility is talent analytics, plus the head of HR; up to two attendees per organization*

### Talent Analytics Webinars

#### Improving Data Quality Through Standardization and Accountability

24 August | 2:00 p.m. AEST

#### Reshaping Your Talent Analytics Process to Enable Action

21 September | Noon EDT

27 September | 2:00 p.m. AEST

#### Building a Talent Analytics Team: The Skills and Partnerships Required

12 October | Noon EDT

30 October | 2:00 p.m. AEDT

#### What's Ahead for Talent Analytics: A Look into 2018

7 December | 2:00 p.m. AEDT

12 December | Noon EST

A photograph of two hikers on a mountain peak, silhouetted against a bright, hazy sky. The hiker in the foreground is lower on the slope, while the second hiker is higher up, closer to the summit. The overall color palette is warm, dominated by oranges and yellows.

## Hear from Your Peers

### Recent Webinars

#### **Innovative Uses for Text Analytics**

Learn about the prerequisites for conducting your first text-mining project, sources for gathering unstructured text-based data, and ways in which organizations are using text analytics to solve talent challenges.

#### **Driving Diversity & Inclusion Outcomes Through Analytics**

See how organizations use analytics to quantify and increase Diversity and Inclusion's impact on critical business outcomes.

#### **The State of Talent Analytics in 2017**

Hear about the key trends shaping talent analytics in 2017 and how to address them at your organization.

#### **Leader Analytics: Predicting How Leaders Will Perform in Context**

Learn how to generate relevant, data-driven insights on your organization's most valuable and effective resource: its leaders.

#### **Three Critical Obstacles to Creating Talent Analytics Capability**

Discover the foundational capabilities you need to manage data in HR and avoid inadvertent exposure to legal risks or invalid analyses.

### **About *Talent Analytics Quarterly***

We've heard your demand for more dedicated support on talent analytics. *Talent Analytics Quarterly*, our quarterly publication featuring business and functional insights for talent analytics leaders, is one of a series of new resources we have created to meet this demand.

### **Have feedback on what you see?**

Which articles in this publication did you find most helpful? Is there a topic or type of content you would like to see in future editions? Send your feedback on the *Talent Analytics Quarterly* to [TalentAnalyticsHelp@cebglobal.com](mailto:TalentAnalyticsHelp@cebglobal.com) today.