

Bilingual Visualization and Diversity in Hiring

Category: Digital Government: Government to Citizen

State: Illinois

Contact: Chris Britten, CMS CIO

Chris.Britten@illinois.gov

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EXECUTIVE SUMMARY

Central Management Services (CMS) undertook the Bilingual & Diversity in Hiring Visualizations project in Fall/Winter 2018 in order to present data in an actionable and transparent manner. Led by the newly-formed internal CMS Data Analytics Practice, the project served as a kick-start for CMS' use of data in decision-making.

Each year, CMS must complete one report on Bilingual Needs & Bilingual Pay, and three other Employment Plans for African American, Asian American, and Hispanic/Latino employees. These are completed in CMS' role as the state support for Personnel matters, which includes the diversity of the workforce and the accessibility of services offered by the State. These reports inform stakeholders, including staff who use them, to guide decision-making on recruiting, hiring, and compensation.

In order to meet the objective of 'actionable and transparent data', the project had three goals:

1. Provide the reports' data in a machine-readable format.
2. Produce interactive dashboards that would allow for data slicing and time series display.
3. Work with stakeholders to improve business questions and data acquisition.

Significant contributions were made towards NASCIO goals of digital government and data analytics. Within the state, the project supported Department of Innovation and Technology (DoIT) State Data Practice (SDP) standards and the SDP tool stack. It also supported the policy positions of the incoming Governor JB Pritzker, who prioritized diversity and equity in one of his transition reports for the state.

Completion of the project led to a transparent website with over 1800 aggregate dashboard views, and process savings of several days of processing time and several weeks of lead time. It also led to the deployment of SDP-standard resources within CMS, including Python, SQL server, and Tableau, and utilized the Open Data Portal.

Most significantly, the project presented data in a way that made it actionable, leading stakeholders to ask deeper questions, to demand higher quality data in the future, and to inform the objectives and procedures of diversity planning.

CONCEPT

Increasing the diversity of the state workforce is a key objective of Central Management Services (CMS), the administrative department of the State of Illinois. Diversity ensures equal employment opportunity and gives citizens a workforce that can respond to their needs in an inclusive manner.

Each year, CMS assists all state agencies through its completion of the Bilingual Needs and Bilingual Pay survey as well as three Employment Plans: African American, Hispanic/Latino, and Asian American. These plans also serve the respective Advisory Councils of public- and private-sector members who monitor the State's diversity progress.

In addition to policy guidance, these reports provide transparency to legislators and the public. The data collected from agencies is made public by law.

Despite the progress made through these plans, their implementation still faced challenges. Because of the way data was collected and processed, making comparisons year-over-year was labor intensive. It was often provided in static tables, which did not lend themselves to easily-understandable insights or slicing by agency.

In fall 2018, CMS began building the foundation for a Data Analytics Practice that could transform administrative data into actionable insights. As part of its development, CMS had begun to map the landscape of available data, including its personnel systems, as well as to craft visualizations. This provided an opportunity for the upcoming diversity reports to take greater advantage of the data that they collected.

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The work was completed using the personal services contract supporting the broader Data Analytics Practice project, at no additional cost to the agency. It jump-started technology adoption at CMS, including introducing a SQL Server for analytics, using Python for data cleaning, and embedding Tableau website displays.

The project was released to stakeholders and launched on the website at the end of December 2018. It continues to grow and evolve as stakeholders consider future needs. The project also serves as a model for future CMS initiatives and has been helpful for selling the concept of business intelligence to other CMS divisions.

SIGNIFICANCE

Benefits

Making CMS diversity data actionable benefits Illinois citizens. Approximately 8.88% of the Illinois population had Limited English Proficiency (LEP) in 2018, defined as individuals who do not speak English as their primary language, and who have a limited ability to read, write, speak, or understand English. The state is home to significant populations of African American (14.26%), Asian American (5.26%), and

Hispanic/Latino (16.82%) citizens. Governor JB Pritzker believes that every person in Illinois has a right to service in a language that they can understand and from a staff that reflects the diversity of the state.

Stakeholders

Achieving these goals requires a broad group of stakeholders. During the early 2000s, the Illinois Legislature created a set of Advisory Councils to provide oversight and advice to state hiring. In addition to private-sector appointed members of the Councils, major state agencies send *ex officio* members, often their Equal Employment Opportunity (EEO) officers. The Councils serve as a convening body to identify issues, set the agenda, and produce improvements in employment diversity.

Goal Alignment

When Governor JB Pritzker was elected in late 2018, he convened a transition committee for Equality, Equity, and Opportunity. This committee's charge was to lay out a path to "an Illinois where everyone has equal and equitable opportunity regardless of race, ethnicity, religion, gender, age, sexual orientation, gender identity, disability status, military status, pregnancy, employment status, family status, returning citizen status, language, housing status, zip code, or income."

This charge applies not only to private businesses in the state, but to public employment as well – a "government reflecting the full diversity of Illinois." Improving the Bilingual and Employment Plan reports directly responds to two of the Governor's charges.

First, the State is to "amend existing law and allocate funding to ... utilize an equity lens in decision-making and priority setting." The goal of both sets of reports is to ensure that Illinois citizens can be provided with services that fit their needs – not a one-size-fits-all approach that can leave some behind. The full text of this first recommendation also specifically encourages the use of data to plan funding allocations. The new reports allow CMS to provide agencies with time series data, which puts them in a better position to make decisions about their progress towards equitable staffing and funding.

Second, the State is to "enact and implement public policies that promote workplace fairness, equity, and sustainable economic opportunity for all Illinoisans." One business question of the employment plan reports regarded the 'hiring funnel'. An examination of the steps of the hiring process can determine if certain groups of applicants are falling off at any point (for example, the interview). Visualization of the data in a way that answers this question allows agencies to develop fairer hiring practices.

Another key business question we were able to answer was if agencies were in compliance with the State Services Assurance Act, which mandates a level of bilingual services that must be made available. These and other policies to provide equal opportunity were informed by the data provided by this project.

Completing our public data visualization also helped to advance NASCIO priorities here at the State. By making the data machine-readable and contextualizing it with visualization, CMS sets a model for a transparent digital government. It also promotes the use of technology in decision making. PDFs and tables are no longer the hallmark of a top-tier decision-making organization – digital presentation of data is key to improved outcomes.

Presenting the data digitally also meant the advancement of another NAISCO goal, Data Management and Analytics. While CMS is not yet prepared to adopt advanced analytics like machine learning, it is ripe for the expansion of business intelligence. Spreading data visualization helps drive home the idea that

data is no longer behind a veil of IT, called upon infrequently to build a table. Instead, it should be automatically available in visual format for consistent use.

Internally to the state, the project was aligned with IT goals. The DoIT State Data Practice has developed and procured a tool stack for data analysis and visualization, including Python, Tableau, PowerBI, and SQL Server. Through this initiative, CMS was able to pilot its use of this tool stack, demonstrating feasibility for future endeavors.

Scope

Initially, the scope of the project was simply to 'digitize' the survey responses. However, it developed into a more impactful initiative by creating a space for stakeholders to define and refine business questions. This broke new ground within the agency – CMS had not previously created and released a public Tableau visualization. Internal use of data visualization was also relatively new, so its use to examine and iterate business questions was a novel exercise.

Direct success for the project would look like citizen engagement with the data and dashboard, as well as Council decision-making based on the data. Indirectly, CMS would also like to see more widespread adoption of dashboards accompanying statutorily-required reports and the use of visualized data to guide decision-making.

IMPACT

CMS successfully completed the visualization of its data, providing four dashboards on its website:

- [Bilingual Needs & Bilingual Pay Survey](#)
- [African American Employment Plan](#)
- [Asian American Employment Plan](#)
- [Hispanic/Latino Employment Plan](#)

The data from these projects was also provided in a machine-readable format through the Illinois Open Data Portal:

- [Bilingual Needs & Bilingual Pay Data](#)
- [Employment Plan Data](#)

The visualizations have collectively been viewed over 1800 times by visitors to the CMS website. This represents a significant increase over views of the previous PDF reports, which were lightly downloaded. The usage of the open data has been low, but we believe this is due to the dashboards themselves, which give context to the data and make the actual dataset unnecessary to all but the most deeply interested parties.

The project was a successful use of contract time, not only because of the direct outcomes, but also because of the startup costs that it eliminated for other projects. As a result of building the dashboards, CMS was able to accelerate its timelines for obtaining a SQL server for analytics, which has since been used in 5 other projects. Additionally, it contributed the first sets of code to an internal Python library,

including standards for SQL connection and upload, data cleaning, and variable naming. Finally, the project also developed Standard Operating Procedures (SOPs) for Tableau usage, Open Data Portal usage, and embedding visualizations in a CMS website (including the development of accessibility standards). These knock-on benefits have greatly reduced the effort needed to get other projects off the ground.

This initiative also supported the goals of the State's Rapid Results program, which encourages process improvement and the elimination of waste. Previously, the lead time of survey processing was several weeks, during which data was cleaned and made into tables in Excel. This new process allows for the data to be ready in days, with much of the cleaning and visualization automated, reducing process time as well. Some minimal savings in paper were also achieved, since previously appendices of the raw data were delivered to stakeholders along with the reports.

One of the most important qualitative outcomes was engaging committee members and staff in a deeper analysis of their business questions. The dashboard was designed with each 'slide' of information as an answer to a particular business question. Often, these went through several rounds of revision to land on what was most significant for the committee to know. This engagement would not have been possible without the new flexible data, software, and process.

Reviewing the business questions will also lead to future enhancements of the report. The visual format of the data made it easier to determine what could and could not be answered by the available data. This new knowledge will serve the committee well in the future – it has kicked off an effort to gather new survey data and to incorporate already extant administrative data. The engagement from this project has sparked a cycle of innovation around the future use of data.

Some of the new findings from existing data that were made possible in this new report include:

- Identifying agencies that were out-of-compliance with state law
- Determining the number of LEP customers per bilingual employee
- Tracking bilingual position vacancies over time
- Viewing the hiring funnel for inequities at different points in the process
- Comparing the geographic distribution of the population, labor force, and state labor force of the diversity subgroups

Because the dashboards were designed specifically to answer a business question, the data is presented in a way that makes it actionable – for example, identifying locations in the state that are struggling to hire at parity with their population. Actionable data lowers the barrier to outreach – and in fact, the Councils have used this data to reach out to State agencies with specific asks regarding agency practices. It is this area that will lead to gains in the long run as agencies enact their plans and examine the data for impact. CMS plans to continue expanding these diversity dashboards and build towards further success.