DATA ANALYSIS TO STRENGTHEN CUSTOMER EXPERIENCE

General Services Administration | Office of Customer Experience

Amy Qiao, Data Analyst Fellow | *Brown University, Mathematics & Computer Science*

Keywords:

statistical analysis, data analysis, data visualization

Summary:

To inform leadership on how to strengthen the customer experience at GSA, Amy conducted statistical analysis and created data visualizations for two major GSA surveys using R, Python, and Tableau. With these insights, GSA can make incremental improvements to the way buyers and suppliers interact with the agency. In addition, Amy created data documentation resources including a data dictionary and methodology guides to inform stakeholders about survey data and to serve as a resource for the OCE team.

DATA ANALYSIS TO STRENGTHEN CUSTOMER EXPERIENCE

Office of Customer Experience
General Services Administration
Genevieve Christensen — Data Analyst

coding it forward >

GSA

AMY QIAO
Brown University
Sc.B. Mathematics & CS

CONTEXT

OFFICE OF CUSTOMER EXPERIENCE @ GSA

- GSA provides services to employees, agencies, suppliers, and the American public
- OCE's mission is to improve end-to-end experience of GSA customers by aligning operations to customer needs

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CONTEXT

PROJECT BACKGROUND

- Two major surveys for an organization in GSA that measure customer loyalty & industry satisfaction
  - Customers are individuals from federal, state, local, & tribal governments who obtain goods & services
  - Industry is businesses/individuals/organizations who supply goods & services
- Stakeholders: organization leadership

Why is this important: Provides insights needed for leadership to strengthen customer experience (CX) at GSA, making incremental improvements to the way buyers and suppliers interact with the agency

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Goal & Purpose

Deliver **statistical analysis** and **data visualization** for two major GSA surveys to **inform** leadership on how to **strengthen CX**

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STATISTICAL ANALYSIS

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STATISTICAL ANALYSIS

COMPUTATIONAL ANALYSIS

Scores

Datasets w/ scores

Margin of error, regression coefficients, & significant differences

FY24 vs. FY23 report

Tools


R


RStudio


Python


scikit-learn


Tableau

Documentation

Create well-documented & repeatable code

Methodology of statistical analysis w/ examples

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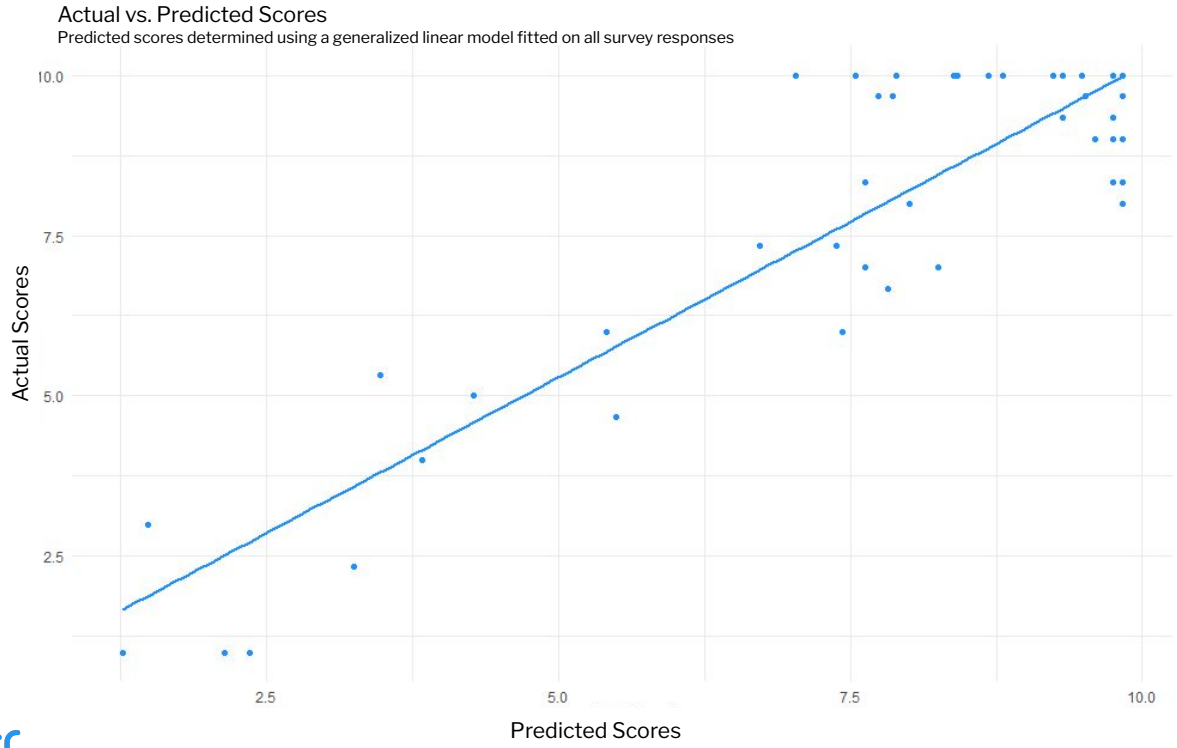
STATISTICAL ANALYSIS

PREDICTIVE ANALYSIS



Using a generalized linear model, we can determine if programs performed as predicted based on prior data & predictor variables

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DATA DOCUMENTATION

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CREATING REPEATABLE CODE

Documentation to ensure reproducibility

- Thorough function comments
- Clearly note changes
- Establish consistent data practices
- README

```r
# HELPER FUNCTION: calculate margin of error given data
moe_helper <- function(data) {
  # moe w/ z-value of 1.96 for 95% confidence
```

```r
# NOTE: The helper function below automatically checks for significant
# differences in FY24 & FY23 data using both Welch's 2 Sample T-test & the
# Wilcoxon test. Individual tests are still included below for labeling
# purposes, but the helper function can be used instead.

# HELPER FUNCTION: check for significant differences of scores between FY24
sig_checker <- function(data.24, data.23) {
```

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DATA DOCUMENTATION

DATA DICTIONARY

OCE Survey Data Dictionary

Name	Description	Data Type	Format
Example	This is an example description.	Numeric	1-100

OCE Data Dictionary- FAQ

FAQ	Methodology/Description
Example	Example Methodology

Data Dictionary

- Name, description, data type, format, units, source, etc. on survey data
- Annual update to maintain

Purpose

- Inform stakeholders on survey data
- Resource for OCE team

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QUANTIFYING CX

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HOW TO QUANTIFY CX

Satisfaction vs. Loyalty

- Both scores are important
- Standard of CSAT (customer satisfaction) scores
- Loyalty can help us understand customer satisfaction

Response Rate Methodology

- Calculate using AAPOR's* Standard Definitions Report
- Ensure meaningful sample sizes

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*AAPOR stands for the American Association for Public Opinion Research

NEXT STEPS

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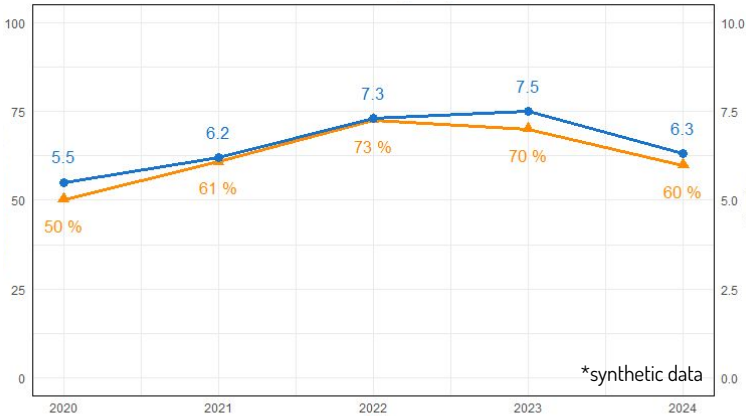
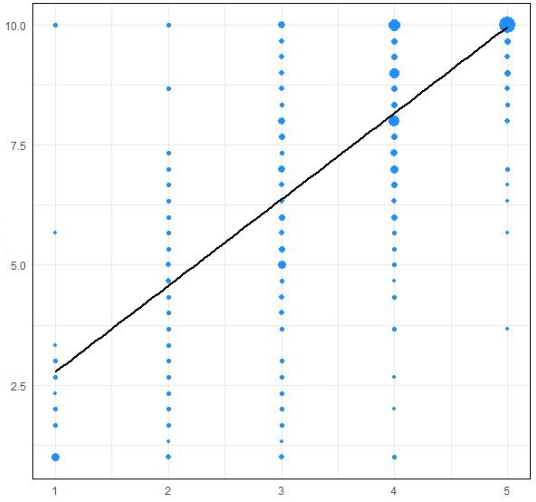
NEXT STEPS

FUTURE DIRECTION

FY25 Surveys

- Helper functions to streamline graph-making process for future iterations of survey
- Allow more time to focus on new data analysis
- New methodology





THANK YOU

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