DATA ACADEMY
FROM THE OFFICE OF PERFORMANCE MANAGEMENT
Since the last class, how have you applied these concepts to your own work?
Agenda

1. Telling a Story with Data
   - Know Your Story
   - Find Your Visual
   - Communication Mechanisms

2. Effective Visuals
   - “Your Charts Suck”
   - Presentation Design

3. Frameworks for Data-Driven Improvement
   - What’s a Framework?
   - How to Improve Your Frameworks
   - “PerformanceStat”
TELLING A STORY WITH DATA
Major Resource: Storytelling with Data

- Blog (storytellingwithdata.com) and a book from previous manager at Google, Cole Nussbaumer Knaflic
Figuring Out Your Story

1) AUDIENCE
   To whom are you telling it?

2) STORY
   What is the story you are telling with your data?

3) VISUAL + COMMUNICATION METHOD
   How can you best tell it?
The “Who”

Quick brainstorm: who are audiences that you engage with?

Ways in which audiences differ from one another:
• Background/experience with the topic
• Level and type of technical understanding
• Level and type of interest
• **Type of action that they can take**
The “What”

What information are you trying to convey from your data, and to what end for your audience?

Or:

What is the point of this chart?
Frequent Problems in Figuring Out the “What”

I’ve done a lot of analysis, but am **not sure yet what the story is.**

- You are still in the “exploratory analysis” phase
- Come back when you have explanatory analysis

**I don’t need to figure out the story** because I always create the same set of charts.

- Option 1: You have already set your story
- Option 2: Your charts are currently operating without a story
- Either way, a conscious focus on the story will help you improve

**It’s not my job** to decide what the story is. That’s above my pay grade.

- YES, IT IS! You are the subject matter expert for your data, which means it is your responsibility to convey it in a meaningful way
- Telling a story does not mean overstepping your bounds
The “Who” and the “What” in Practice

**What is the story of the 2016 ElevateKC Employee Survey results?**

<table>
<thead>
<tr>
<th>City Manager</th>
<th>Department Directors/Deputies</th>
<th>Cross-Functional Work Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The City’s overall progress since 2014</td>
<td>• My department’s progress compared to 2014</td>
<td>• Progress in strategic areas compared to 2014</td>
</tr>
<tr>
<td>• Citywide trends across departments</td>
<td>• My department’s progress compared to other departments</td>
<td>• Topic area outliers (positive/negative) to be aware of</td>
</tr>
<tr>
<td>• Departmental outliers (positive/negative) to be aware of</td>
<td>• My department’s levels compared to other departments</td>
<td>• Benchmarking (comparison to other cities)</td>
</tr>
<tr>
<td>• Strategic areas in need of attention</td>
<td>• Topic area outliers (positive/negative to be aware of)</td>
<td>• Reach of survey and participation rate</td>
</tr>
<tr>
<td>• Benchmarking (comparison to other cities)</td>
<td></td>
<td>• Knowledge base of employees for programs</td>
</tr>
</tbody>
</table>
The “How” – Selecting a Visual

A handful of visuals will serve almost all of your needs:

- Text
- Table
- Vertical bar graph (column)
- Horizontal bar graph
- Line graph
Text: When and Why to Use

What is it good for?
– When you have only a few numbers to work with
– When your point can be summarized easily with one number

From 11.1.16 Public Safety KCStat

Specialty Court Volume

From May 01, 2016 to present:

- 117 • Screened for Specialty Court
- 101 • Recommended
- 84 • Entered
Text-Based Visual Example

Tool: Visme, simple design software used by our office

Other tools/resources:
• SmartArt in Powerpoint
• City Communications staff or other design professionals
What is it good for?

– Non-numerical presentations of data
– Mixed audiences who each want to see different elements within the data
– Presenting multiple units of measure
– Can shade for visual cues
# Infrastructure: Priorities by Council District

<table>
<thead>
<tr>
<th>Question</th>
<th>Citywide</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
<th>D6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of city streets</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Condition of sidewalks in the city</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Snow removal on residential streets</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Maintenance of streets in your neighborhood</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Condition of sidewalks in your neighborhood</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>On street bike infrastructure</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Accessibility of streets/infrastructure for people with disabilities</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Snow removal on major city streets</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Adequacy of city street lighting</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Maintenance of traffic signs &amp; signals</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
Vertical Bar Graph (Column Chart): When and Why to Use

What is it good for?

– Time series
– Ranking
– Part to whole
– Distribution
– Comparison of nominal values
– Stacked column can show categories within categories, or as proportions (100% stacked)
– Virtually everything!

Outcomes for Animal At Large Calls

From 11.1.16 Public Safety KCStat
### Examples of Vertical Stacked Bar Charts

#### Homicides due to Group Related Violence

<table>
<thead>
<tr>
<th>Year</th>
<th>Group Related</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>36</td>
<td>46</td>
</tr>
<tr>
<td>2015</td>
<td>47</td>
<td>63</td>
</tr>
<tr>
<td>2016 (YTD)</td>
<td>13 TBD</td>
<td>37</td>
</tr>
</tbody>
</table>

Calendar year

Source: KC NoVA

### From 11.1.16 Public Safety KCStat

#### Satisfaction with Effectiveness of Police Protection by Victims/Non-Victims of Crime

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes (14%)</th>
<th>No (85%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>90%</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>80%</td>
<td>27%</td>
<td>45%</td>
</tr>
<tr>
<td>70%</td>
<td>33%</td>
<td>16%</td>
</tr>
<tr>
<td>60%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Citizen Survey FY2016
Horizontal Bar Graph (Bar Chart): When and Why to Use

What is it good for?
• Charts where labels are very long
• Ranking
• Part to whole
• Distribution
• Comparison of nominal values
• Stacked bar can show categories within categories, or as proportions (100% stacked)
• Almost as much as the vertical bar chart!

Reason for Being at Airport

- I am a departing passenger: 21,712
- I am an arriving passenger: 4,008
- I am a connecting passenger: 2,166
- I am picking up (or dropping off someone): 1,034

Source: Aviation Department
Example of Horizontal Stacked Bar Chart

Citizen Satisfaction With Emergency Medical Services By Users Of Service

Source: Citizen Survey, FY2016 (kcostat.kcmo.org)
Line Graph: When and Why to Use

What is it good for?

– Time series
– Time series comparison between categories
– Comparing to a target

From 11.1.16
Public Safety
KCStat

Animal Shelter Live Release Rate

Source: Animal Health and Public Safety Division monthly report

Crimes Against Property by Youth (Arrested Offenders)

Source: KCPD
Other Visuals

Slopegraph

- Signs and Signals
- Streetlighting

Public Transportation
- ADA Accessibility
- Neighborhood Streets
- Neighborhood Sidewalks
- Bike Infrastructure
- Streets
- Sidewalks

Bullet Graph

Water Usage Chart By BiMonthly Billing Cycle
- Previous Year Consumption
- Current Year Consumption

Usage in Cubic Feet

- JAN/FEB
- MAR/APR
- MAY/JUN
- JUL/AUG
- SEP/DEC
- NOV/DEC

From 9.18.17 Infrastructure and Transportation KCStat

Visuals to avoid

- Pie charts
- Donut charts
- 3-D charts
- Anything that is too complicated for your audience to understand

But Why?

All of these visuals rely on the human brain to interpret arcs or angles that are harder for them to handle.
The “How”: Selecting a Communication Method

- **Powerpoint** presentations are the most flexible and easy to create charts within, while also including other context, and can easily be shared.
- **Word** documents are good if you need a great deal of text narrative surrounding your visuals.
- **Excel** spreadsheets can be difficult because it is tough to provide a flow or direction to the narrative.
- As a rule of thumb, **assume that your document or presentation will need to stand on its own**, without you there:
  - This requires attention to the level of detail: too much will overwhelm the story, but not enough will lose the story.
  - One option: annotate slides.
1,140 units of affordable housing are expiring in the next five years in the Downtown area. This represents a 41% decline from the 2,759 units that are currently affordable, assuming no new units are added.

From 1.16.18 KCStat on Housing; Data Source: Downtown Council