Data Visualization for Decision Making
RIPL Webinar Series
March 13, 2019
2:00-3:00 Eastern/11:00-12:00 Pacific

Our Intentions
- Improve understanding of the value of data in libraries for decision making
- Strategize techniques to turn raw data into actionable information
- Share lessons learned and ideas for how data visualization can help your organization

Who are we?
Katina Jones,
Statistical Research Analyst
Mid-Continent Public Library
Manages strategic plan metrics and evaluation of grant programs
Compiles monthly and annual library and community data reports
Presents quarterly to Library Board and monthly to library management

Who are we?
Lindsay Hanson,
Data Analysis Librarian
Sno-Isle Libraries
Manages metrics and evaluation for Public Services
Survey & research design
Provides analyses and visualizations for service managers
Data Visualization

Data visualization is a way to communicate findings as clearly and succinctly as possible. It leverages our visual memory rather than focusing on text.

Why “data visualization for decision-making?”

Inform a one-time or repeat decision
Can explore organizational efficiency, leading to policy innovation
Not necessarily intended for public consumption

Examples from Mid-Continent Public Library

Utilizing Data Already Available to You
- Visualizing data with Excel – trends and year-over-year
- How should data containing patron barcodes be used?

Collecting Actionable Data with Surveys
- Asking the right questions
- Cross-tabulating results

Using Excel: Trend Data

Best used with one data point, comparing months and years.
Aids in visualizing the ebb and flow of monthly circulation.
Aids understanding of how changes in programs or services affect the data.

Using Excel: Rolling 13 Months

Year-over-year comparison, plus what happened in between.
Good for comparing like data points (e.g., virtual materials).
Has a left and right axis so all data can be seen in one chart.

Using Excel: Year Over Year Change

<table>
<thead>
<tr>
<th>February 2019</th>
<th>Mid-Continent Public Library Result of Physical &amp; Virtual Circulation in Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Circulation</td>
<td>February 2019: 497,387</td>
</tr>
<tr>
<td>Total Physical Circulation</td>
<td>February 2019: 325,393</td>
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<tr>
<td>Total Virtual Circulation</td>
<td>February 2019: 171,994</td>
</tr>
<tr>
<td>Audiovisual Kids</td>
<td>February 2019: 38,500</td>
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<tr>
<td>Audiovisual teens</td>
<td>February 2019: 21,000</td>
</tr>
<tr>
<td>Audiovisual non-fiction</td>
<td>February 2019: 12,000</td>
</tr>
<tr>
<td>Printed Music Video</td>
<td>February 2019: 300</td>
</tr>
<tr>
<td>Print DVDs</td>
<td>February 2019: 1,500</td>
</tr>
<tr>
<td>Downloaded Music</td>
<td>February 2019: 8,000</td>
</tr>
<tr>
<td>Library Wi-Fi Hotspot and Lap Drop</td>
<td>February 2019: 9,000</td>
</tr>
</tbody>
</table>
Using Excel: Rolling 13 Months

Using Excel: Branch Specific Trends

Using Data with Patron Barcodes

- Pivot Tables are your friend!
- Names need not be involved.
- Aids in understanding the age old question:
  - Is the decrease in circulation because we have fewer customers or are customers checking out fewer items?
- Request vendors provide usage data with barcodes.

Collecting Actionable Data with Surveys

- Ask the right questions:
  - Obtaining actionable data requires asking questions on which action can be taken.
  - Asking “easy” questions will give you talking points for speeches and press releases, but not actionable data.
- Ask questions that can be cross-tabulated:
  - Yes, we need those demographic questions...
  - Yes we need to ask them which branch they use...

Cross-Tabulating Survey Data

- If the Library’s hours of operation were extended, how often do you think you would take advantage of those extra hours?

Examples from Sno-Isle Libraries

- Operational Report
- Programming Support and Evaluation
- Service Plan Metrics Visualization
- Analytics on Demand Report
- eBook Survey
Examples from Sno-Isle

Examples from Sno-Isle

Examples from Sno-Isle

Examples from Sno-Isle

Tips: Start with good data!
- Anticipate future reporting needs
- Think longitudinally – gather data that can be compared over time
- Work with other data owners (IT, Systems Librarian, etc.)
- Make a data dictionary! Define your data.

Tips: Know your data!
- How are the data collected?
- What is missing from the data?
- What columns are present in your data?
- Consult with the domain expert
What happens if you don’t know your data...

Domain knowledge helps identify data issues

Tips: With data viz powers comes great responsibility!

Pass: Print Test

Fail: Print Test
Say No to 3D

Don’t Confuse
Correlation for Causation

Don’t Confuse
Correlation for Causation

Lessons Learned
Always ask - “What decision are you trying to make?”
Decision-making is more challenging without organizational metrics
Data “owners”/domain experts need to inform viz
Beauty = Believability

What is good data visualization customer service?
Results: Number and type of customers to redirect

| CUSTOM          | ALTITUDE      | ELEVATION      | EXCLUSION | DIGITALIZATION | PLATTEVALLEY | MESQUITE | Active Customers for Redirect
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Main Branch</td>
<td>790 20%</td>
<td>515 15%</td>
<td>390 12%</td>
<td>150 10%</td>
<td>750 15%</td>
<td>500 10%</td>
<td>2,800</td>
</tr>
<tr>
<td>Page Branch</td>
<td>300 10%</td>
<td>600 15%</td>
<td>450 15%</td>
<td>100 10%</td>
<td>350 15%</td>
<td>300 10%</td>
<td>1,350</td>
</tr>
<tr>
<td>Map Branch</td>
<td>1,200 20%</td>
<td>800 15%</td>
<td>450 15%</td>
<td>150 10%</td>
<td>750 15%</td>
<td>500 10%</td>
<td>3,800</td>
</tr>
<tr>
<td>Main Office</td>
<td>100 10%</td>
<td>400 15%</td>
<td>350 15%</td>
<td>50 10%</td>
<td>250 15%</td>
<td>150 10%</td>
<td>1,200</td>
</tr>
<tr>
<td>Main Store</td>
<td>500 10%</td>
<td>600 15%</td>
<td>450 15%</td>
<td>100 10%</td>
<td>350 15%</td>
<td>300 10%</td>
<td>1,350</td>
</tr>
<tr>
<td>Main Shop</td>
<td>1,200 20%</td>
<td>800 15%</td>
<td>450 15%</td>
<td>150 10%</td>
<td>750 15%</td>
<td>500 10%</td>
<td>3,800</td>
</tr>
<tr>
<td>Main University</td>
<td>150 10%</td>
<td>350 15%</td>
<td>500 15%</td>
<td>250 10%</td>
<td>125 15%</td>
<td>50 10%</td>
<td>750</td>
</tr>
<tr>
<td>Main Mall</td>
<td>500 10%</td>
<td>600 15%</td>
<td>450 15%</td>
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<td>500 10%</td>
<td>3,800</td>
</tr>
</tbody>
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**Data for week ending 3/31/2018**

Number of customers to redirect: 1,250, 1,500, 1,750, 2,000

Results: Alternate Branch Locations

Upcoming Webinars

**Voter Perceptions of Libraries: Results and Methodology of the 2018 From Awareness to Funding Study**
May 23, 2019: 2:00-3:00 Eastern/11:00-12:00 Pacific
Sharon Streams (WebJunction, OCLC), Janet Hawk (Market Analysis, OCLC), Peggy Gallagher (Market Analysis, OCLC)

**Power Up Reports with Google**
September 24, 2019: 1:00-2:00 Eastern/10:00-11:00 Pacific
Lynn Hoffman, Somerset County Library System of New Jersey

Resources

Thank you!

Katina Jones - katinajones@mymcpl.org, 816.521.7218
Lindsay Hanson - lhanson@sno-isle.org, 360.651.7000

Storytelling with Data

Community of Practice
Thank You!

Webinar evaluation:
https://s.lrs.org/data_decision