

Fierce Data Analytics: Moving from Fear and Uncertainty to Analyzing Data with Ferocity!

Presented by the
**OPLA Research &
Evaluation Committee**

January 29, 2020

ONTARIO LIBRARY ASSOCIATION

*Super
Conference*



OPLA Research & Evaluation Committee

Presenting:

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Additional OREC Committee Members:

Anne Donnellan, Professor, Library and Information Techniques Program, Durham College

Erika Heesen, CEO/Chief Librarian, Perth & District Union Public Library

Jessica Rovito, Planning Specialist, Toronto Public Library

Rebecca Hunt, Library CEO/Head Librarian, City of Temiskaming Shores Public Library

OLA Staff Member:

Sarah Roberts, Advocacy & Research Officer



Fierce Data Analytics

Agenda

- Why do we need data anyway?
- Quantitative vs qualitative
- Joy of Pivot Tables & spreadsheet tips
- Visualize This!
- A Story in Charts
- Hot topic interactive poll
- Resources

Dropbox link

Download this presentation and data files at:

<http://bit.ly/REC-OLA2020>

Why do we need data anyway?

Short answer:

Libraries must prove
their value

- Economically
 - Societally
 - Culturally

Support the Library's Mission
and Strategic Plan

Why do we need data anyway?

Since the late 1980s, throughout the Western world, there is greater emphasis on applying business principles in the public sector:

- New Public Management (Irwin)
 - Economic bottom-line
 - Cost-effectiveness
 - Strong business plans/cases
- Economic impact studies

Data can help build the case to **funders** and **stakeholders** not only to demonstrate value, but help build the case for more funding.

Why do we need data anyway?

...to demonstrate value, evaluation of programs and services is supported by strong data.

- Moving beyond outputs; moving towards outcomes
 - How is the library making a societal difference?
 - The outcome/benefit for the library user.
 - Not just collecting data, but telling the right story with it.
- Effort to better demonstrate the social impact of libraries, which is often undervalued (Yarrow)
- Better decision-making: programming and service decisions based on strong Returns on Investment (ROI) (economic and in terms of benefit for library users)

[Link to Library Impact Studies](#) [Project Outcome](#) [Bridge](#)

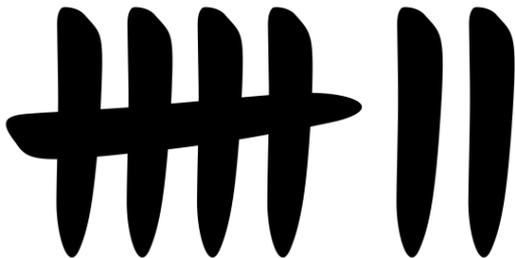


∴ ontario public library association

Quantitative vs. Qualitative

Types of Data:

- Two main types:
- 1) Quantitative: numbers
- 2) Qualitative: words & behaviours

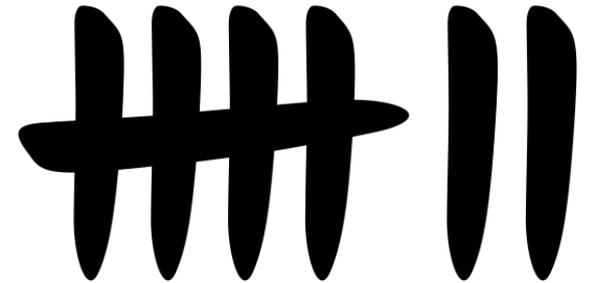


Quantitative vs. Qualitative

Quantitative Data:

- Aim: objective
- Test a theory
- Collection: measurement
- Analysis: comparisons and stats

- Pro: scientifically objective and quick analysis
- Con: no explanation of why and need large sample size



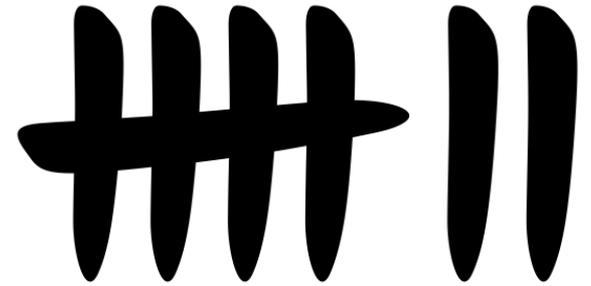
Quantitative vs. Qualitative

Quantitative Data Collection:

- Experiments
- Controlled observations
- Questionnaires (rating scales, closed questions)

Quantitative Data Analysis:

- Descriptive statistics
- Inferential statistics



Quantitative vs. Qualitative

Qualitative Data:

- Aim: answer why and how
 - Participants own words
 - Uncover trends and dive deeper
 - Collection: participant observation and interviews
 - Analysis: themes and descriptions
-
- Pro: gain insider view
 - Con: time and cost = low data set



Quantitative vs. Qualitative

Qualitative Data Collection:

- Interviews and focus groups
- Open ended questions
- Participant observation
- Case study

Qualitative Data Analysis:

- Content analysis / text mining
- Thematic analysis



Quantitative vs. Qualitative



Example: Studying Ice Cream Flavours

- **Quantitative:** What type of ice cream do you prefer:
 - a) chocolate
 - b) vanilla
- Responses: count

- **Qualitative:** What is your favourite type of ice cream:
- Responses: unlimited, code for themes

Quantitative vs. Qualitative

Example: Studying Library Programs



- **Quantitative:** Are you currently satisfied with your library's program offerings?
 - extremely satisfied, very satisfied, satisfied, somewhat satisfied, not at all satisfied
- Closed ended, responses: count on Likert scale
- **Qualitative:** What sorts of programs at the library would make you satisfied?
- Open ended, responses: unlimited, code for themes

Quantitative vs. Qualitative

Theming Qualitative Data



● ***ALA's Libraries Transforming Communities: What do you want in your community?***

<ul style="list-style-type: none">● Want a safe community● Want a vibrant community, especially downtown● Has kids and wants things for them to do● Wants a friendly community, compassionate, caring● Know people you live with● Want to be able to go out on a date in town and be able to walk there, have to go out of town now● Want to live in a vibrant (bustling) place with lots of community activities● Want to have things happening● Activities to get people out of their house● Shops and activities for young people● Busy community, when it's busy it's more safe● Community that helps each other, look out for your neighbours, more safe● Need stores and activities for young people and kids● Want a quiet community	<ul style="list-style-type: none">● Safe, inclusive, accessible, welcoming, prosperous, and affordable community● Safe, kind, inclusive, where everyone feels welcome● Can walk down the street without being judged● Community with mixed population/ages● Where things are happening/fun things to do● Involved/active● Vibrant main street● A place where all community needs are met● Viable – economically● Welcoming, especially of outsiders/immigrants● Peaceful, with no prejudices● More things to do for young people & young adults● Friendly● Safe● Lots to do for kids and young families	<ul style="list-style-type: none">● Want a friendly community● Want a safe community● Comfortable community● Where people care about each other● A community that communicates with each other● Small town charm● Things to do, events● Open minded● Proactive community, make things happen● Self-contained, have everything we need (medical/ education/ social/ economic)● Invest in the future● Feel part of the community● Lots of opportunities/activities for young people/kids● Welcoming for both long-time residents and newcomers● All services/supports available locally● Helpful - help your neighbours● Diverse population● Accessible events (not cost prohibitive)● Welcoming● Accepting● Friendly for all ages	<ul style="list-style-type: none">● Active/busy community with lots to do for kids and adults● A small community, where people care for each other● Lots of amenities and community events● Open-minded● Lots of different activities● Peaceful, quiet, nice neighbours● Vibrant, stuff happening● Lots of arts oriented/culture● Friendly - get help when needed● Resources - services● Community events● Vibrant - a lot of activities, jobs, healthcare● Want more jobs, industry● Involvement of community members to keep it active● People know you walking down the street● Have lifelong friends here, support● Vibrant safe main street● Want fun activities● Lots of different things for kids to do - close by, no travel needed● Group activities to meet people● Family focused
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Quantitative vs. Qualitative



Theming Qualitative Data

- What are people trying to say?
- Larger themes?
- Patterns, groupings?

<ul style="list-style-type: none"> ● Want a safe community ● Want a vibrant community, especially downtown ● Has kids and wants things for them to do ● Wants a friendly community, compassionate, caring ● Know people you live with ● Want to be able to go out on a date in town and be able to walk there, have to go out of town now ● Want to live in a vibrant (bustling) place with lots of community activities ● Want to have things happening ● Activities to get people out of their house ● Shops and activities for young people ● Busy community, when it's busy it's more safe ● Community that helps each other, look out for your neighbours, more safe ● Need stores and activities for young people and kids ● Want a quiet community 	<ul style="list-style-type: none"> ● Safe, inclusive, accessible, welcoming, prosperous, and affordable community ● Safe, kind, inclusive, where everyone feels welcome ● Can walk down the street without being judged ● Community with mixed population/ages ● Where things are happening/fun things to do ● Involved/active ● Vibrant main street ● A place where all community needs are met ● Viable – economically ● Welcoming, especially of outsiders/immigrants ● Peaceful, with no prejudices ● More things to do for young people & young adults ● Friendly ● Safe ● Lots to do for kids and young families 	<ul style="list-style-type: none"> ● Want a friendly community ● Want a safe community ● Comfortable community ● Where people care about each other ● A community that communicates with each other ● Small town charm ● Things to do, events ● Open minded ● Proactive community, make things happen ● Self-contained, have everything we need (medical/ education/ social/ economic) ● Invest in the future ● Feel part of the community ● Lots of opportunities/activities for young people/kids ● Welcoming for both long-time residents and newcomers ● All services/supports available locally ● Helpful - help your neighbours ● Diverse population ● Accessible events (not cost prohibitive) ● Welcoming ● Accepting ● Friendly for all ages 	<ul style="list-style-type: none"> ● Active/busy community with lots to do for kids and adults ● A small community, where people care for each other ● Lots of amenities and community events ● Open-minded ● Lots of different activities ● Peaceful, quiet, nice neighbours ● Vibrant, stuff happening ● Lots of arts oriented/culture ● Friendly - get help when needed ● Resources - services ● Community events ● Vibrant - a lot of activities, jobs, healthcare ● Want more jobs, industry ● Involvement of community members to keep it active ● People know you walking down the street ● Have lifelong friends here, support ● Vibrant safe main street ● Want fun activities ● Lots of different things for kids to do - close by, no travel needed ● Group activities to meet people ● Family focused
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Quantitative vs. Qualitative



Theming Qualitative Data

● Possible theme: vibrant

<ul style="list-style-type: none">● Want a safe community● Want a vibrant community, especially downtown● Has kids and wants things for them to do● Wants a friendly community, compassionate, caring● Know people you live with● Want to be able to go out on a date in town and be able to walk there, have to go out of town now● Want to live in a vibrant (bustling) place with lots of community activities● Want to have things happening● Activities to get people out of their house● Shops and activities for young people● Busy community, when it's busy it's more safe● Community that helps each other, look out for your neighbours, more safe● Need stores and activities for young people and kids● Want a quiet community	<ul style="list-style-type: none">● Safe, inclusive, accessible, welcoming, prosperous, and affordable community● Safe, kind, inclusive, where everyone feels welcome● Can walk down the street without being judged● Community with mixed population/ages● Where things are happening/fun things to do● Involved/active● Vibrant main street● A place where all community needs are met● Viable – economically● Welcoming, especially of outsiders/immigrants● Peaceful, with no prejudices● More things to do for young people & young adults● Friendly● Safe● Lots to do for kids and young families	<ul style="list-style-type: none">● Want a friendly community● Want a safe community● Comfortable community● Where people care about each other● A community that communicates with each other● Small town charm● Things to do, events● Open minded● Proactive community, make things happen● Self-contained, have everything we need (medical/ education/ social/ economic)● Invest in the future● Feel part of the community● Lots of opportunities/activities for young people/kids● Welcoming for both long-time residents and newcomers● All services/supports available locally● Helpful - help your neighbours● Diverse population● Accessible events (not cost prohibitive)● Welcoming● Accepting● Friendly for all ages	<ul style="list-style-type: none">● Active/busy community with lots to do for kids and adults● A small community, where people care for each other● Lots of amenities and community events● Open-minded● Lots of different activities● Peaceful, quiet, nice neighbours● Vibrant, stuff happening● Lots of arts oriented/culture● Friendly - get help when needed● Resources - services● Community events● Vibrant - a lot of activities, jobs, healthcare● Want more jobs, industry● Involvement of community members to keep it active● People know you walking down the street● Have lifelong friends here, support● Vibrant safe main street● Want fun activities● Lots of different things for kids to do - close by, no travel needed● Group activities to meet people● Family focused
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Quantitative vs. Qualitative



Theming Qualitative Data

● Possible theme: friendly and welcoming

<ul style="list-style-type: none">● Want a safe community● Want a vibrant community, especially downtown● Has kids and wants things for them to do● Wants a friendly community, compassionate, caring● Know people you live with● Want to be able to go out on a date in town and be able to walk there, have to go out of town now● Want to live in a vibrant (bustling) place with lots of community activities● Want to have things happening● Activities to get people out of their house● Shops and activities for young people● Busy community, when it's busy it's more safe● Community that helps each other, look out for your neighbours, more safe● Need stores and activities for young people and kids● Want a quiet community	<ul style="list-style-type: none">● Safe, inclusive, accessible, welcoming, prosperous, and affordable community● Safe, kind, inclusive, where everyone feels welcome● Can walk down the street without being judged● Community with mixed population/ages● Where things are happening/fun things to do● Involved/active● Vibrant main street● A place where all community needs are met● Viable – economically● Welcoming, especially of outsiders/immigrants● Peaceful, with no prejudices● More things to do for young people & young adults● Friendly● Safe● Lots to do for kids and young families	<ul style="list-style-type: none">● Want a friendly community● Want a safe community● Comfortable community● Where people care about each other● A community that communicates with each other● Small town charm● Things to do, events● Open minded● Proactive community, make things happen● Self-contained, have everything we need (medical/ education/ social/ economic)● Invest in the future● Feel part of the community● Lots of opportunities/activities for young people/kids● Welcoming for both long-time residents and newcomers● All services/supports available locally● Helpful - help your neighbours● Diverse population● Accessible events (not cost prohibitive)● Welcoming● Accepting● Friendly for all ages	<ul style="list-style-type: none">● Active/busy community with lots to do for kids and adults● A small community, where people care for each other● Lots of amenities and community events● Open-minded● Lots of different activities● Peaceful, quiet, nice neighbours● Vibrant, stuff happening● Lots of arts oriented/culture● Friendly - get help when needed● Resources - services● Community events● Vibrant - a lot of activities, jobs, healthcare● Want more jobs, industry● Involvement of community members to keep it active● People know you walking down the street● Have lifelong friends here, support● Vibrant safe main street● Want fun activities● Lots of different things for kids to do - close by, no travel needed● Group activities to meet people● Family focused
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Quantitative vs. Qualitative



Theming Qualitative Data

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- Summary of theming: ***Want to live in a vibrant place that is friendly and welcoming***

Don't get dirty

Before

En francais s'il vous plait
En Français Sîl Vous Plaît
En Française Sîl Vous Plaît
En francais s'il vous plait
En Français Sil Vous Plaît
En Francais, S'il Vous Plait
En Francais, S'il vous Plait!
En Française Sîl Vous Plaît

After

Please choose program title from drop down list: *

Choose

- After Hours Study Hall
- Baby Storytime
- Book Bingo
- Brampton Writers' Guild
- Bring Your Own Device
- Class Visit in branch
- Coffee 'n' Code
- Computer Basics and Beyond (English)
- Computer Basics and Beyond (HPU)
- Colouring and Conversation
- Cryptocurrency/Bitcoin Meetup (CH Only)
- e-Learning: Educate Yourself for Free
- Excel and Spreadsheets

The Joy of Pivot Tables

Was this program	In which branch	Please choose program/title from drop down list:	Please	Please choose t	Please choose t	Please enter the	Time of Day	Weekday	Month	Quarter	Branch and	Age Group	In H
In Branch	SP	Games Café (SP)		11:00:00 AM	2:00:00 PM	0	Morning	Friday	May	2	SP	All Ages	In H
In Branch	SP	Senior Series		1:39:00 PM	3:00:00 PM	43	Afternoon	Thursday	May	2	SP	Seniors	In H
In Branch	SF	Family Storytime		10:30:00 AM	11:00:00 AM	12	Morning	Saturday	May	2	SF	Children 0-6 & th	In H
In Branch	GM	Family Storytime		11:00:00 AM	11:30:00 AM	14	Morning	Saturday	May	2	GM	Children 0-6 & th	In H
In Branch	CH	Family Storytime		11:00:00 AM	11:35:00 AM	21	Morning	Saturday	May	2	CH	Children 0-6 & th	In H
In Branch	FC	Drop-in 3D Printing (branch run Saturdays- FC only)		10:00:00 AM	1:00:00 PM	8	Morning	Saturday	May	2	FC	All Ages	In H
In Branch	MPV	OEYC - Family Time		10:00:00 AM	12:00:00 AM	32	Morning	Saturday	May	2	MPV	Children 0-6 & th	In H
In Branch	MPV	Kids Discovery Club		1:30:00 PM	3:30:00 PM	31	Afternoon	Saturday	May	2	MPV	9-12 years	In H
In Branch	FC	Kids Discovery Club		2:30:00 PM	4:00:00 PM	16	Afternoon	Saturday	May	2	FC	9-12 years	In H
In Branch	SF	Kids Disco										9-12 years	In H
In Branch	CH	Kids Disco										9-12 years	In H
In Branch	MPV	LegoMania										Children 6-12 & t	In H
In Branch	CC	LegoMania										Children 6-12 & t	In H
In Branch	GM	Game On!										Children 0-6 & th	In H
In Branch	FC	Lego Mania										Children 6-12 & t	In H
In Branch	SP	Game On!										Children 0-6 & th	In H
In Branch	SP	Kids Disco										9-12 years	In H
In Branch	CH	Audio reco										Teens 13-18, Adu	In H
In Branch	CH	LegoMania										Children 6-12 & t	In H
In Branch	SF	LegoMania										Children 6-12 & t	In H
In Branch	SP	Games Café (SP)		11:00:00 AM	2:00:00 PM	0	Morning	Tuesday	May	2	SP	All Ages	In H
In Branch	GM	After Hours Study Hall		5:00:00 PM	9:00:00 PM	21	Evening	Sunday	May	2	GM	Teens 13-18, Adu	In H
In Branch	FC	OEYC - Read and Play		10:00:00 AM	11:00:00 PM	30	Morning	Monday	May	2	FC	Children 0-6 & th	In H
In Branch	GM	Library Pals (CC, GM, MPV)		10:00:00 AM	11:00:00 AM	14	Morning	Monday	May	2	GM	Adult 19+	In H
In Branch	CH	OEYC - Read and Play		10:30:00 AM	12:00:00 PM	64	Morning	Monday	May	2	CH	Children 0-6 & th	In H
In Branch	SP	Baby Storytime		10:30:00 AM	11:00:00 AM	38	Morning	Monday	May	2	SP	Children 0-6 & th	In H
In Branch	FC	Class Visit in branch		10:15:00 AM	1:00:00 PM	105	Morning	Thursday	May	2	FC	Children 6-12 & t	In H
Offsite			Bramp	9:00:00 AM	2:00:00 PM	320	Morning	Thursday	May	2	Offsite	Children 6-12	Offs
In Branch	GM	Movers and Shakers		1:30:00 PM	2:00:00 PM	22	Afternoon	Monday	May	2	GM	Children 0-6 & th	In H
Offsite			Comm	12:00:00 PM	5:00:00 PM	300	Morning	Sunday	May	2	Offsite	All ages	Offs
Offsite			Comm	1:00:00 PM	3:00:00 PM	80	Afternoon	Saturday	May	2	Offsite	All ages	Offs
Offsite			Comm	11:00:00 AM	12:30:00 PM	40	Morning	Thursday	May	2	Offsite	All ages	Offs
In Branch	GM	Family Storytime		6:30:00 PM	7:30:00 PM	46	Evening	Monday	May	2	GM	Children 0-6 & th	In H
In Branch	CH	Family Storytime		6:30:00 PM	7:00:00 PM	13	Evening	Monday	May	2	CH	Children 0-6 & th	In H

Program Data from 2018
6423 rows X 36 columns = 231,228 Cells



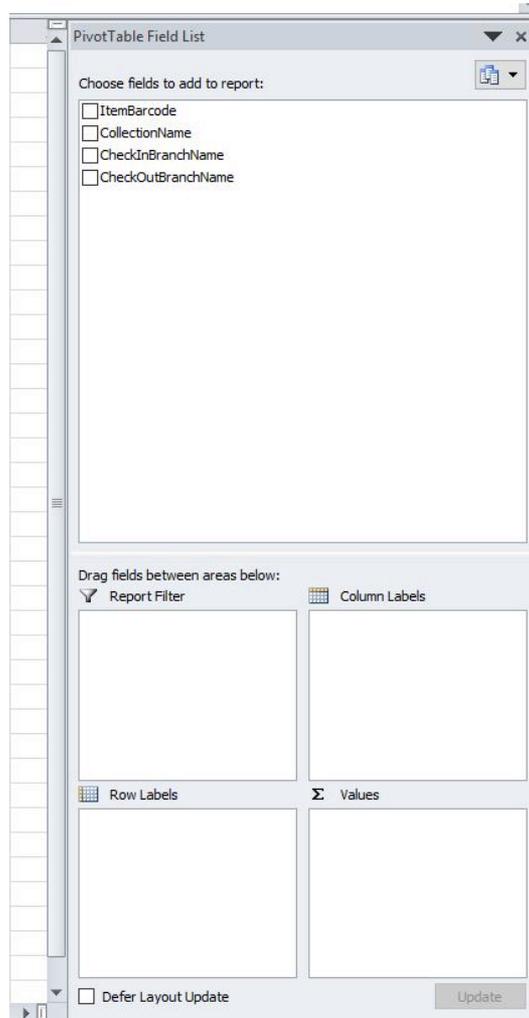
The Joy of Pivot Tables

	A	B	C
1	<i>Ministry Category</i>	# of Programs	Total Attendance
2	Adult Learning	432	6351
3	Book Clubs	20	263
4	Business Development	1	16
5	Careers, job help, skills	8	226
6	Class instruction at a library or school	284	10012
7	Community Development	44	516
8	Early Literacy and Early Learning	2003	52558
9	MakerSpace, Digital Media Lab, Self-Publishing	294	2227
10	Newcomer focus	460	5402
11	Other	168	11510
12	Other Children's	1640	42693
13	Seniors Programming	65	974
14	Summer Reading	93	8910
15	Technology, social media and computer literacy	439	4463
16	Teen Programming	471	4179
17	Grand Total	6422	150300

Excel V Google

Excel:

- Insert
- Pivot Table

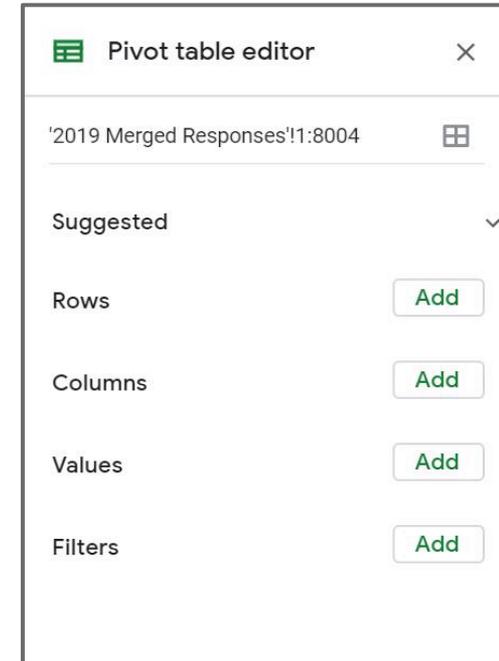


Google:

- Data
- Pivot Table

Both have:

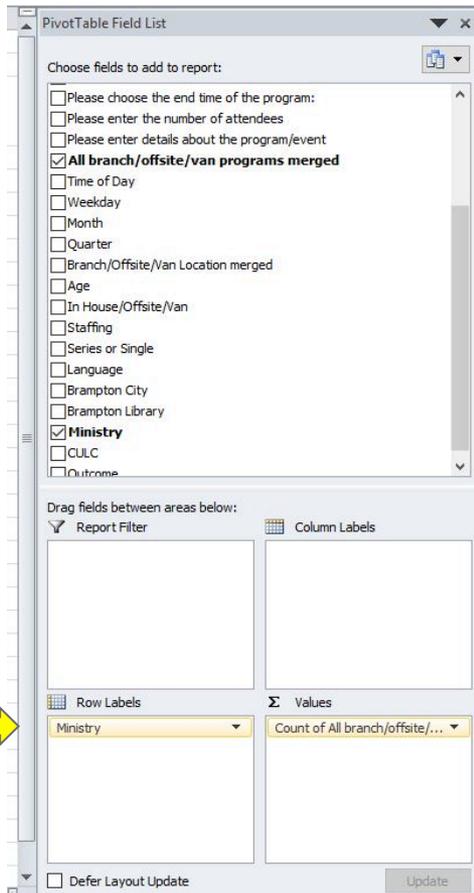
- Rows
- Columns
- Values
- Filters



Setting up a pivot table

File: [Sample program data excel file July-Aug](#)

1. Select the data for your pivot table (CTRL-A will select the whole sheet)
2. Excel - “Insert” & “Pivot Table” & click “OK” to “New Worksheet”
3. Select your rows and/or columns & values - depending on what you want your chart to show



Example #1

Rows: “Ministry”

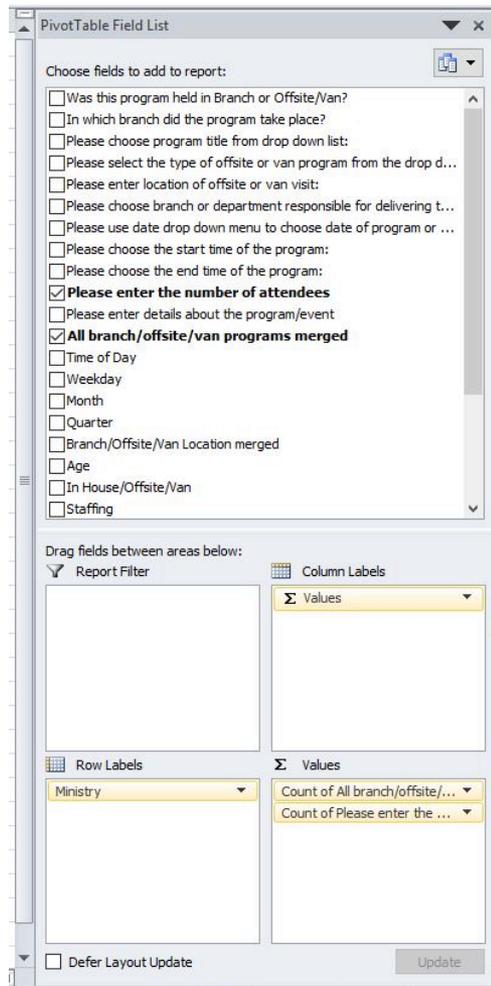
Values: “All branch/offsite/van programs merged”

	Count of All branch/offsite/van programs merged
2	
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Setting up a pivot table

File: [Sample program data excel file July-Aug](#)

1. Select the data for your pivot table (CTRL-A will select the whole sheet)
2. Excel - “Insert” & “Pivot Table” & click “OK” to “New Worksheet”
3. Select your rows and/or columns & values - depending on what you want your chart to show



Example #2

Rows: “Ministry”

Values: “All branch/offsite/van programs merged”
AND “Please enter the number of attendees”

Setting up a pivot table

File: [Sample program data excel file July-Aug](#)

1. Select the data for your pivot table (CTRL-A will select the whole sheet)
2. Excel - "Insert" & "Pivot Table" & click "OK" to "New Worksheet"
3. Select your rows and/or columns & values - depending on what you want your chart to show

Example #2

Rows: "Ministry"

Values: "All branch/offsite/van programs merged"

AND "Please enter the number of attendees"

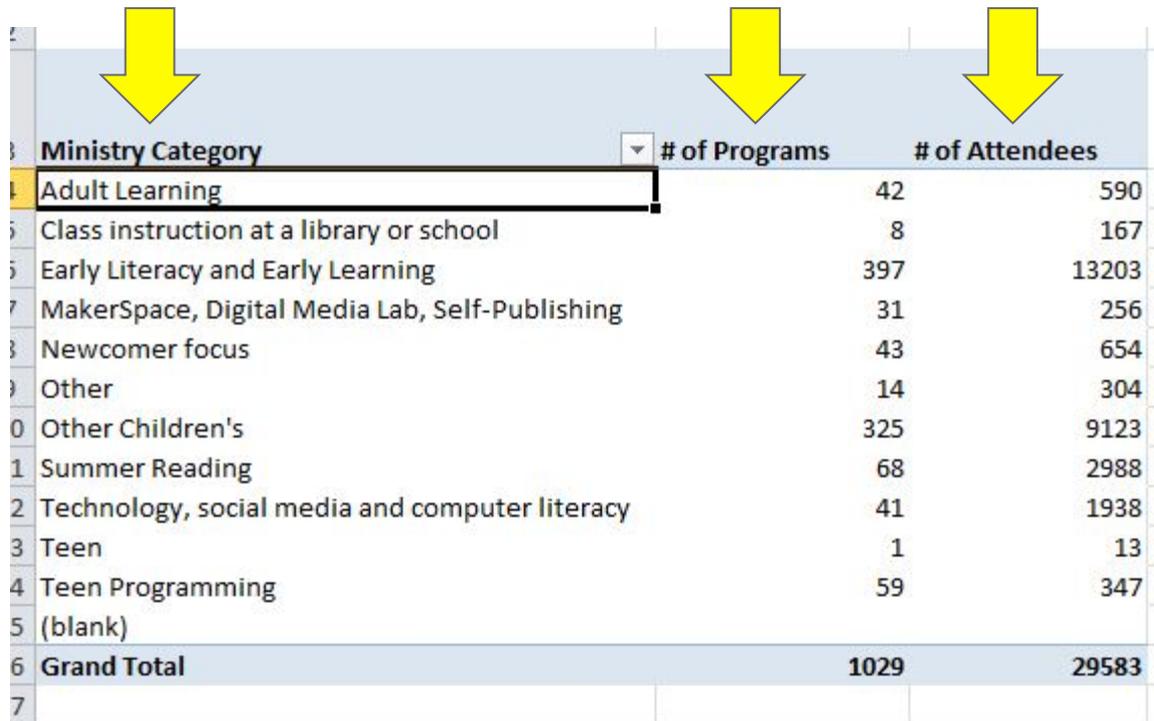
The screenshot shows an Excel spreadsheet with two columns of data. The first column is labeled 'Count of All branch/offsite/van programs merged' and the second column is labeled 'Count of Please enter the number of attendees'. The data values are: 42, 8, 397, 31, 43, 14, 325, 68, 41, 1, 59. The 'Value Field Settings' dialog box is open, showing the 'Summarize value field by' dropdown menu with 'Sum' selected. A red circle highlights the data in the spreadsheet, and a yellow arrow points to the 'Sum' option in the dialog box.

Count of All branch/offsite/van programs merged	Count of Please enter the number of attendees
42	42
8	8
397	397
31	31
43	43
14	14
325	325
68	68
41	41
1	1
59	59
1029	1029

Example #2

Rows: "Ministry"

Values: "All branch/offsite/van programs merged"
AND "Please enter the number of attendees"



Ministry Category	# of Programs	# of Attendees
Adult Learning	42	590
Class instruction at a library or school	8	167
Early Literacy and Early Learning	397	13203
MakerSpace, Digital Media Lab, Self-Publishing	31	256
Newcomer focus	43	654
Other	14	304
Other Children's	325	9123
Summer Reading	68	2988
Technology, social media and computer literacy	41	1938
Teen	1	13
Teen Programming	59	347
(blank)		
Grand Total	1029	29583

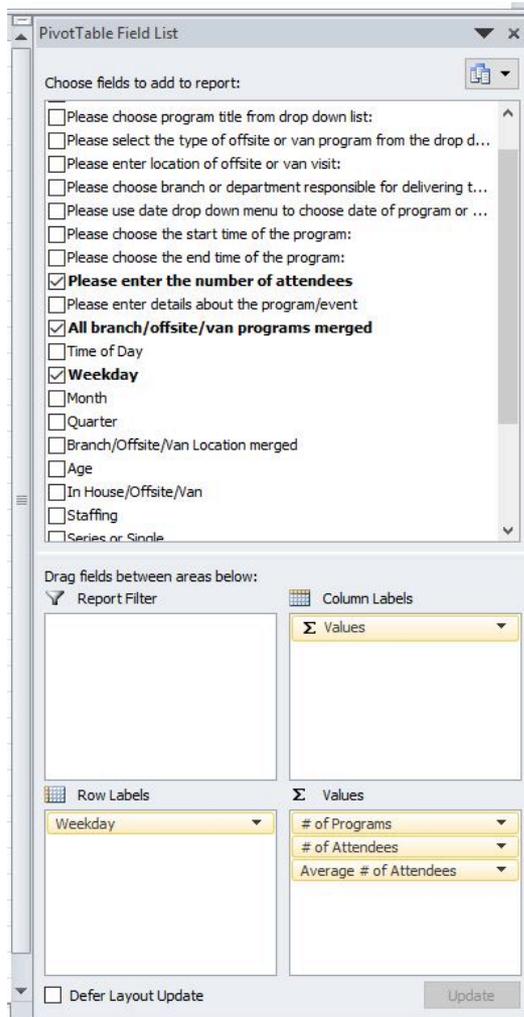
Example #3

Rows: “Weekday”

Values: “All branch/offsite/van programs merged”

AND “Please enter the number of attendees” (Change value field setting to SUM)

AND “Please enter the number of attendees” (Change value field setting to Average)



Day of Week	# of Programs	# of Attendees	Average # of Attendees
Sunday	68	1204	17.71
Monday	154	4403	28.59
Tuesday	224	6420	28.66
Wednesday	190	5661	29.79
Thursday	175	4978	28.45
Friday	107	3287	30.72
Saturday	111	3630	32.70
(blank)			
Grand Total	1029	29583	28.75

Useful formulas for spreadsheets

All of the following formulas have examples in the file available.

If you have a date (ie. 12/6/2019) and want to know the day of the week:

=TEXT(E2 (or whatever cell your date is in), "dddd")

If you have a date (ie. 12/6/2019) and want to know the month:

=TEXT(E2 (or whatever cell your date is in), "mmmm")

To count text responses (can be used with qualitative data as well)

=Countif(range, "text you want to match")

Eg. =Countif(C178:AR178, "No")

To count numeric responses based on numeric criteria

=Countif(range, "criteria you want to match")

Eg. =Countif(AV2:AV186, ">70%")

VLOOKUP

The VLOOKUP formula allows you to merge two spreadsheets into one.

=VLOOKUP(A2, 'Master list'!A:B, 2, false)

- A2 - or whatever cell you want to match that exists on both spreadsheets
- 'Master list'!A:B - the name of the spreadsheet and the range that you want to look up
- 2 - this means you want to bring over the piece of information that is in the second column in the range
- False - means you want an exact match

Master List

	A	B
1	Program Name	Ministry Category
2	Family Storytime	Early Learning & Literacy

Program Data Collection

	A	B	C
1	Program Name	# of Attendees	Ministry Category
2	Family Storytime	20	Early Learning & Literacy

Visualize This!

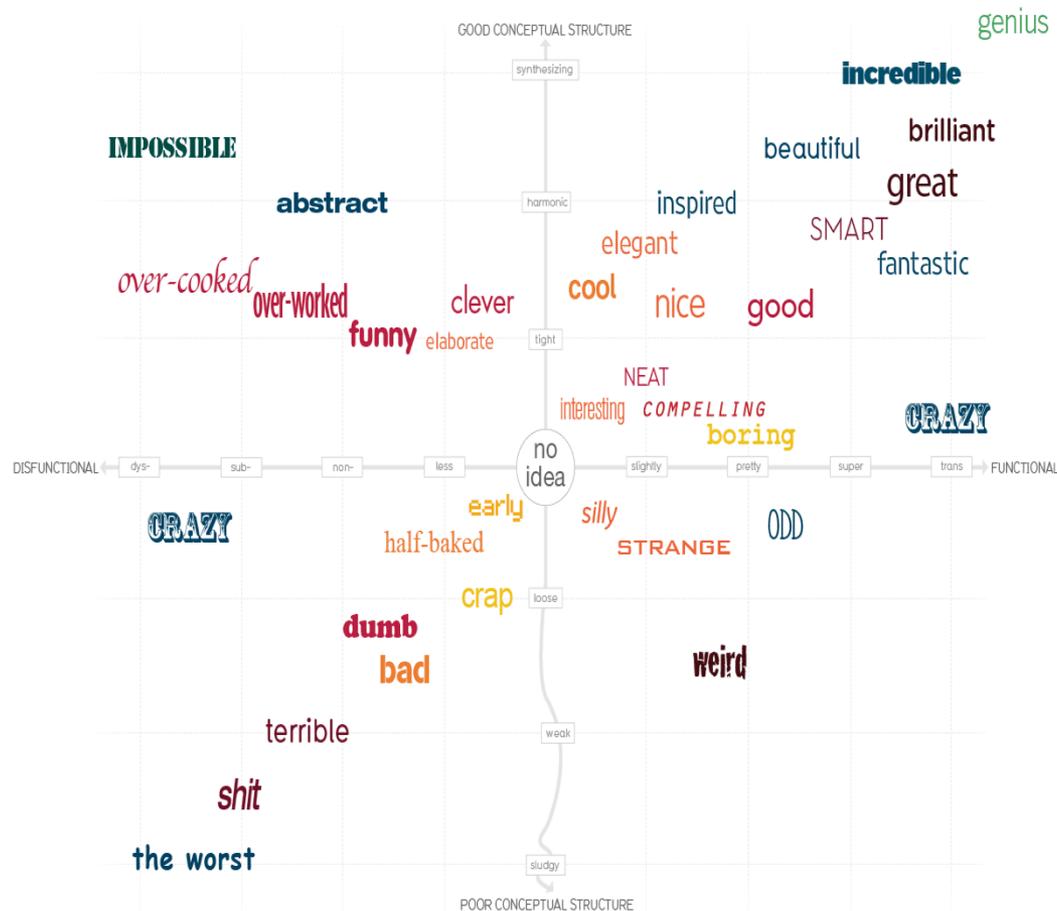
Data Visualization defined:

“Data Visualization. Data visualization is a way to represent information graphically, highlighting patterns and trends in **data** and helping the reader to achieve quick insights. ... These tools enable users to analyze the **data** by interacting directly with a visual representation of it.”

- [Gartner](#)

Visualizations Accommodate Different Learning Styles

A Taxonomy of Ideas
Structure + Functionality + Unpredictability?



David McCandless // v.1.1 // Nov 2012
InformationIsBeautiful.net

OBVIOUS PREDICTABLE INEVITABLE
UNEXPECTED UNPREDICTABLE OTHERWORLDLY

Data Viz Demo: Excel Pivot Chart, Step 1

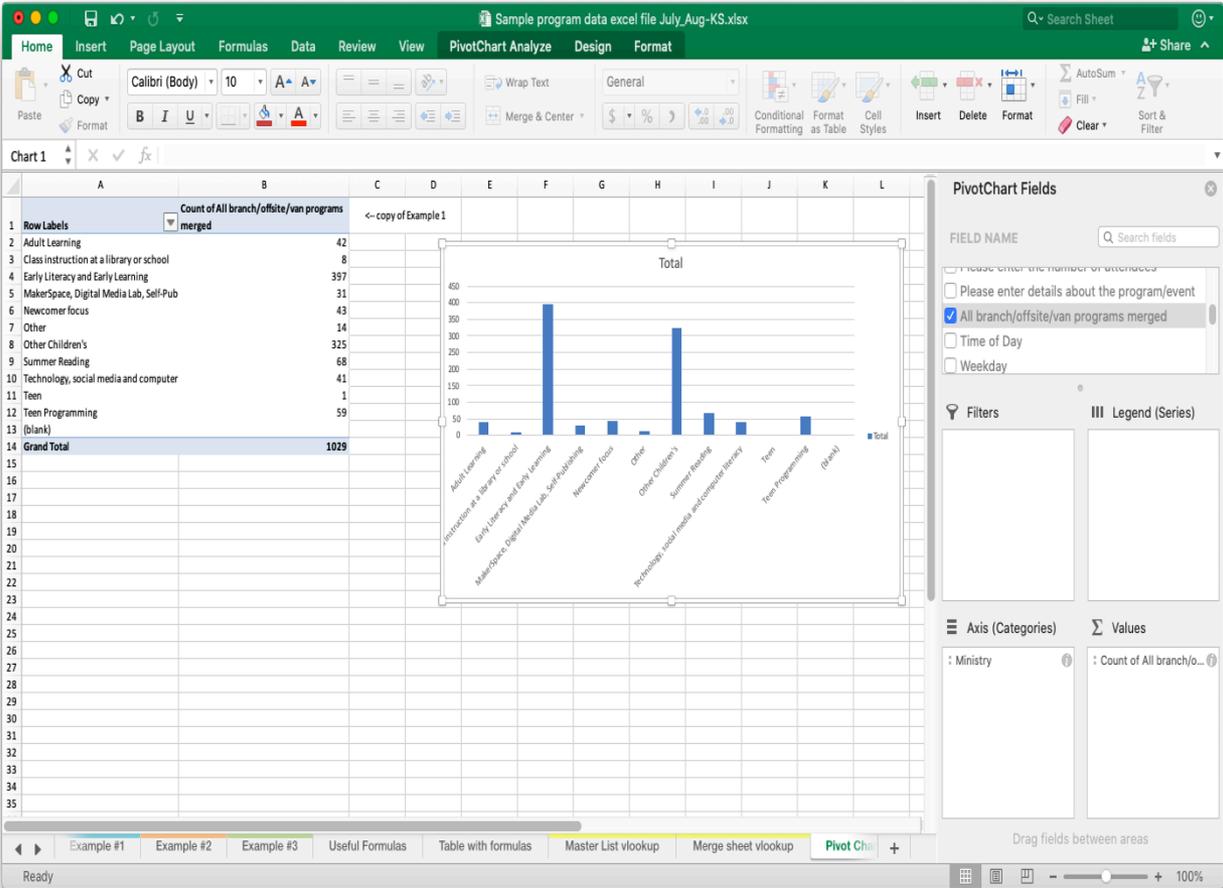
The screenshot shows the Microsoft Excel interface with the following data in the PivotTable:

Row Labels	Count of All branch/offsite/van programs
Adult Learning	42
Class instruction at a library or sc	8
Early Literacy and Early Learning	397
MakerSpace, Digital Media Lab, S	31
Newcomer focus	43
Other	14
Other Children's	325
Summer Reading	68
Technology, social media and cor	41
Teen	1
Teen Programming	59
(blank)	
Grand Total	1029

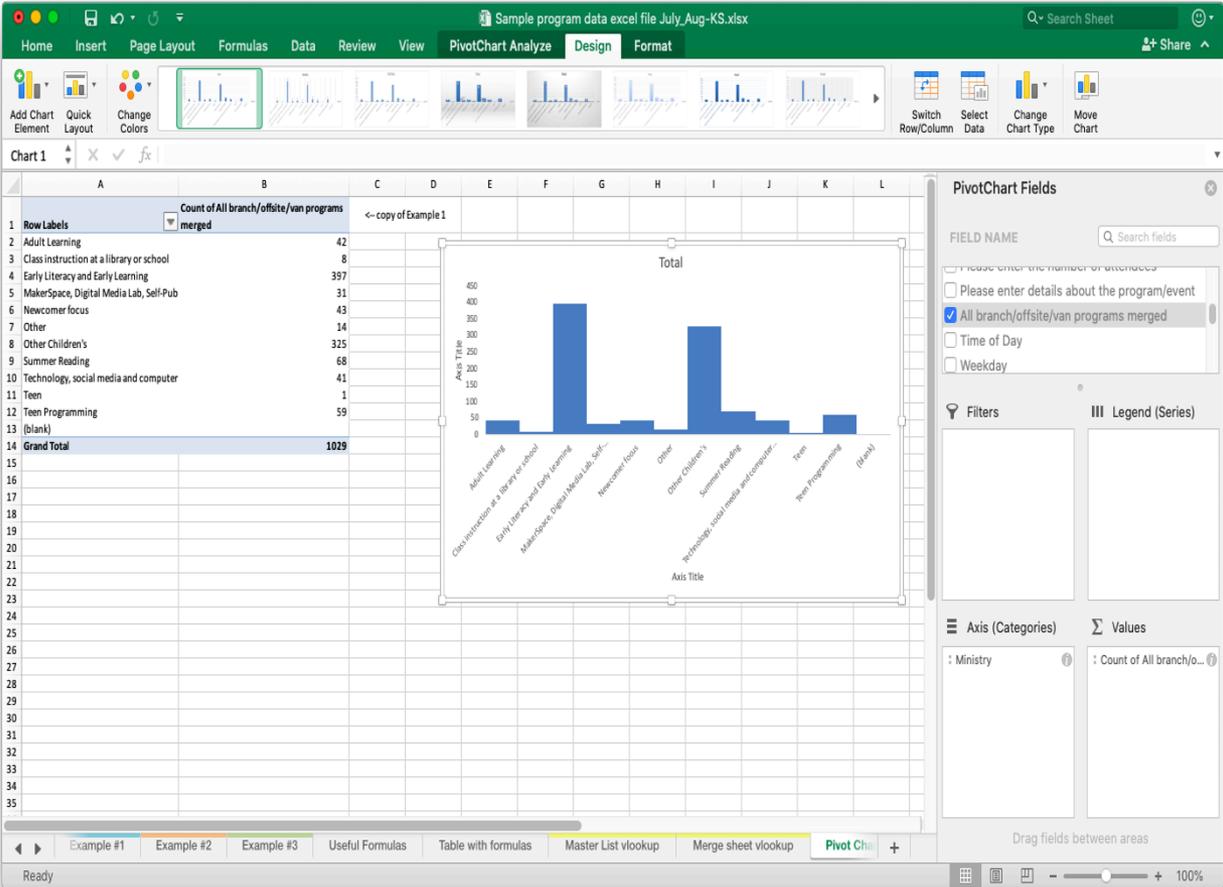
The PivotChart is currently blank. The PivotTable Fields task pane on the right shows the following configuration:

- Fields: Ministry, Count of All branch...
- Rows: Ministry
- Values: Count of All branch...

Data Viz Demo: Excel Pivot Chart, Step 2



Data Viz Demo: Excel Pivot Chart, Step 1



Data Viz Demo: Pivot Chart Options

The screenshot displays an Excel spreadsheet with a PivotTable and a PivotChart. The PivotTable is titled "Count of All branch/offsite/van programs" and is merged. The PivotChart is a bar chart titled "Total" showing the count for each program. The context menu is open over the chart, listing various options.

Row Labels	Count
Adult Learning	42
Class instruction at a library or school	8
Early Literacy and Early Learning	397
MakerSpace, Digital Media Lab, Self-Pub	31
Newcomer focus	43
Other	14
Other Children's	325
Summer Reading	68
Technology, social media and computer	41
Teen	1
Teen Programming	59
(blank)	0
Grand Total	1029

The context menu options are:

- Refresh Data
- Cut (⌘X)
- Copy (⌘C)
- Paste (⌘V)
- Reset to Match Style
- Font...
- Change Chart Type
- Save as Template...
- Select Data...
- Move Chart...
- 3-D Rotation...
- Group
- Bring to Front
- Send to Back
- Save as Picture...
- Assign Macro...
- Format Chart Area...
- PivotChart Options...**
- Hide Field List

Data Viz Demo: Pivot Chart Field Settings

The screenshot displays the Microsoft Excel interface with a PivotTable and a PivotChart. The PivotTable is titled "Count of All branch/offsite/van programs merged" and lists various program categories with their respective counts. The PivotChart is a bar chart titled "Total" showing the distribution of these counts. The PivotChart Fields task pane is open on the right, showing the "All branch/offsite/van programs merged" field selected. A context menu is open over the task pane, listing actions like "Move Up", "Move Down", "Move to Report Filter", etc.

Row Labels	Count
Adult Learning	42
Class instruction at a library or school	8
Early Literacy and Early Learning	397
MakerSpace, Digital Media Lab, Self-Pub	31
Newcomer focus	43
Other	14
Other Children's	325
Summer Reading	68
Technology, social media and computer	41
Teen	1
Teen Programming	59
(blank)	
Grand Total	1029

Data Viz Demo: Pivot Chart Field Settings

The screenshot displays the Microsoft Excel interface with a PivotTable and two overlapping 'PivotTable Field' dialog boxes. The PivotTable in the background has the following data:

Row Labels	Count of All branch/offsite/van programs merged
Adult Learning	42
Class instruction at a library or school	8
Early Literacy and Early Learning	397
MakerSpace, Digital Media Lab, Self-Pub	31
Newcomer focus	43
Other	14
Other Children's	325
Summer Reading	68
Technology, social media and computer	41
Teen	1
Teen Programming	59
(blank)	
Grand Total	1029

The left 'PivotTable Field' dialog box shows the source field as 'All branch/offsite/van programs merged' and the field name as 'Count of All branch/offsite/van program'. The 'Summarize by' dropdown is set to 'Count'. The right dialog box shows the same source field and field name, but the 'Summarize by' dropdown is set to 'No Calculation'. The background PivotTable Field task pane shows 'Ministry' in the Axis (Categories) area and 'Count of All branch/o...' in the Values area.

Data Viz Demo: Infogram

Library Programs

Please choose program title from drop down list:

A	B
1	Was this program held in Branch or Offsite/Van?
2	In Branch
3	In Branch
4	In Branch
5	In Branch
6	In Branch
7	In Branch
8	In Branch
9	In Branch
10	In Branch
11	In Branch
12	In Branch
13	In Branch
14	In Branch
15	In Branch
16	In Branch
17	In Branch
18	In Branch
19	In Branch
20	In Branch
21	In Branch
22	In Branch

Data Viz: Do's and Don'ts

Do

- Keep it simple!
- Use colour intentionally
- Make sure your visualization is understandable
- Choose the right visualization for the message you're trying to communicate

Don't!

- Don't present too much info
- Bad data makes for bad visualizations
- No visualization can improve bad data

A Story in Charts



Branch	Yea	Month	Da	Day of We	Tim	Cou
	2016	December	1	Thursday	02:00	0
	2016	December	1	Thursday	02:30	0
	2016	December	1	Thursday	03:00	0
	2016	December	1	Thursday	03:30	0
	2016	December	1	Thursday	04:00	0
	2016	December	1	Thursday	04:30	0
	2016	December	1	Thursday	05:00	0
	2016	December	1	Thursday	05:30	0
	2016	December	1	Thursday	06:00	0
	2016	December	1	Thursday	06:30	0
	2016	December	1	Thursday	07:00	0
	2016	December	1	Thursday	07:30	0
	2016	December	1	Thursday	08:00	0
	2016	December	1	Thursday	08:30	0
	2016	December	1	Thursday	09:00	0
	2016	December	1	Thursday	09:30	2
	2016	December	1	Thursday	10:00	0
	2016	December	1	Thursday	10:30	0
	2016	December	1	Thursday	11:00	2
	2016	December	1	Thursday	11:30	40
	2016	December	1	Thursday	12:00	28
	2016	December	1	Thursday	12:30	20
	2016	December	1	Thursday	13:00	22
	2016	December	1	Thursday	13:30	25
	2016	December	1	Thursday	14:00	24
	2016	December	1	Thursday	14:30	30
	2016	December	1	Thursday	15:00	31
	2016	December	1	Thursday	15:30	22
	2016	December	1	Thursday	16:00	14
	2016	December	1	Thursday	16:30	19
	2016	December	1	Thursday	17:00	13
	2016	December	1	Thursday	17:30	10
	2016	December	1	Thursday	18:00	9
	2016	December	1	Thursday	18:30	7
	2016	December	1	Thursday	19:00	10
	2016	December	1	Thursday	19:30	2
	2016	December	1	Thursday	20:00	0
	2016	December	1	Thursday	20:30	0
	2016	December	1	Thursday	21:00	0
	2016	December	1	Thursday	21:30	0
	2016	December	1	Thursday	22:00	0
	2016	December	1	Thursday	22:30	0



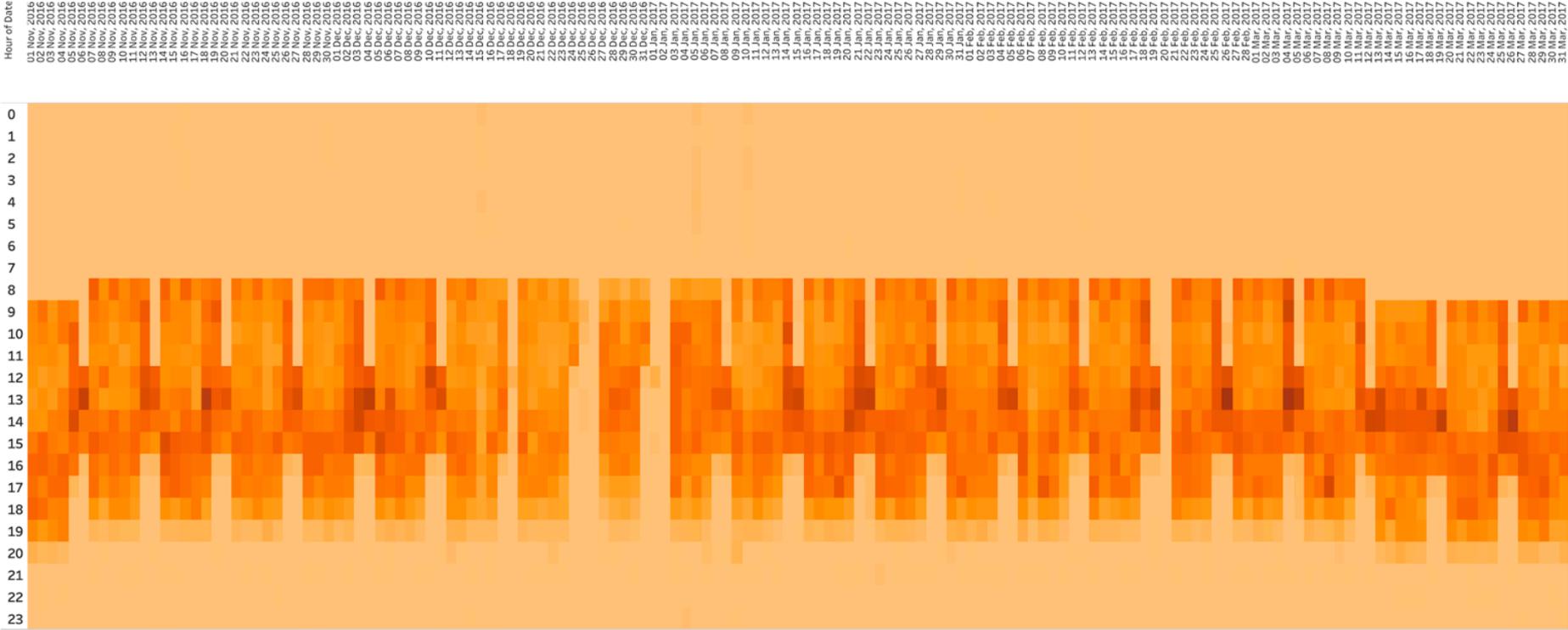
		Mon	Tue	Wed	Thu	Fri	Sat	Sun
		10:00 - 8:30	12:30 - 8:30	10:00 - 6:00	12:30 - 8:30	10:00 - 6:00	9:00 - 5:00	9:00 - 5:00
9-10		25	0	22	0	16	19	0
		17	0	13	0	16	23	0
10-11		21	0	26	0	19	23	0
		18	0	22	0	19	28	0
11-12		23	9	28	9	18	30	0
		20	30	25	37	26	41	0
12-1		24	16	36	25	31	27	0
		29	15	35	23	21	25	0
1-2		12	25	17	27	19	41	0
		19	13	22	23	19	24	0
2-3		17	20	31	29	13	42	0
		37	18	30	20	13	23	0
3-4		23	13	29	16	20	31	0
		40	22	26	21	10	17	0
4-5		26	13	25	26	10	2	0
		25	14	18	14	22	0	0
5-6		22	24	2	18	3	0	0
		10	12	0	24	0	0	0
6-7		11	15	0	11	0	0	0
		10	10	0	16	0	0	0
7-8		8	5	0	5	0	0	0
		0	3	0	2	0	0	0
8-8:30		0	0	0	0	0	0	0
Total		437	277	407	346	295	396	0



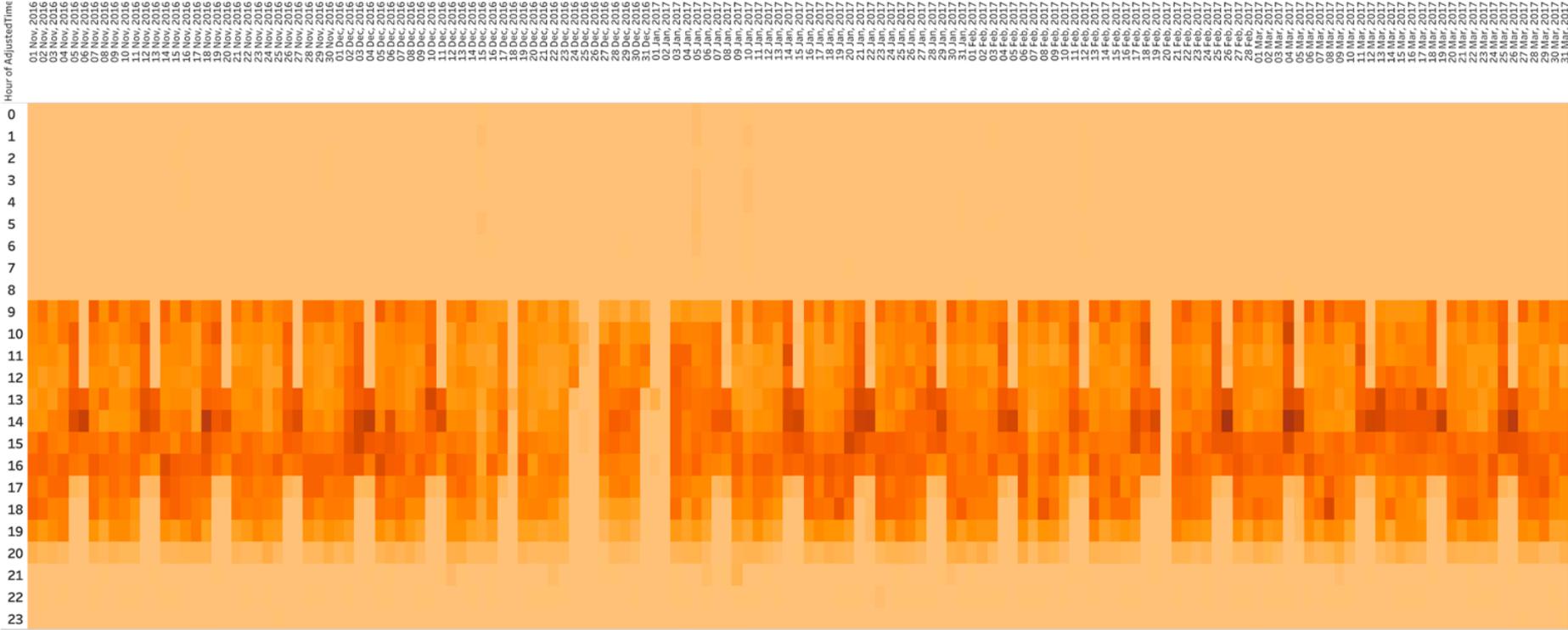
		Mon	Tue	Wed	Thu	Fri	Sat	Sun
		10:00 - 8:30	12:30 - 8:30	10:00 - 6:00	12:30 - 8:30	10:00 - 6:00	9:00 - 5:00	9:00 - 5:00
9-10		25	0	22	0	16	19	0
		17	0	13	0	16	23	0
10-11		21	0	26	0	19	23	0
		18	0	22	0	19	28	0
11-12		23	9	28	9	18	30	0
		20	30	25	37	26	41	0
12-1		24	16	36	25	31	27	0
		29	15	35	23	21	25	0
1-2		12	25	17	27	19	41	0
		19	13	22	23	19	24	0
2-3		17	20	31	29	13	42	0
		37	18	30	20	13	23	0
3-4		23	13	29	16	20	31	0
		40	22	26	21	10	17	0
4-5		26	13	25	26	10	2	0
		25	14	18	14	22	0	0
5-6		22	24	2	18	3	0	0
		10	12	0	24	0	0	0
6-7		11	15	0	11	0	0	0
		10	10	0	16	0	0	0
7-8		8	5	0	5	0	0	0
		0	3	0	2	0	0	0
8-8:30		0	0	0	0	0	0	0
Total		437	277	407	346	295	396	



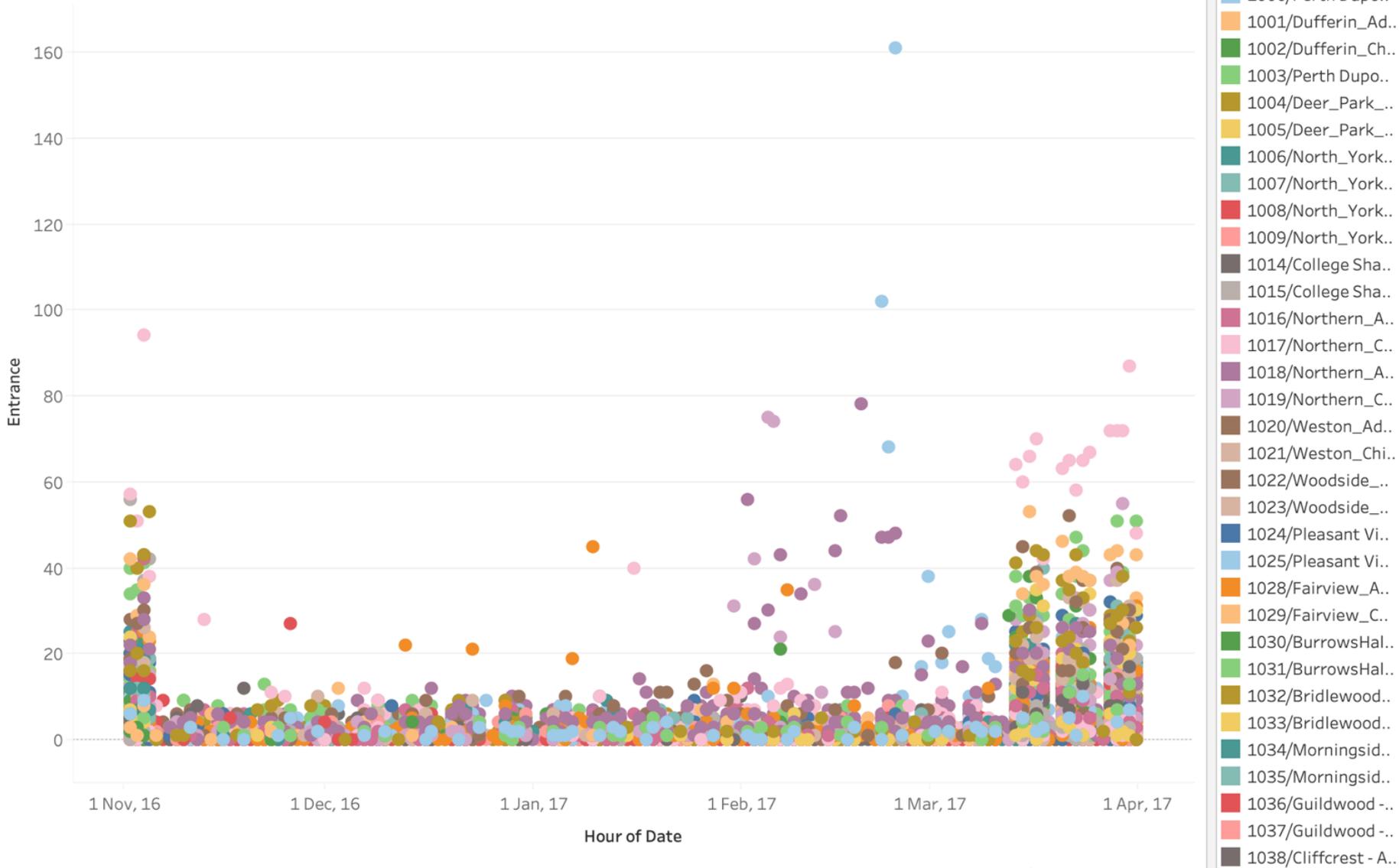
Individual Branch Visits (Nov 1 2016 to Mar 31 2017)



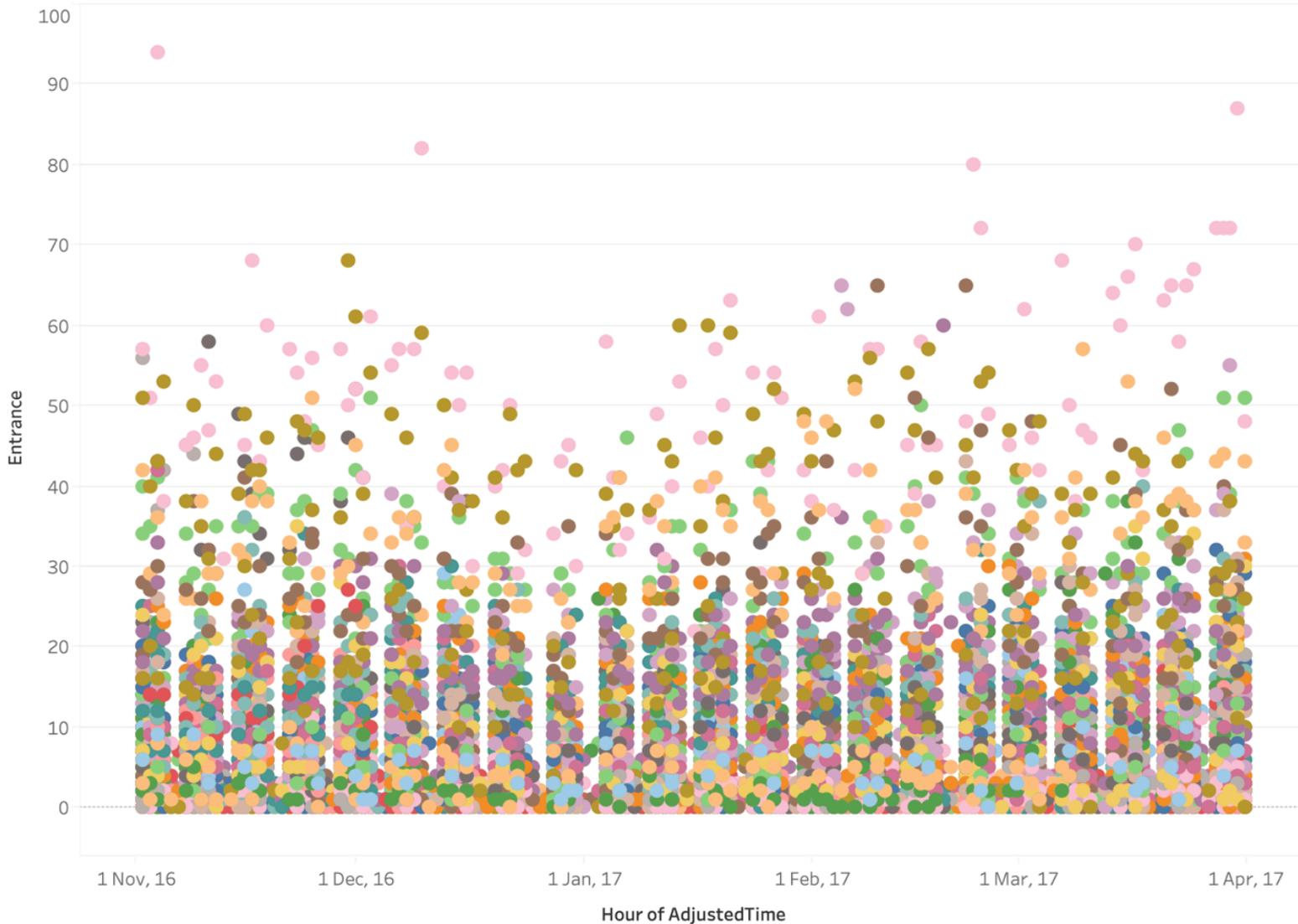
Individual Branch Visits Based on Adjusted Time (Nov 1 2016 to Mar 31 2017)



Branch visits at 8PM (8:00-8:59)



Adjusted branch visits at 8PM (8:00-8:59)



Average Annual Visits Per Branch by Open Half Hour

Time	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9:00		2,245	2,512	2,490	2,457	2,314	1,602
9:30		1,585	1,853	1,829	1,762	1,747	1,257
10:00		1,534	1,871	1,625	1,848	1,476	1,445
10:30		1,462	1,820	1,446	1,889	1,319	1,544
11:00		1,446	1,806	1,373	1,832	1,256	1,596
11:30		1,689	1,997	1,538	2,044	1,383	1,558
12:00		1,628	1,975	1,500	2,045	1,364	1,613
12:30		1,665	1,761	1,495	1,659	1,400	1,664
13:00		1,696	1,566	1,517	1,506	1,447	1,746
13:30	3,956	1,776	1,637	1,615	1,567	1,562	1,811
14:00	2,400	1,701	1,534	1,541	1,490	1,542	1,853
14:30	2,410	1,665	1,501	1,521	1,503	1,539	1,781
15:00	2,116	1,999	1,859	1,834	1,797	1,730	1,727
15:30	1,904	2,356	2,143	2,113	2,031	1,909	1,627
16:00	1,611	2,052	1,865	1,839	1,780	1,659	1,474
16:30	1,187	1,881	1,694	1,665	1,621	1,479	1,171
17:00		1,770	1,604	1,563	1,510	1,382	
17:30		1,665	1,524	1,449	1,455	1,237	
18:00		1,586	1,550	1,907	1,433	2,340	
18:30		1,388	1,358	1,660	1,249	2,022	
19:00		1,122	1,121	1,353	1,021	1,685	
19:30		863	872	1,029	775	1,299	
20:00		580	593	720	547	880	

Note: Average visits are calculated based on the number of branches open during that time period. 35 branches are closed on Monday.

Hot Topic Poll

[Pollev.com/
KIMBERLYSILK321](https://Pollev.com/KIMBERLYSILK321)

Resources

[Project Outcome](#) - free resource for public and academic libraries that offers surveys and other resources to measure outcomes

[Edge](#) - a tool to assess the current state of technology in your library

[ALA's Libraries Transforming Communities](#) - tools for community engagement

Excel tips & tricks - Lynda.com/LinkedIn Learning

Irwin, B., & Silk, K. (2017).

[*Creating a culture of evaluation: taking your library from talk to action.*](#) Toronto: Ontario Library Association.

Data Analysis & Visualization Tools

Tool	Numeric Data	Text Data	Maps
Excel	🧐	🧐	
Microsoft Power BI	🧐		
Tableau Public	🧐		
Infogram	🧐		🧐
WordArt		🧐	
NVivo		🧐	
OpenRefine	🧐	🧐	
Google Charts	🧐	🧐	🧐
Google My Maps			🧐
ArcGIS	🧐		🧐

Data Visualization Blogs

Title	URL
Mona Chalabi	https://monachalabi.com/
Storytelling with Data	http://www.storytellingwithdata.com/blog
Information is Beautiful	https://informationisbeautiful.net/blog/
Flowing Data	https://flowingdata.com/
Visualising Data	https://www.visualisingdata.com/blog/
The Pudding Visual Essays	https://pudding.cool/
Junk Charts	https://junkcharts.typepad.com/
FiveThirtyEight	https://fivethirtyeight.com/
Stephanie Evergreen	https://stephanieevergreen.com/blog/

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Images from:

The Noun Project