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

Presented by the

OPLA Research & Evaluation Committee

January 29, 2020

OPLA Research & Evaluation Committee

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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.

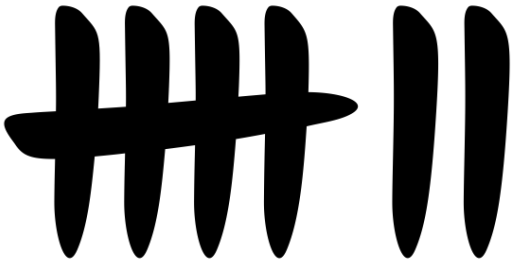
- Moving beyond outputs; moving towards outcomes
  - How is the library making a societal difference?
  - The outcome/benefit for the library user.
  - Not just collecting data, but telling the right story with it.
- Effort to better demonstrate the social impact of libraries, which is often undervalued (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

Quantitative vs. Qualitative

Types of Data:

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



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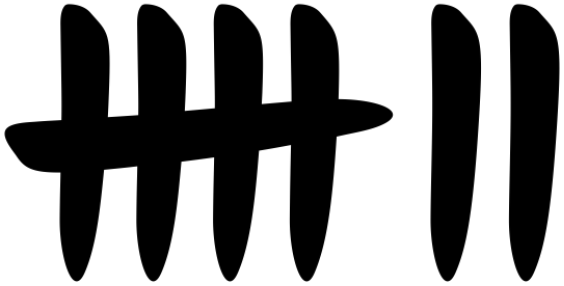
Quantitative vs. Qualitative

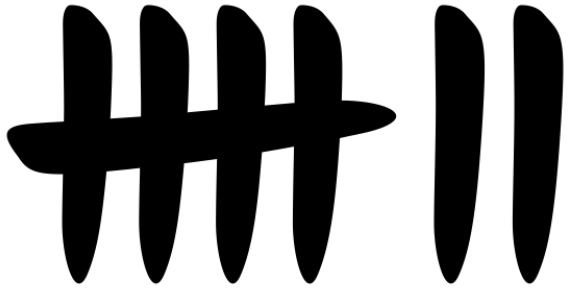


Quantitative Data:

- 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?

●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	●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	●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	●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

Quantitative vs. Qualitative

Theming Qualitative Data

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

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Quantitative vs. Qualitative

Theming Qualitative Data

- Possible theme: vibrant

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Quantitative vs. Qualitative

Theming Qualitative Data

- Possible theme: friendly and welcoming

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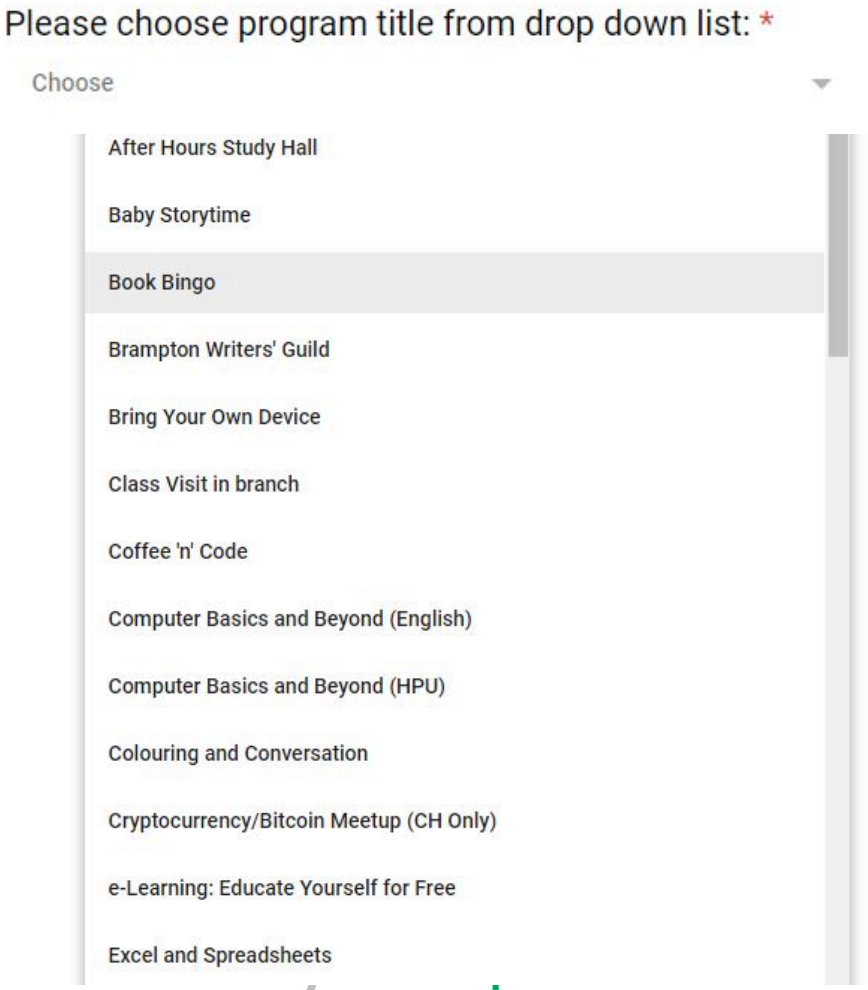
- Summary of theming: ***Want to live in a vibrant place that is friendly and welcoming***

Don’t get dirty

Before

En francais s'il vous plait
En Fraçais Sîl Vous Plaît
En Fraçaise 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



The Joy of Pivot Tables

C	D	E	F	K	L	M	S	T	U	V	W	X	
Was this progra	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
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Program Data from 2018

6423 rows X 36 columns = 231,228 Cells

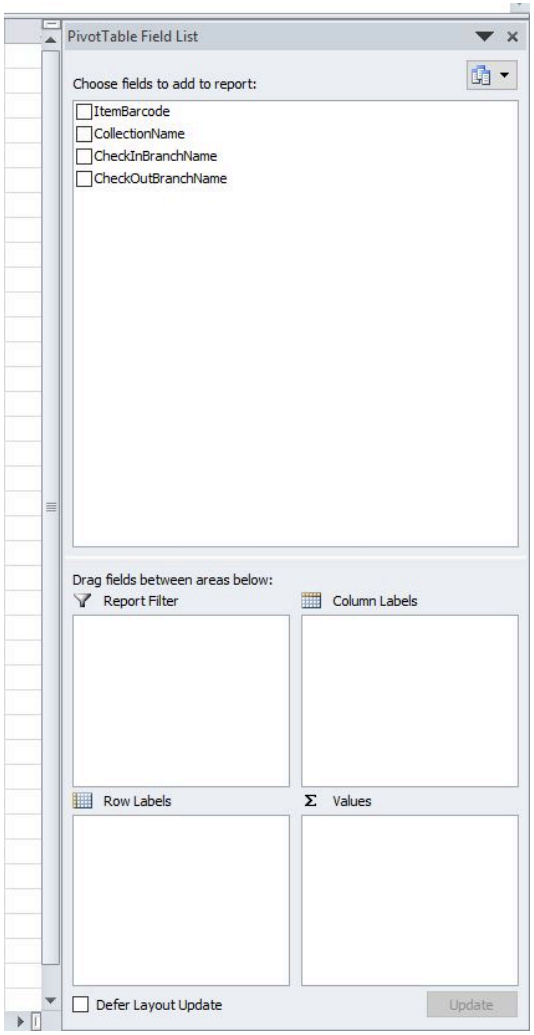
The Joy of Pivot Tables

	A	B	C
1	*MInistry Category*	# 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

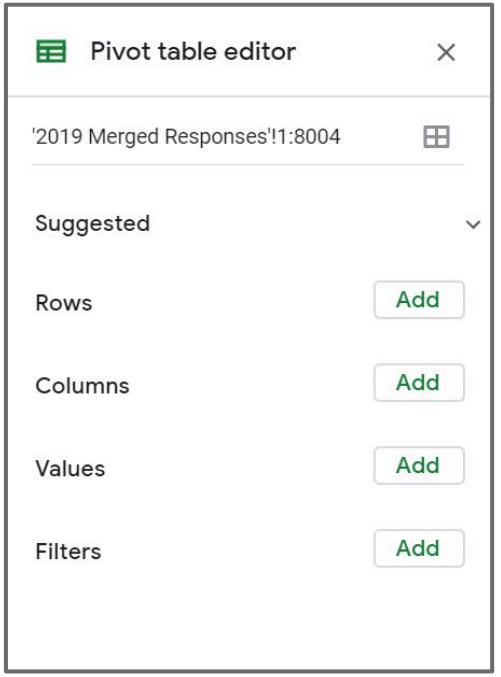
Excel:

- **Insert**
- **Pivot Table**



Google:

- **Data**
- **Pivot Table**



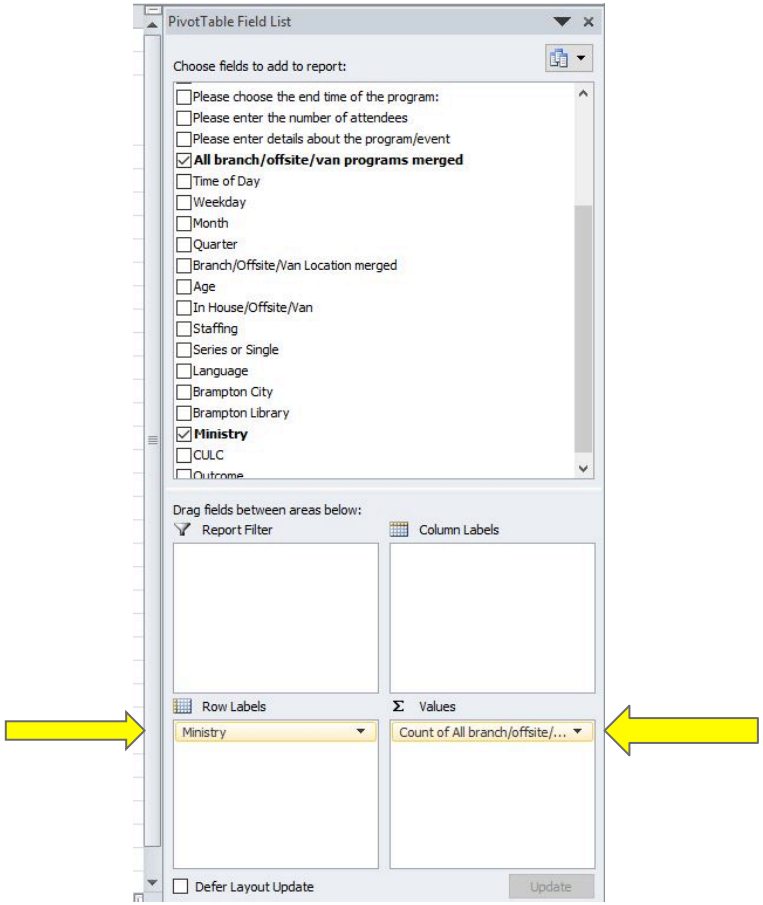
Both have:

- **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”

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-Publishing	31
Newcomer focus	43
Other	14
Other Children's	325
Summer Reading	68
Technology, social media and computer literacy	41
Teen	1
Teen Programming	59
(blank)	
Grand Total	**1029**

Setting up a pivot table

File: Sample program data excel file July-Aug

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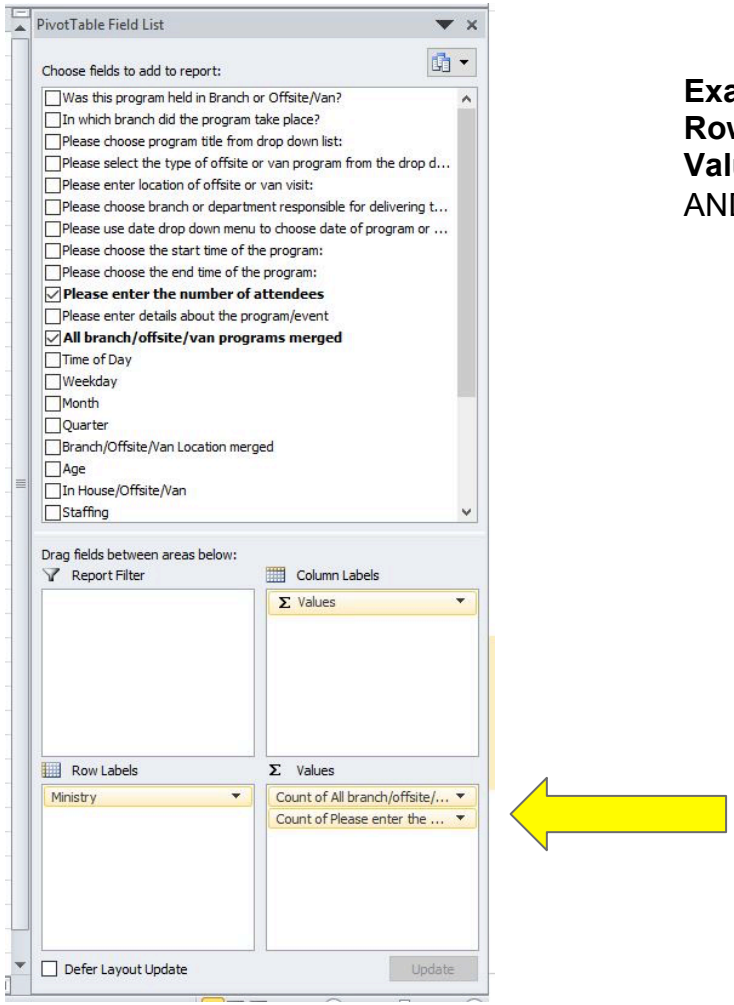
2. Excel - “Insert” & “Pivot Table” & click “OK” to “New Worksheet”
3. Select your rows and/or columns & values - depending on what you want your chart to show



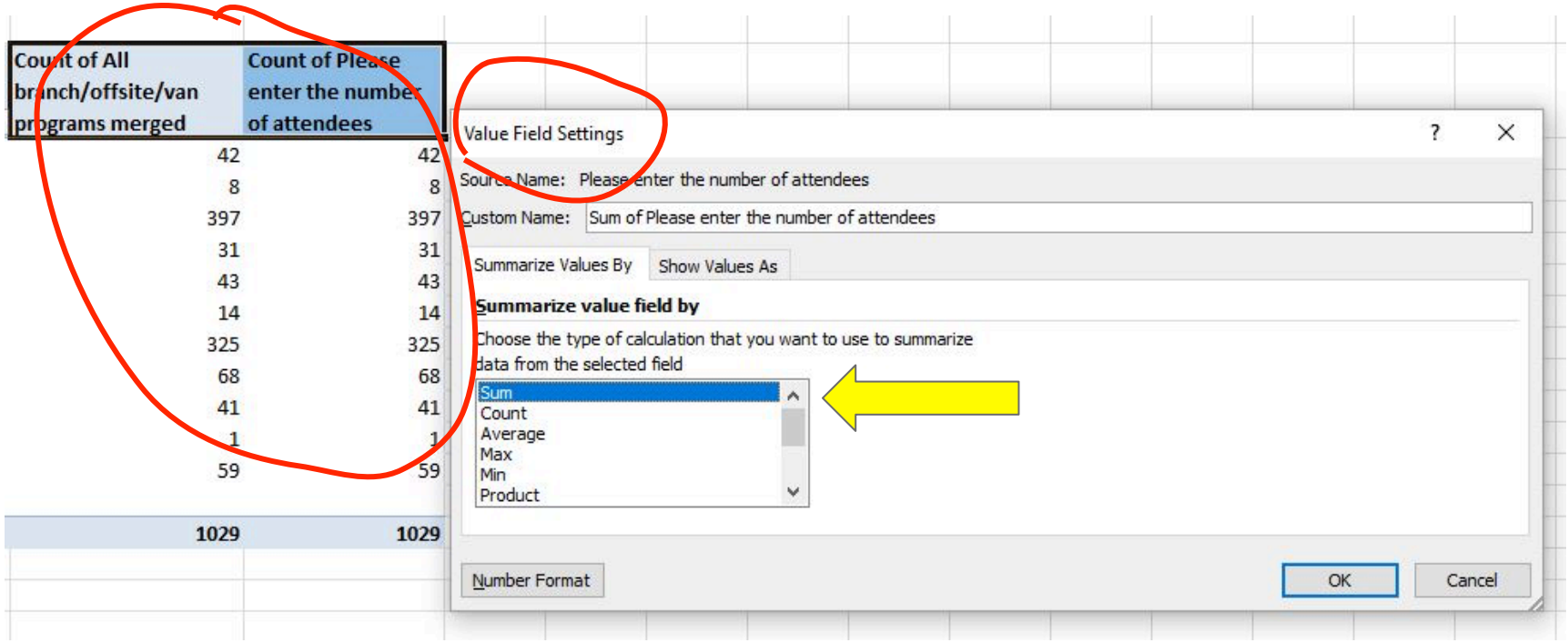
Example #2
Rows: “Ministry”
Values: “All branch/offsite/van programs merged” AND “Please enter the number of attendees”

Setting up a pivot table

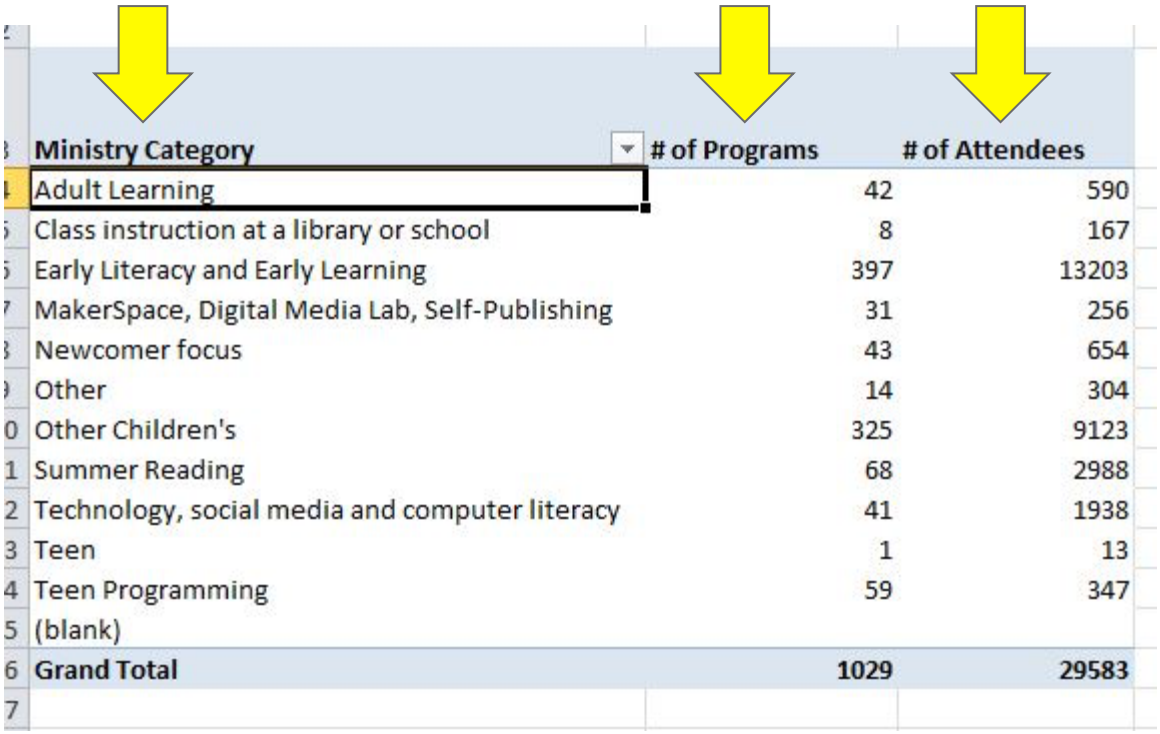
File: Sample program data excel file July-Aug

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”

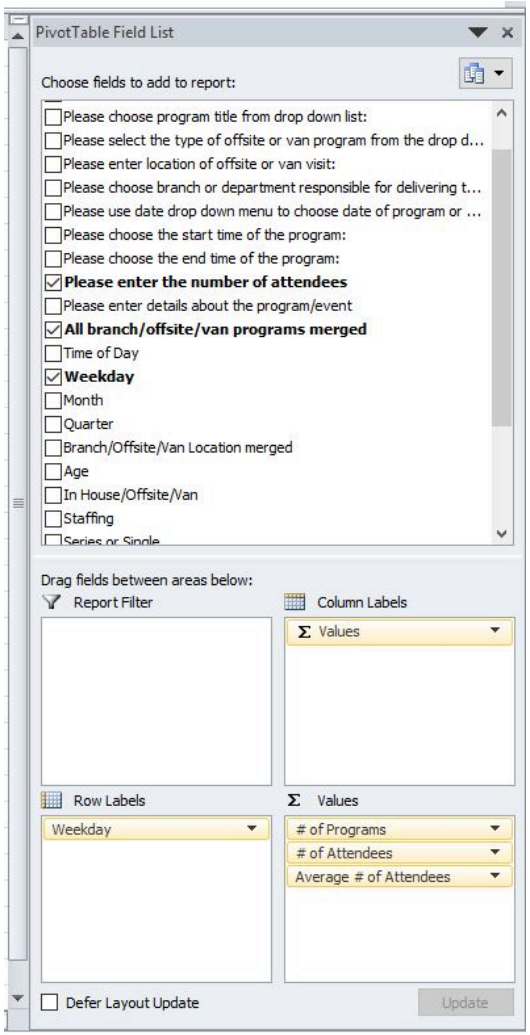


Example #2
Rows: “Ministry”
Values: “All branch/offsite/van programs merged”
AND “Please enter the number of attendees”



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**

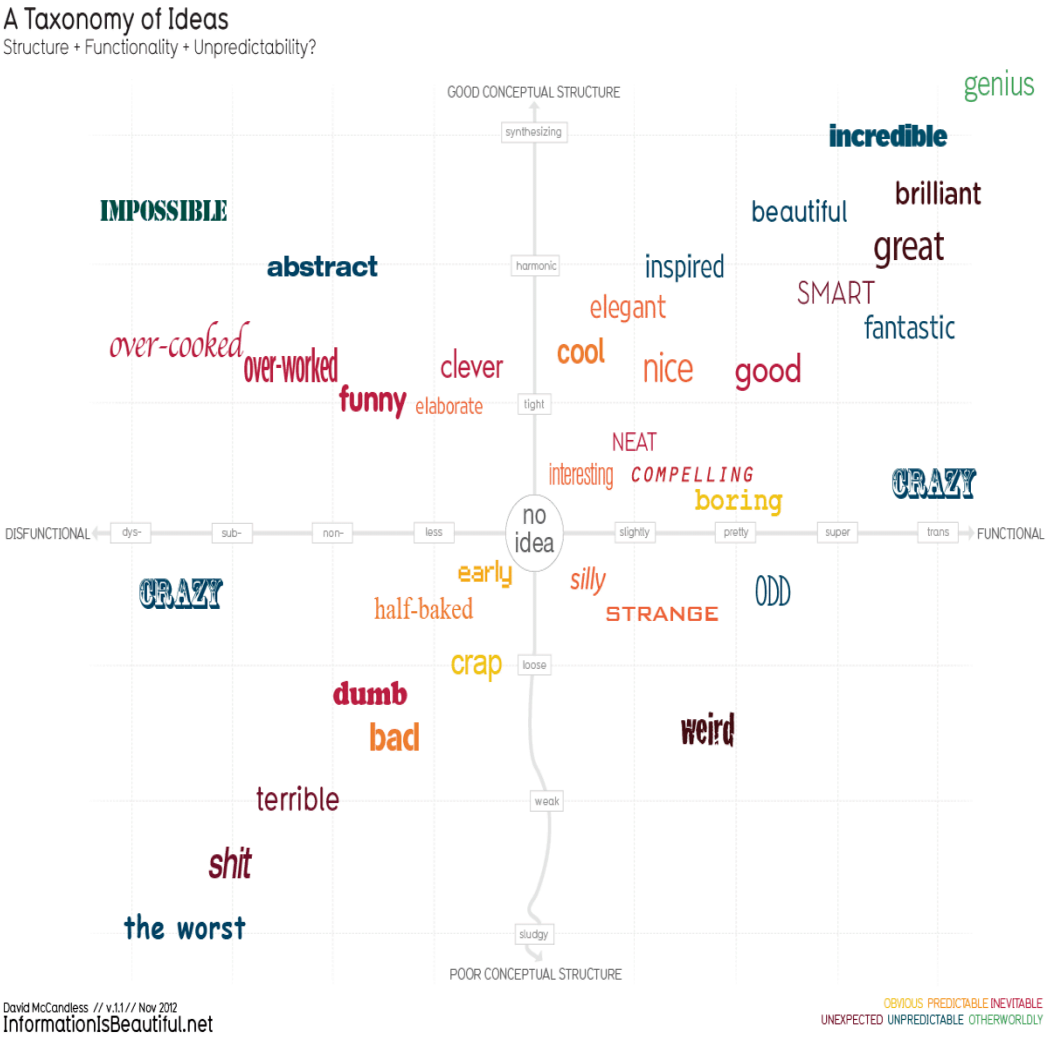
Visualize This!

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



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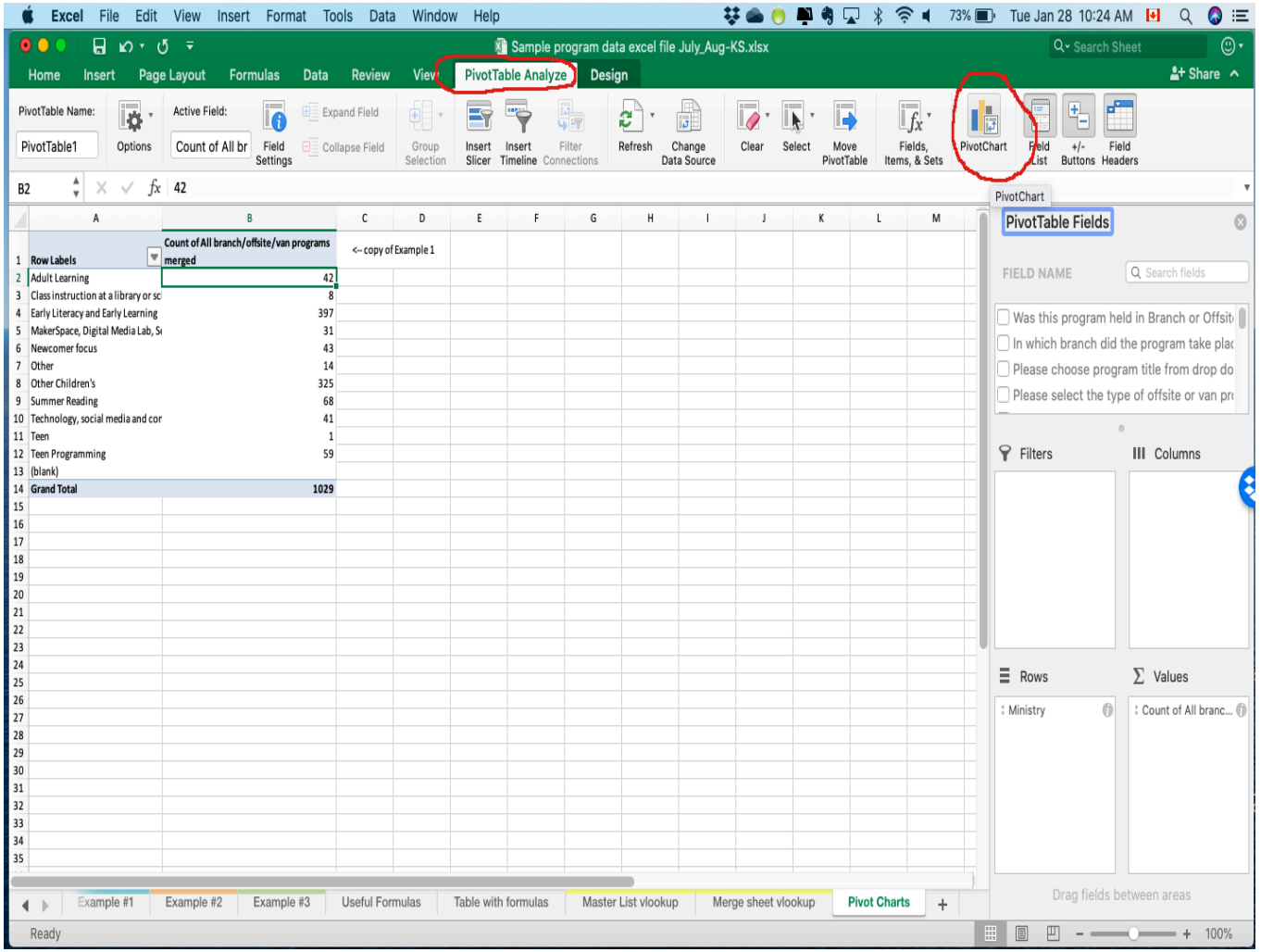
Data Viz Demo: Excel Pivot Chart, Step 1



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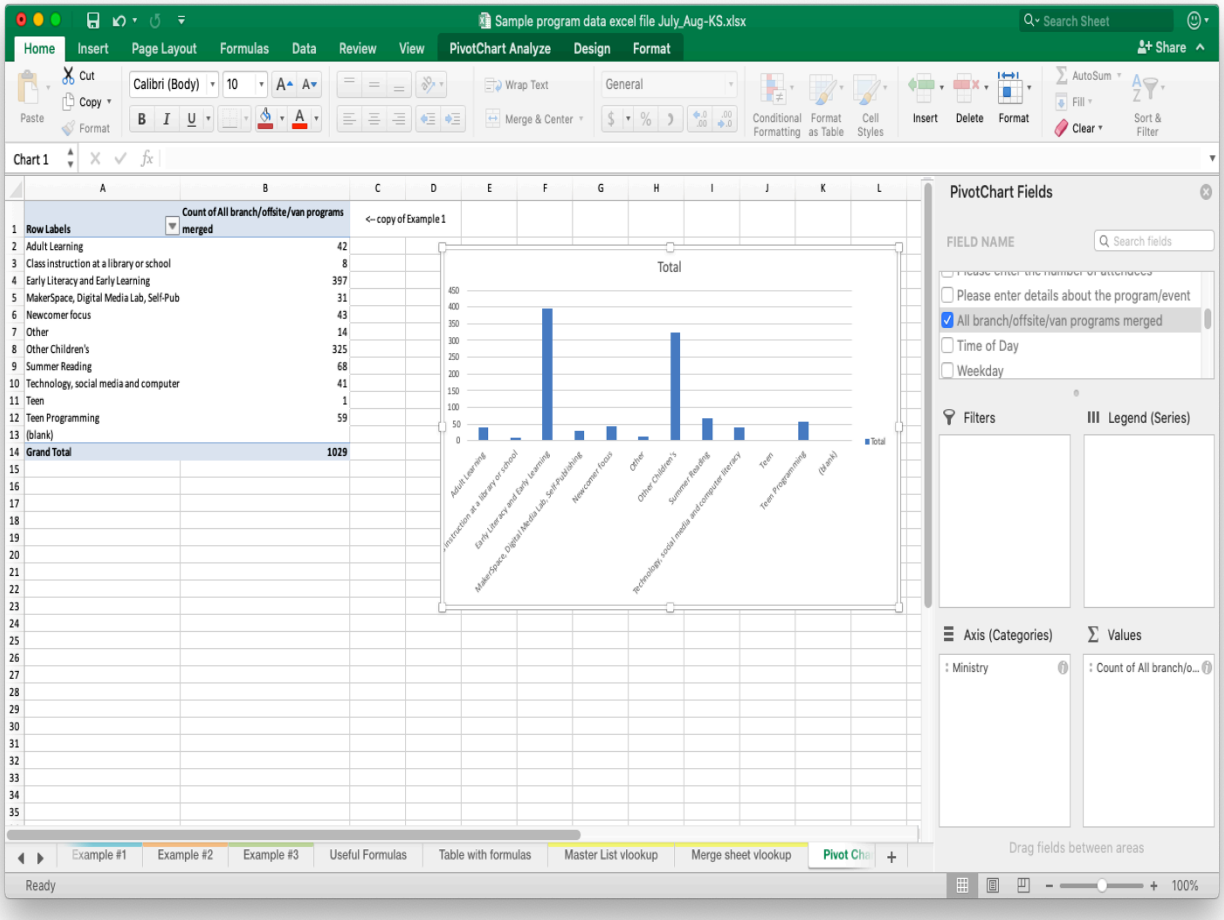
Data Viz Demo: Excel Pivot Chart, Step 2



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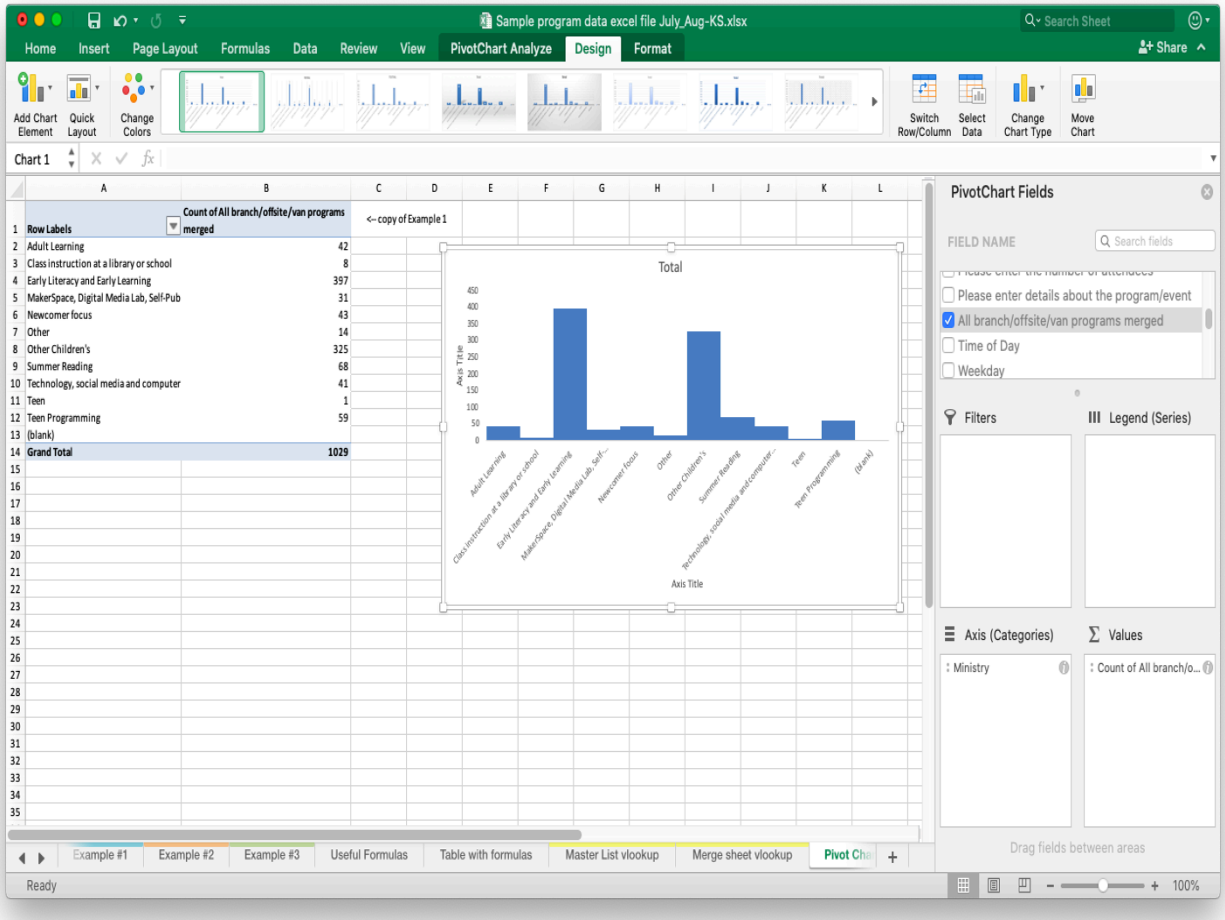
Data Viz Demo: Excel Pivot Chart, Step 1



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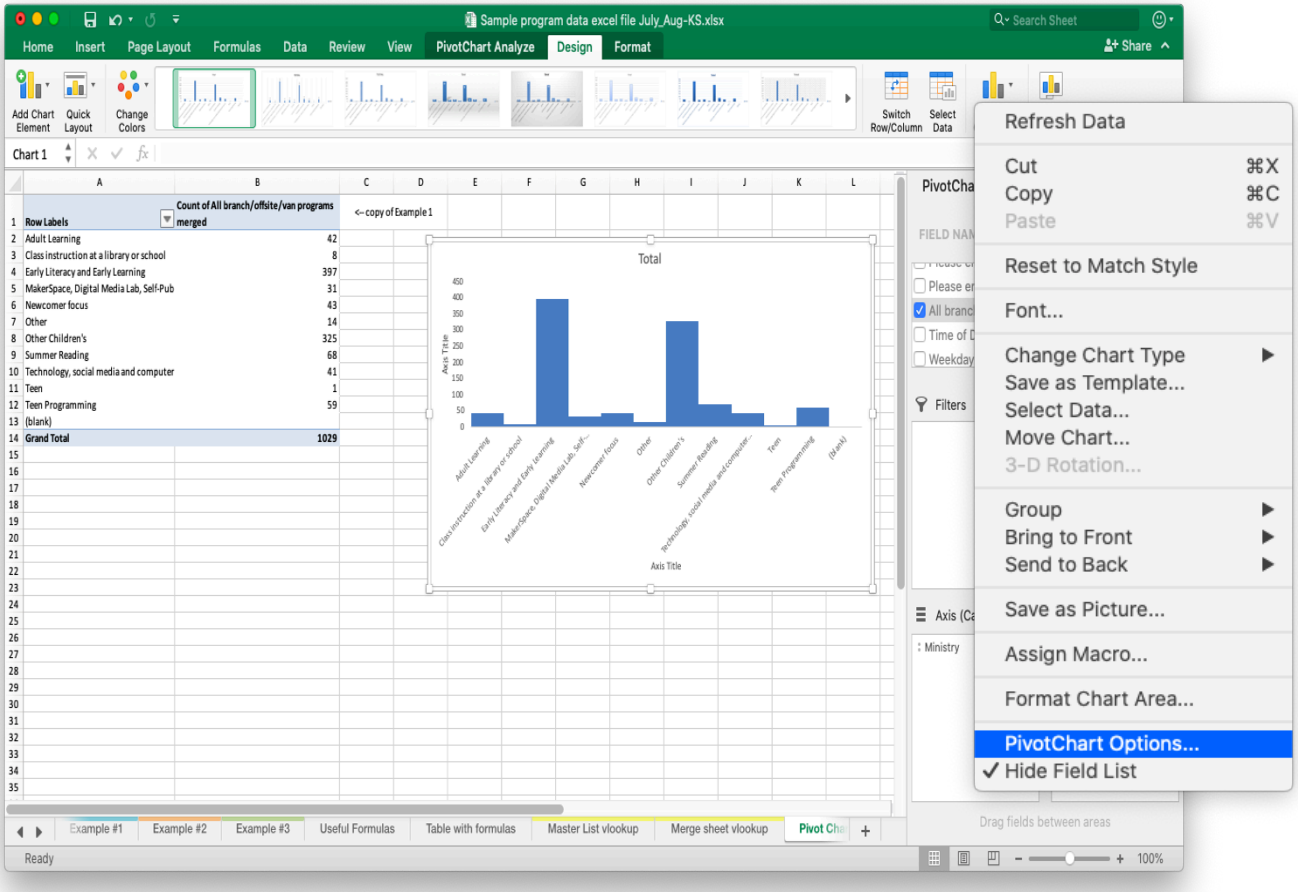
Data Viz Demo: Pivot Chart Options



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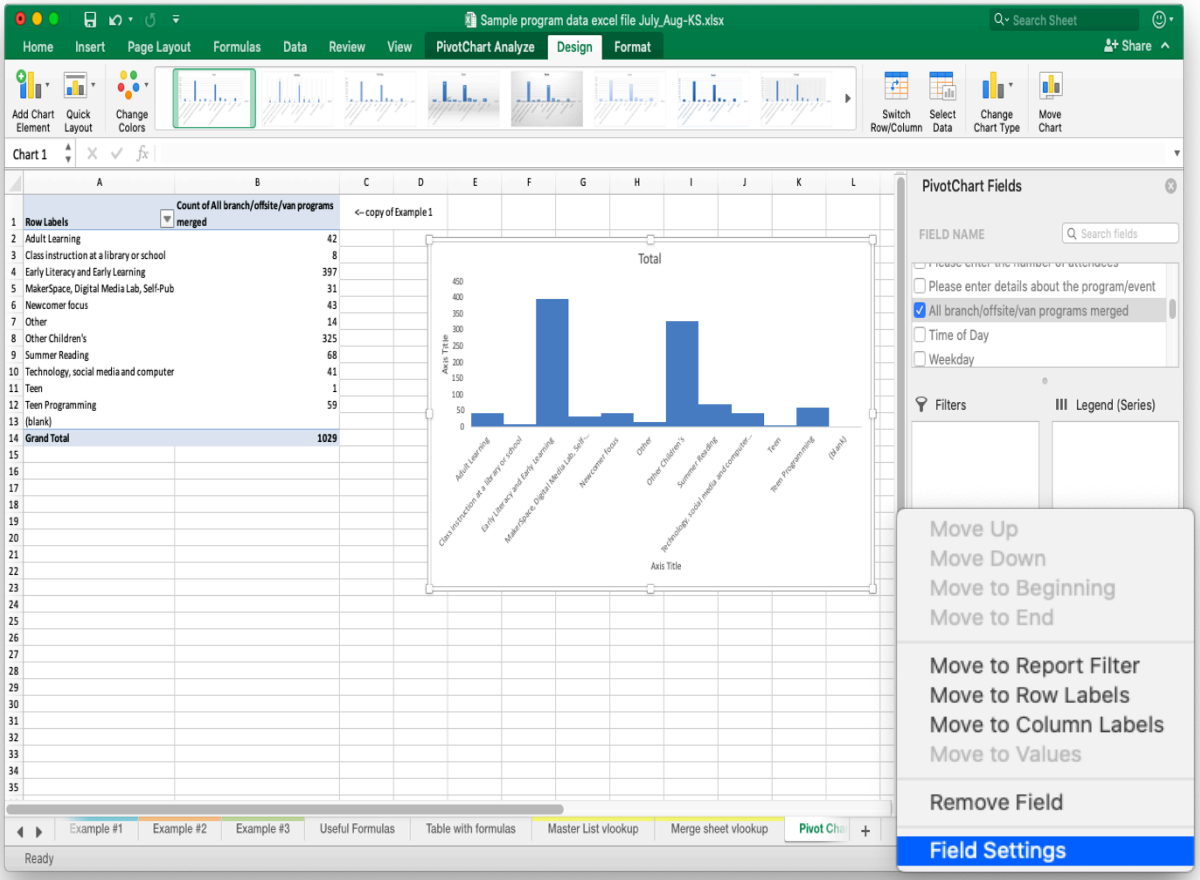
Data Viz Demo: Pivot Chart Field Settings



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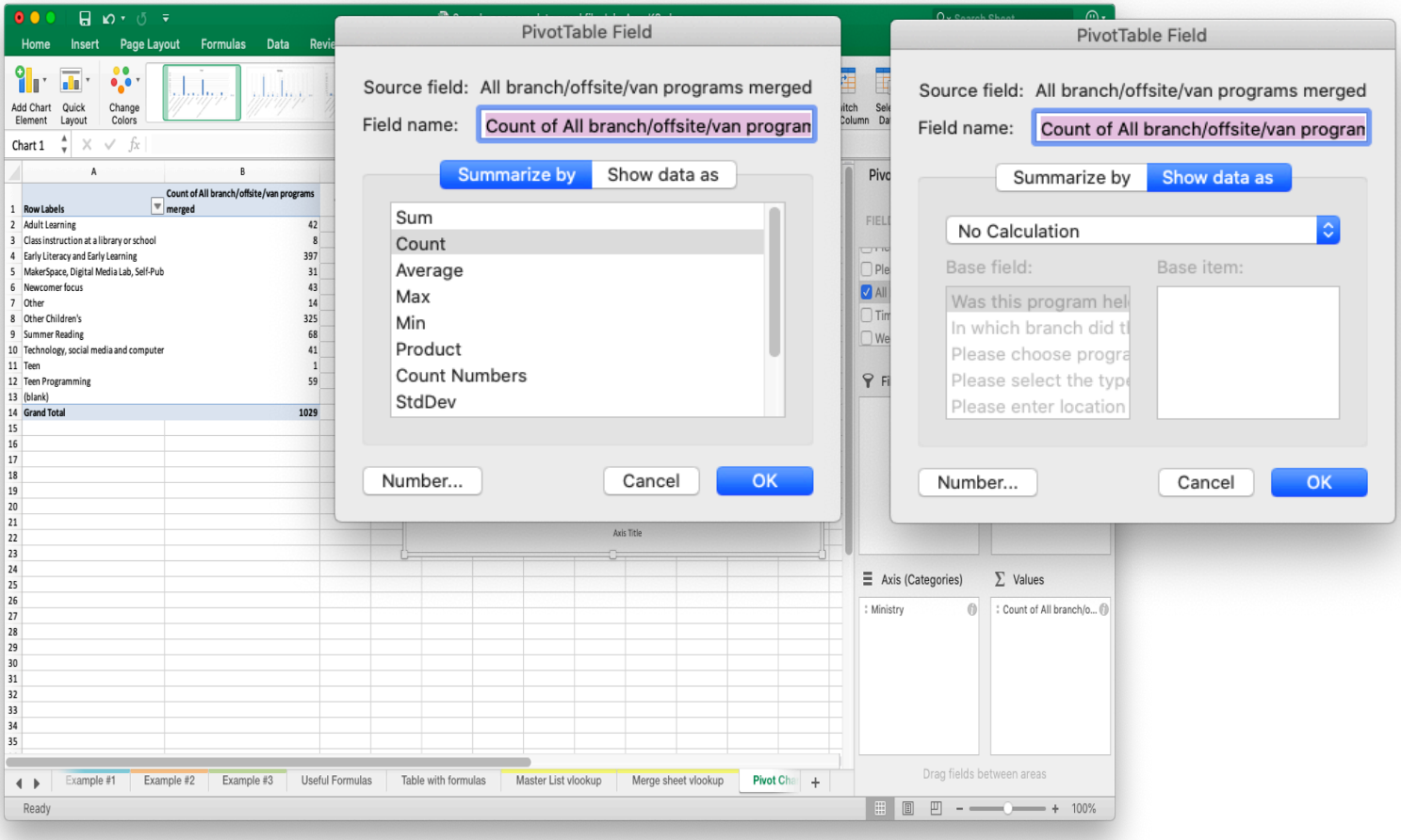
Data Viz Demo: Pivot Chart Field Settings



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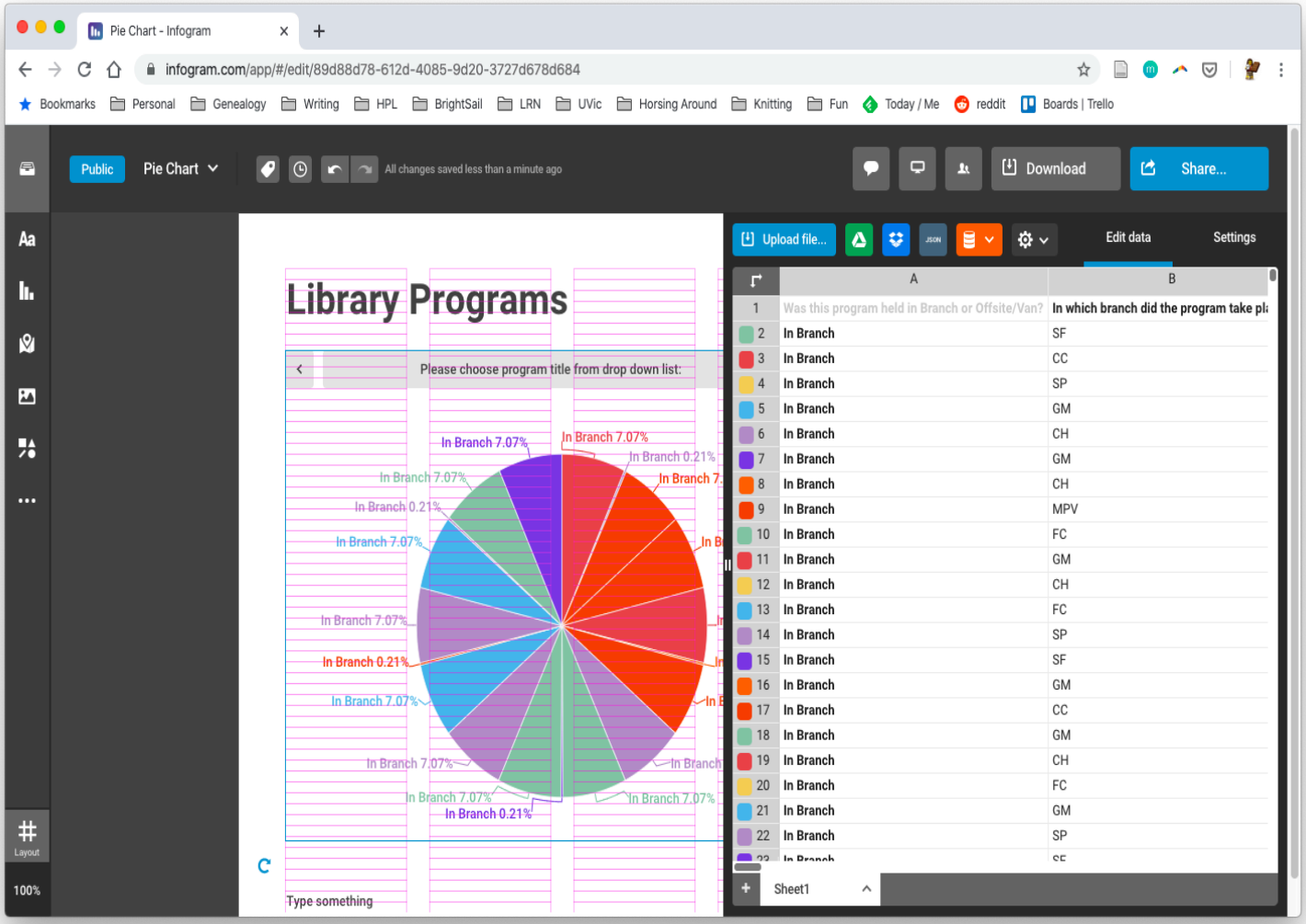
Data Viz Demo: Infogram



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Data Viz: Do's and Don'ts

Do

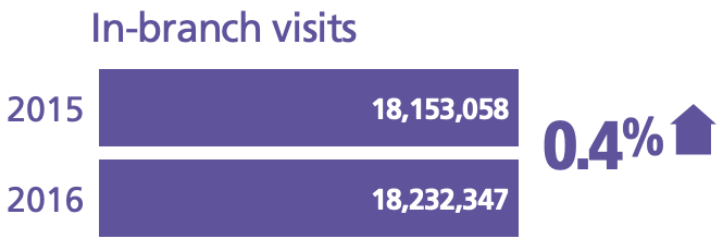
- Keep it simple!
- Use colour intentionally
- Make sure your visualization is understandable
- Choose the right visualization for the message you're trying to communicate

Don't!

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

A Story in Charts

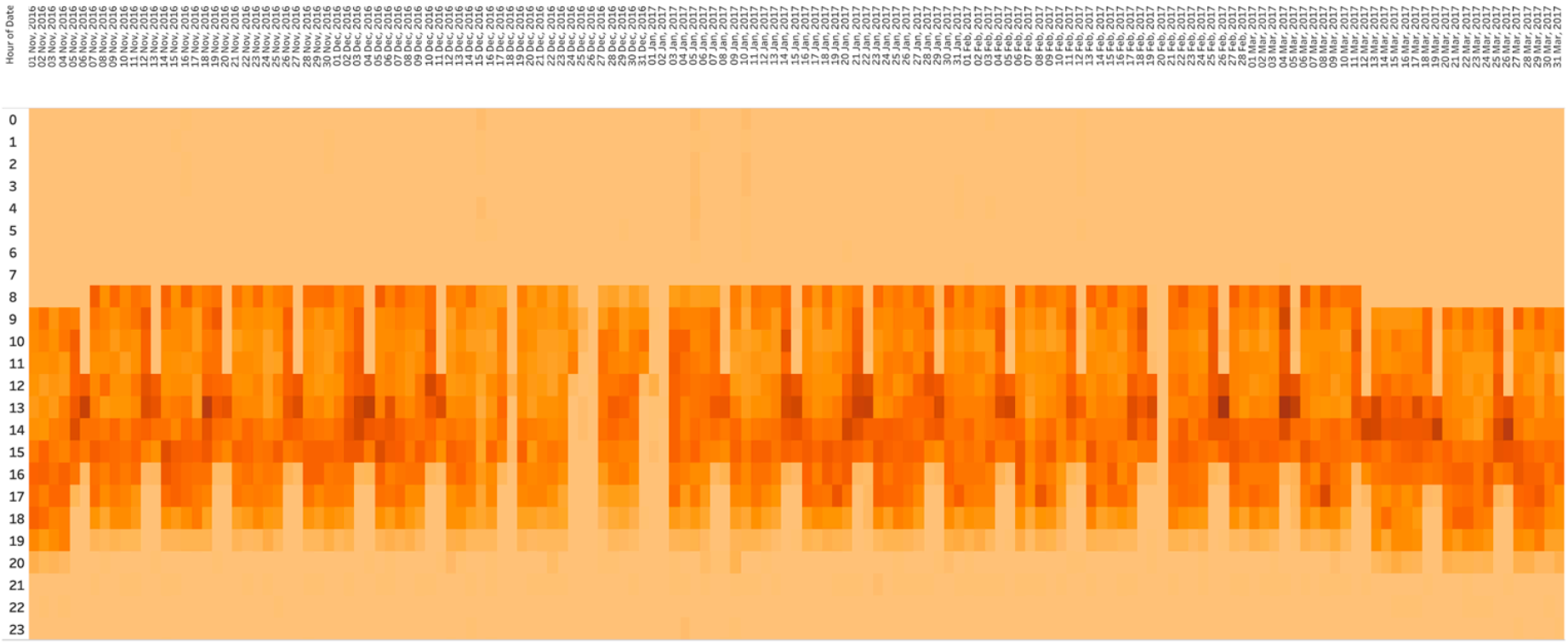
Branch	Yea	Month	Da	Day of We	Tim	Cou
	2016	December	1	Thursday	02:00	0
	2016	December	1	Thursday	02:30	0
	2016	December	1	Thursday	03:00	0
	2016	December	1	Thursday	03:30	0
	2016	December	1	Thursday	04:00	0
	2016	December	1	Thursday	04:30	0
	2016	December	1	Thursday	05:00	0
	2016	December	1	Thursday	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



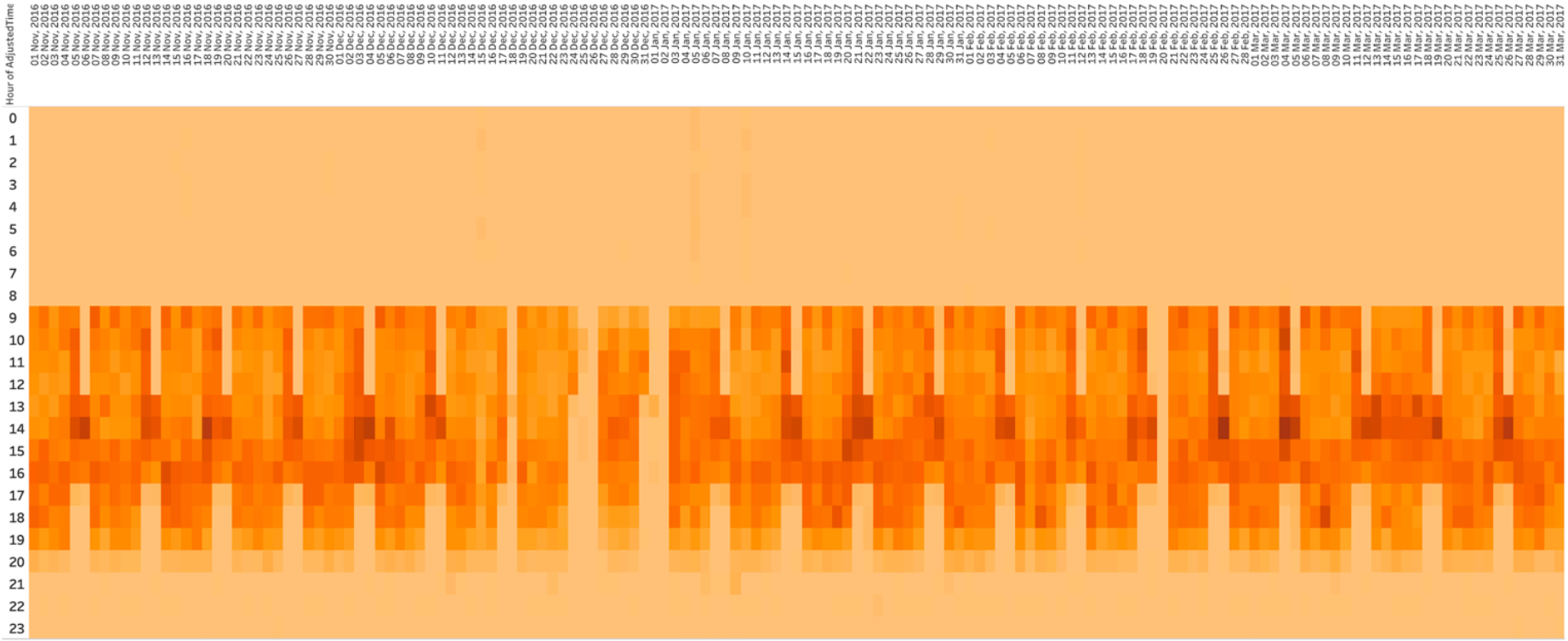
		Mon	Tue	Wed	Thu	Fri	Sat	
		10:00 - 8:30	12:30 - 8:30	10:00 - 6:00	12:30 - 8:30	10:00 - 6:00	9:00 - 5:00	Cl
9-10		25	0	22	0	16	19	
		17	0	13	0	16	23	
10-11		21	0	26	0	19	23	
		18	0	22	0	19	28	
11-12		23	9	28	9	18	30	
		20	30	25	37	26	41	
12-1		24	16	36	25	31	27	
		29	15	35	23	21	25	
1-2		12	25	17	27	19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

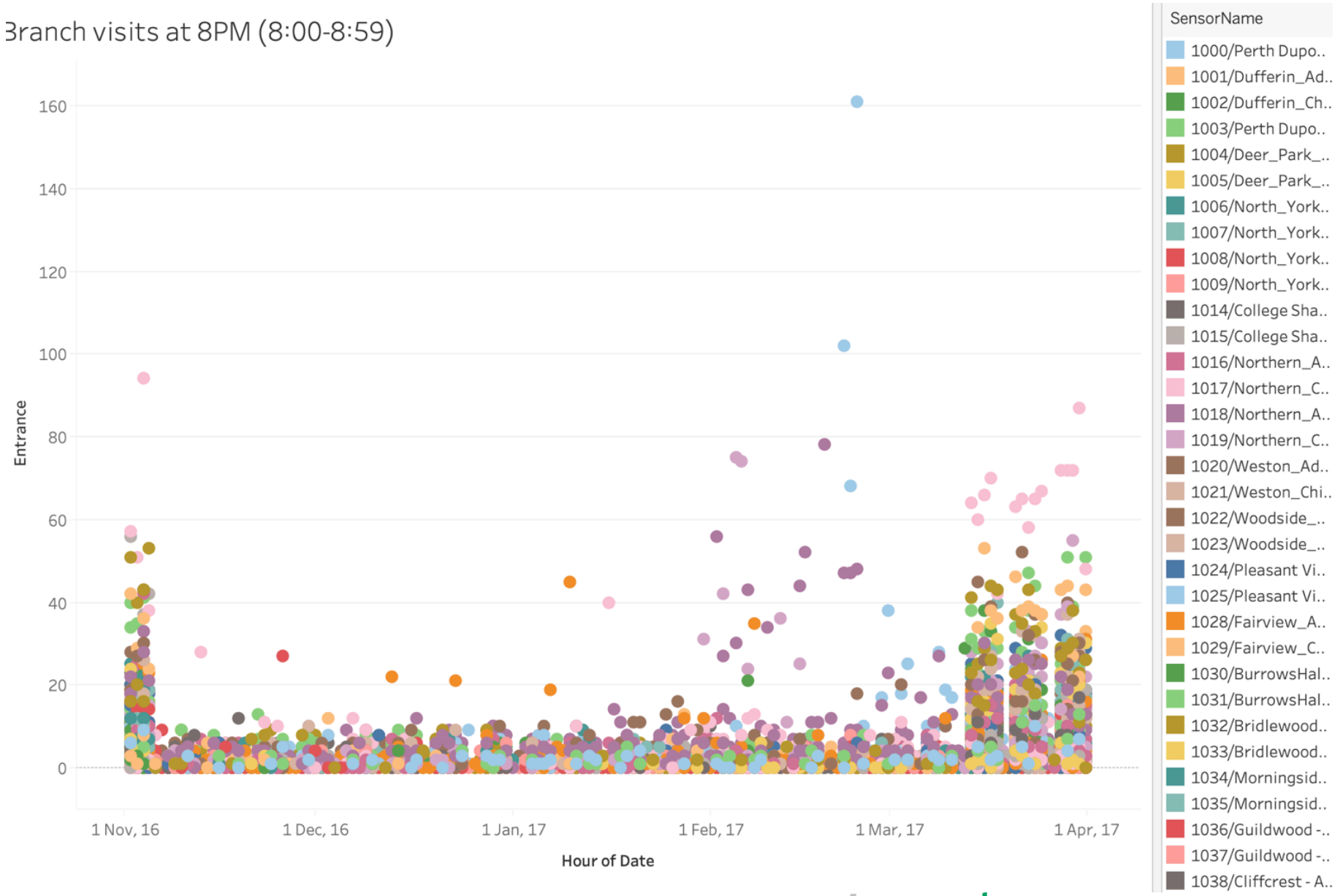
		Mon	Tue	Wed	Thu	Fri	Sat	
		10:00 - 8:30	12:30 - 8:30	10:00 - 6:00	12:30 - 8:30	10:00 - 6:00	9:00 - 5:00	Cl
9-10		25	0	22	0	16	19	
		17	0	13	0	16	23	
10-11		21	0	26	0	19	23	
		18	0	22	0	19	28	
11-12		23	9	28	9	18	30	
		20	30	25	37	26	41	
12-1		24	16	36	25	31	27	
		29	15	35	23	21	25	
1-2		12	25	17	27	19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

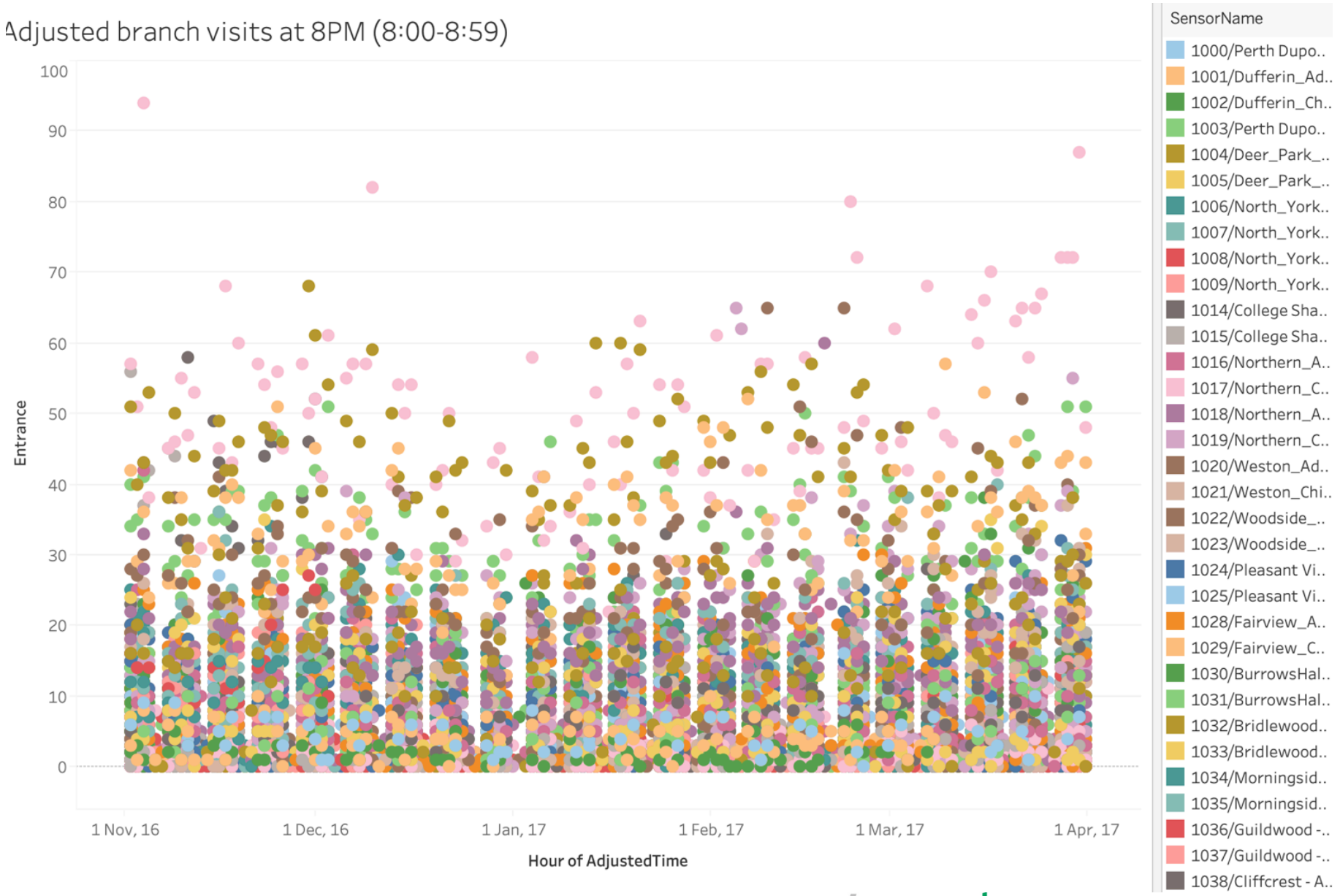
Indivdiual Branch Visits (Nov 1 2016 to Mar 31 2017)



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




Branch visits at 8PM (8:00-8:59)
Entrance
160
140
120
100
80
60
40
20
0
1 Nov, 16
1 Dec, 16
1 Jan, 17
1 Feb, 17
1 Mar, 17
1 Apr, 17
Hour of Date
SensorName
1000/Perth Dupo..
1001/Dufferin_Ad..
1002/Dufferin_Ch..
1003/Perth Dupo..
1004/Deer_Park_..
1005/Deer_Park_..
1006/North_York..
1007/North_York..
1008/North_York..
1009/North_York..
1014/College Sha..
1015/College Sha..
1016/Northern_A..
1017/Northern_C..
1018/Northern_A..
1019/Northern_C..
1020/Weston_Ad..
1021/Weston_Chi..
1022/Woodside_..
1023/Woodside_..
1024/Pleasant Vi..
1025/Pleasant Vi..
1028/Fairview_A..
1029/Fairview_C..
1030/BurrowsHal..
1031/BurrowsHal..
1032/Bridlewood..
1033/Bridlewood..
1034/Morningsid..
1035/Morningsid..
1036/Guildwood -..
1037/Guildwood -..
1038/Cliffcrest - A..


Adjusted branch visits at 8PM (8:00-8:59)
Entrance
100
90
80
70
60
50
40
30
20
10
0
1 Nov, 16
1 Dec, 16
1 Jan, 17
1 Feb, 17
1 Mar, 17
1 Apr, 17
Hour of AdjustedTime
SensorName
1000/Perth Dupo..
1001/Dufferin_Ad..
1002/Dufferin_Ch..
1003/Perth Dupo..
1004/Deer_Park_..
1005/Deer_Park_..
1006/North_York..
1007/North_York..
1008/North_York..
1009/North_York..
1014/College Sha..
1015/College Sha..
1016/Northern_A..
1017/Northern_C..
1018/Northern_A..
1019/Northern_C..
1020/Weston_Ad..
1021/Weston_Chi..
1022/Woodside_..
1023/Woodside_..
1024/Pleasant Vi..
1025/Pleasant Vi..
1028/Fairview_A..
1029/Fairview_C..
1030/BurrowsHal..
1031/BurrowsHal..
1032/Bridlewood..
1033/Bridlewood..
1034/Morningsid..
1035/Morningsid..
1036/Guildwood -..
1037/Guildwood -..
1038/Cliffcrest - A..

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

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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Erika Heesen, CEO/Chief Librarian, Perth & District Union Public Library (currently on leave)

OLA Staff Member: Sarah Roberts, Advocacy & Research Officer

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Images from:

The Noun Project