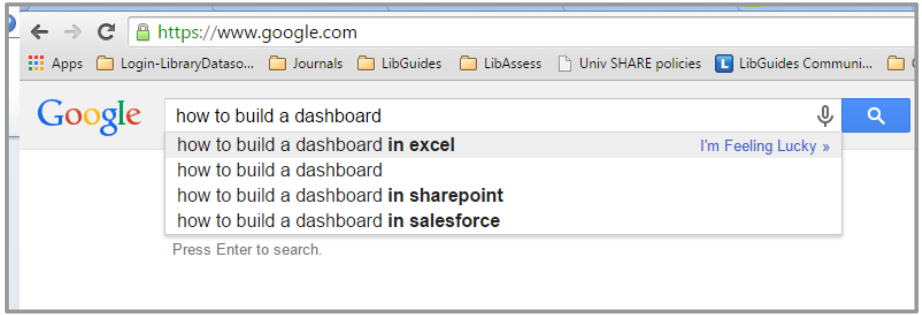
Visualizing Library Data

Getting Started with your First Library Dashboard



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Technology and Tech Support

Part I : Dashboards - A Primer

What are dashboards?

A dashboard is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.

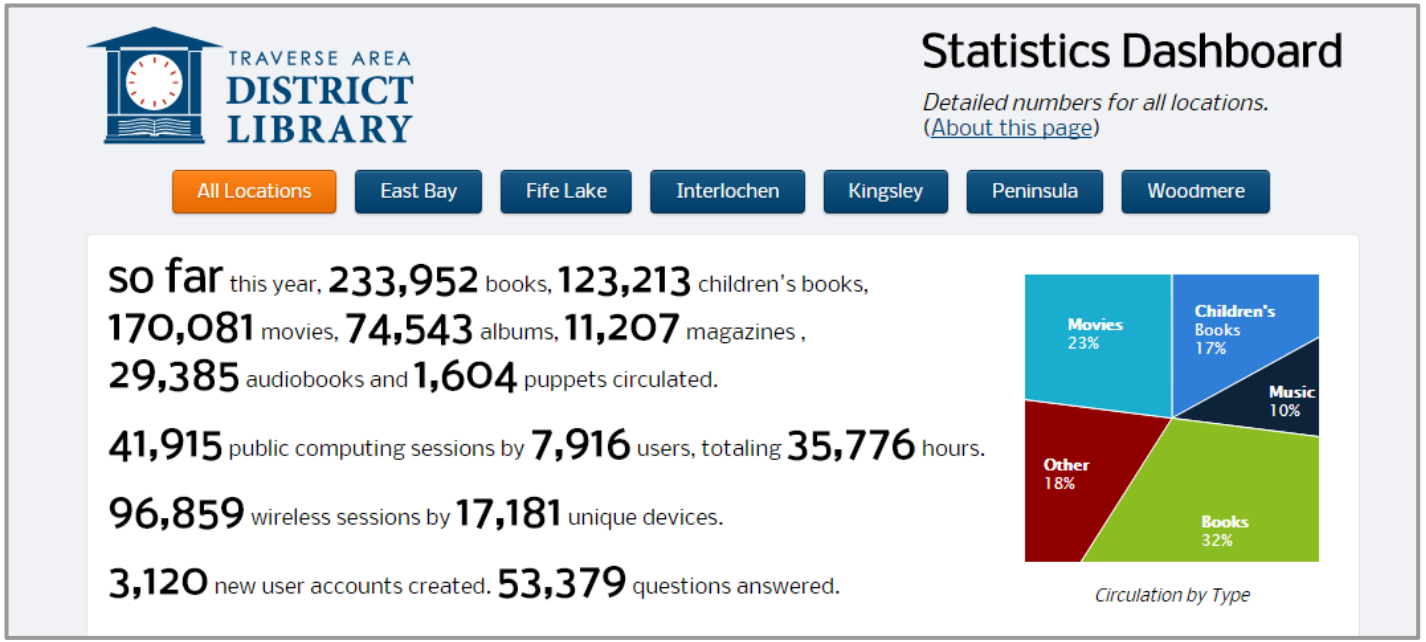
- Stephen Few (Dashboard Confusion, 2004)

Why Dashboards ?

Ad Hoc reporting

Data at your finger tips

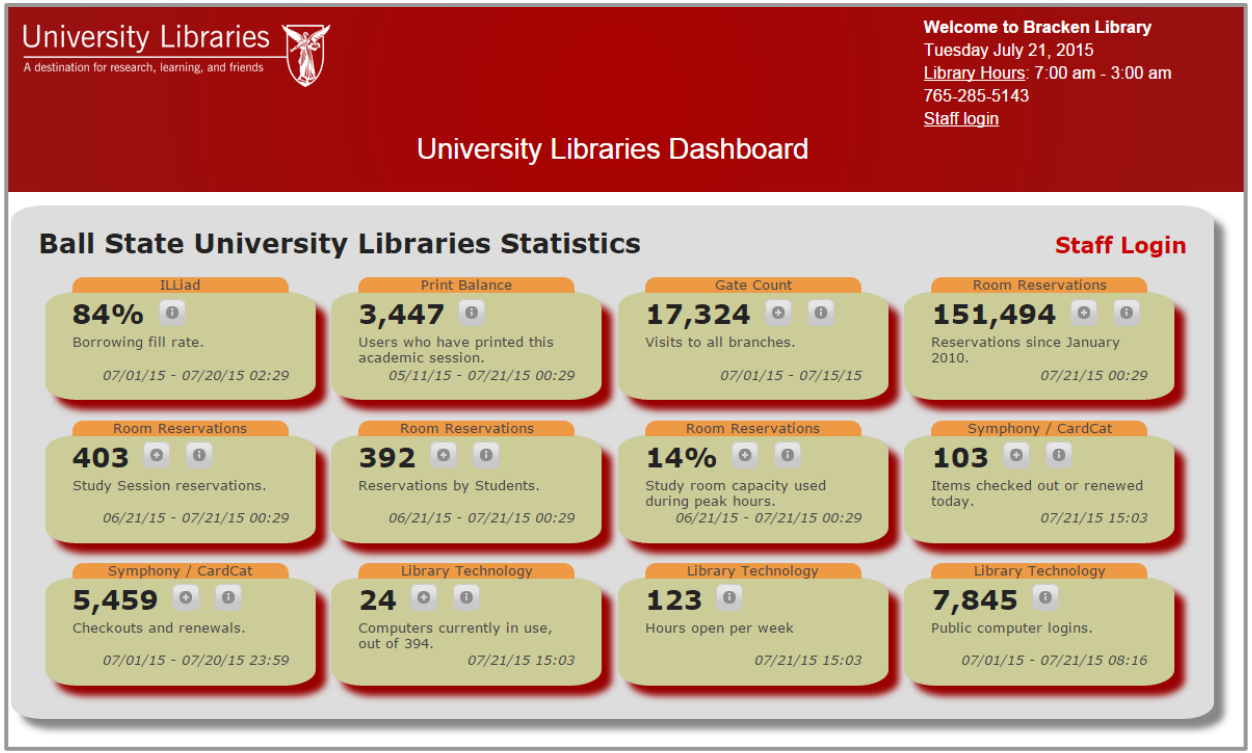
How are Libraries using dashboards ?



Data displayed:
Quick Facts

Tool:
Web development (Php scripting and Postgres database)

Source: http://www.tadl.org/stats/



Source : Bracken Library Dashboard available at http://www.bsu.edu/libraries/dashboard/public.php

Data displayed:
User facing dashboards dynamically loading most recent data

[and staff login for more detailed data]

Tool:
Web development (JQuery)

most popular books

1. The Girl on the Train
2. Country
3. Nemesis
4. Wicked Charms
5. The Stranger
6. The Fault in Our Stars
7. The Nightingale
8. Gray Mountain
9. Every Fifteen Minutes
10. 14th Deadly Sin

movies

1. Gone Girl
2. Maleficent
3. The Hunger Games
4. Into the Woods
5. The Imitation Game
6. American Sniper
7. Fury
8. Guardians of the Galaxy
9. The Hundred Foot Journey
10. The Monuments Men

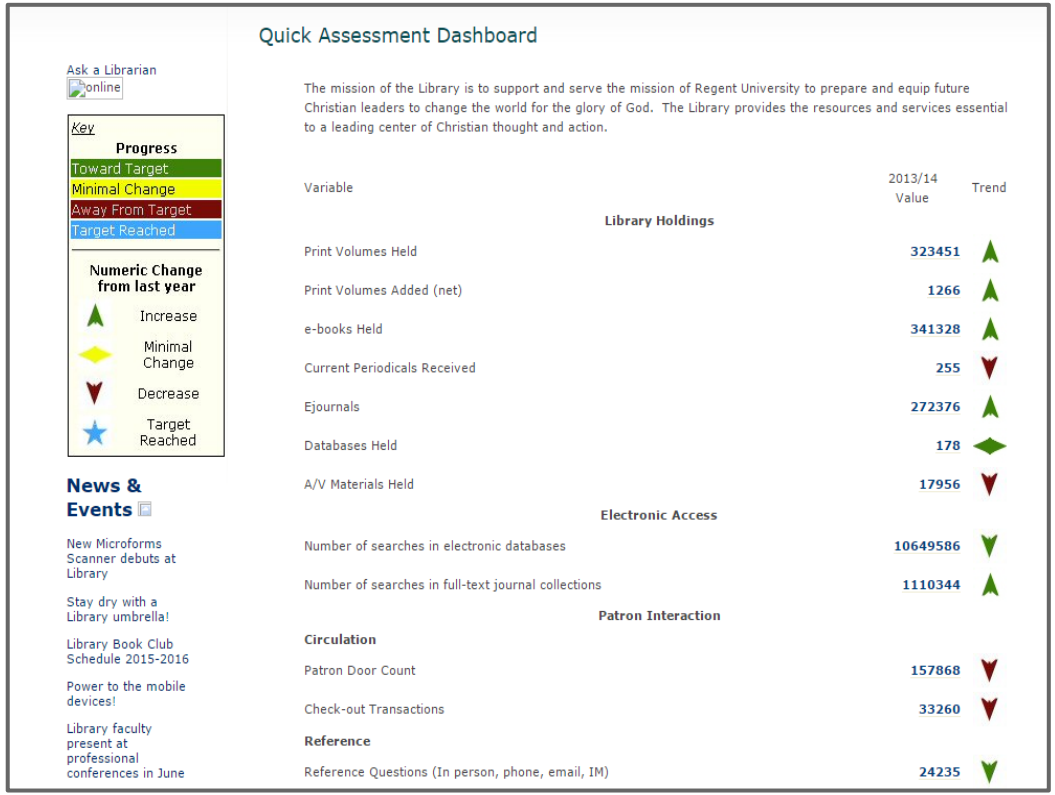
music

1. 1989
2. G I R L
3. Wilder Mind
4. Turn Blue
5. Grammy
6. Title
7. Now Thats What I Call Music
8. V
9. First Kiss
10. 747

Data displayed:
The top 10 list

Tool:
Web development (Php scripting and Postgres database)

Source: http://www.tadl.org/stats/



Ask a Librarian online

Key

Progress

- Toward Target
- Minimal Change
- Away From Target
- Target Reached

Numeric Change from last year

- Increase
- Minimal Change
- Decrease
- Target Reached

News & Events

- New Microforms Scanner debuts at Library
- Stay dry with a Library umbrella!
- Library Book Club Schedule 2015-2016
- Power to the mobile devices!
- Library faculty present at professional conferences in June

Quick Assessment Dashboard

The mission of the Library is to support and serve the mission of Regent University to prepare and equip future Christian leaders to change the world for the glory of God. The Library provides the resources and services essential to a leading center of Christian thought and action.

Variable	2013/14 Value	Trend
Library Holdings		
Print Volumes Held	323451	↑
Print Volumes Added (net)	1266	↑
e-books Held	341328	↑
Current Periodicals Received	255	↓
Ejournals	272376	↑
Databases Held	178	↔
A/V Materials Held	17956	↓
Electronic Access		
Number of searches in electronic databases	10649586	↓
Number of searches in full-text journal collections	1110344	↑
Patron Interaction		
Circulation		
Patron Door Count	157868	↓
Check-out Transactions	33260	↓
Reference		
Reference Questions (In person, phone, email, IM)	24235	↓

Data displayed: ACRL/ARL statistics for the year

Tool:
static values entered in webpage

Source : Regent University library dashboard : http://www.regent.edu/lib/dashboard/home.cfm

www.countingopinions.com/pireports/report.php?b90fa62227ea9c0e20b66f942e910a77

Apps | Login-LibraryDataso... | Journals | LibGuides | LibAssess | Univ SHARE policies | LibGuides Communi... | Outcomes | Sha

FY14 Public Programs 5-Year Trends

Collection: **Public Library Statistics** Period **2010 - 2014**

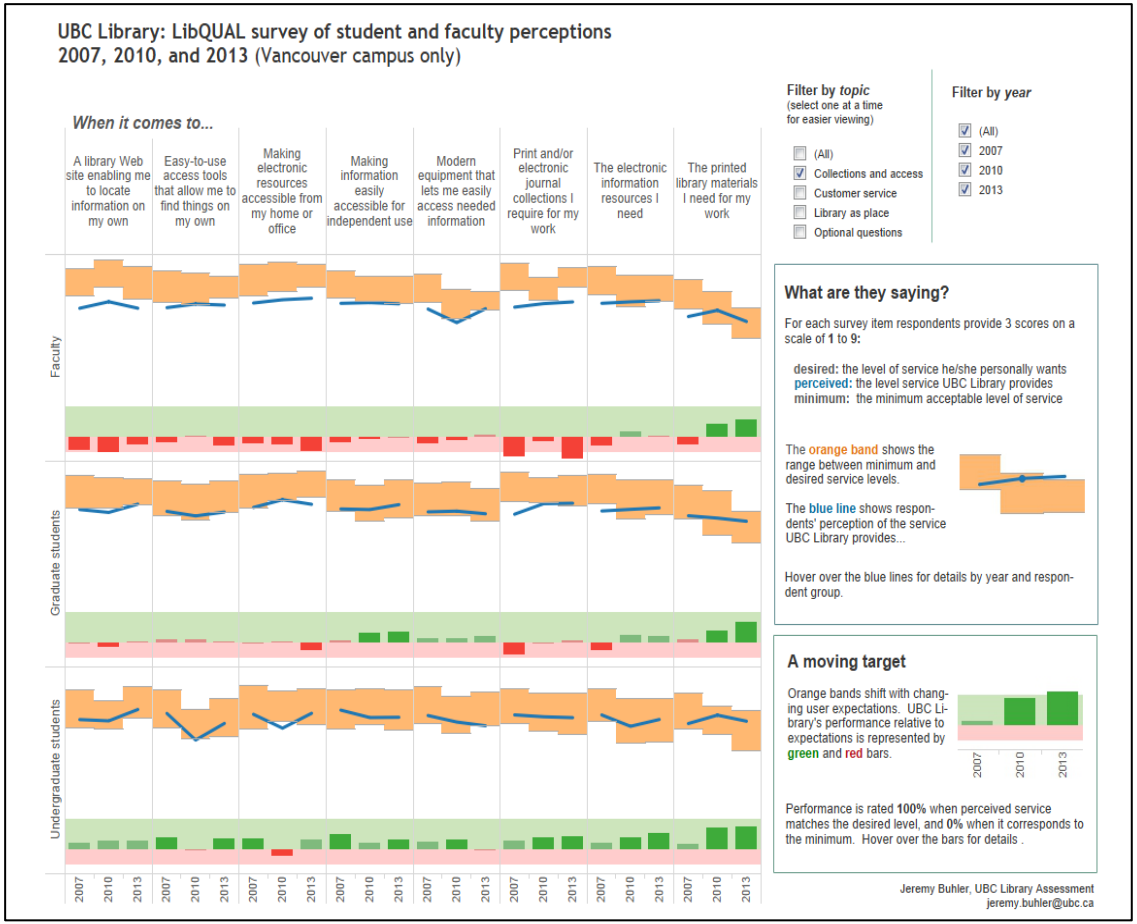
72. Children's Programs	2010	Diff(%)	2011	Diff(%)	2012	Diff(%)	2013	Diff(%)	2014
Wyoming	10,818	-2.47%	10,551	2.61%	10,826	3.18%	11,170	1.71%	11,361
ALBANY COUNTY PUBLIC LIBRARY	480	3.13%	495	-15.35%	419	-29.83%	294	102.04%	594
BIG HORN COUNTY LIBRARY	254	0.00%	254	2.36%	260	-9.23%	236	-18.22%	193
CAMPBELL COUNTY PUBLIC LIBRARY SYSTEM	369	5.69%	390	-9.23%	354	9.32%	387	15.76%	448
CARBON COUNTY LIBRARY SYSTEM	665	-9.77%	600	-27.17%	437	-13.04%	380	6.84%	406
CONVERSE COUNTY LIBRARY SYSTEM	255	38.43%	353	-0.57%	351	-9.40%	318	14.78%	365
CROOK COUNTY LIBRARY	143	250.35%	501	5.19%	527	10.63%	583	-24.70%	439
FREMONT COUNTY LIBRARY SYSTEM	593	-10.96%	528	1.33%	535	-3.36%	517	-22.82%	399
GOSHEN COUNTY LIBRARY	69	-2.90%	67	2.99%	69	-7.25%	64	7.81%	69
HOT SPRINGS COUNTY LIBRARY	233	-13.30%	202	35.64%	274	-15.33%	232	-23.28%	178
JOHNSON COUNTY LIBRARY SYSTEM	230	10.87%	255	-15.69%	215	32.56%	285	14.39%	326
LARAMIE COUNTY LIBRARY SYSTEM	1,283	-8.89%	1,169	-22.84%	902	17.52%	1,060	5.47%	1,118
LINCOLN COUNTY LIBRARY SYSTEM	855	1.87%	871	-9.53%	788	9.77%	865	14.45%	990
NATRONA COUNTY LIBRARY SYSTEM	823	-0.49%	819	56.53%	1,282	29.56%	1,661	-38.05%	1,029
NIOBRARA COUNTY LIBRARY	333	-16.82%	277	23.83%	343	-26.53%	252	15.87%	292
PARK COUNTY PUBLIC LIBRARY	790	-18.48%	644	9.47%	705	-4.82%	671	10.58%	742
PLATTE COUNTY LIBRARY SYSTEM	74	2.70%	76	-5.26%	72	11.11%	80	11.25%	89
SHERIDAN COUNTY LIBRARY	612	-27.61%	443	4.06%	461	8.68%	501	-22.95%	386
SUBLETTE COUNTY LIBRARY SYSTEM	248	27.82%	317	80.44%	572	2.97%	589	-6.79%	549
SWEETWATER LIBRARY SYSTEM	1,089	-8.45%	997	-7.42%	923	5.96%	978	18.61%	1,160
TETON COUNTY LIBRARY	537	-8.01%	494	16.19%	574	-14.46%	491	26.48%	621
UINTA COUNTY LIBRARY SYSTEM	566	-8.13%	520	-4.23%	498	2.01%	508	-0.79%	504
WASHAKIE COUNTY LIBRARY	199	-20.60%	158	-8.23%	145	-49.66%	73	53.42%	112
WESTON COUNTY LIBRARY SYSTEM	118	2.54%	121	-0.83%	120	20.83%	145	17.93%	171

73. Young Adult Programs	2010	Diff(%)	2011	Diff(%)	2012	Diff(%)	2013	Diff(%)	2014
Wyoming	1,390	11.73%	1,553	19.96%	1,863	4.35%	1,944	19.96%	2,332
ALBANY COUNTY PUBLIC LIBRARY	47	12.77%	53	-18.87%	43	37.21%	59	0.00%	59
BIG HORN COUNTY LIBRARY	5	0.00%	5	60.00%	8	0.00%	8	200.00%	24
CAMPBELL COUNTY PUBLIC LIBRARY SYSTEM	224	21.43%	272	46.69%	399	-10.78%	356	11.80%	398
CARBON COUNTY LIBRARY SYSTEM	20	50.00%	30	203.33%	91	-21.98%	71	-16.90%	59
CONVERSE COUNTY LIBRARY SYSTEM	68	26.47%	86	-13.95%	74	5.41%	78	17.95%	92
CROOK COUNTY LIBRARY	47	-25.53%	35	-82.86%	6	100.00%	12	-8.33%	11
FREMONT COUNTY LIBRARY SYSTEM	34	129.41%	78	-15.38%	66	31.82%	87	-19.54%	70
GOSHEN COUNTY LIBRARY	0		2	-100.00%	0		0		0
HOT SPRINGS COUNTY LIBRARY	2	-100.00%	0		0		18	-38.89%	11
JOHNSON COUNTY LIBRARY SYSTEM	6	50.00%	9	-44.44%	5	20.00%	6	150.00%	15
LARAMIE COUNTY LIBRARY SYSTEM	120	-18.33%	98	-9.18%	89	-23.60%	68	-10.29%	61

Data displayed:
Yearly trends (longitudinal)

Tool:
LibPas by Counting Opinions

LibPas screenshot from http://www.countingopinions.com/pireports/report.php?b90fa62227ea9c0e20b66f942e910a77

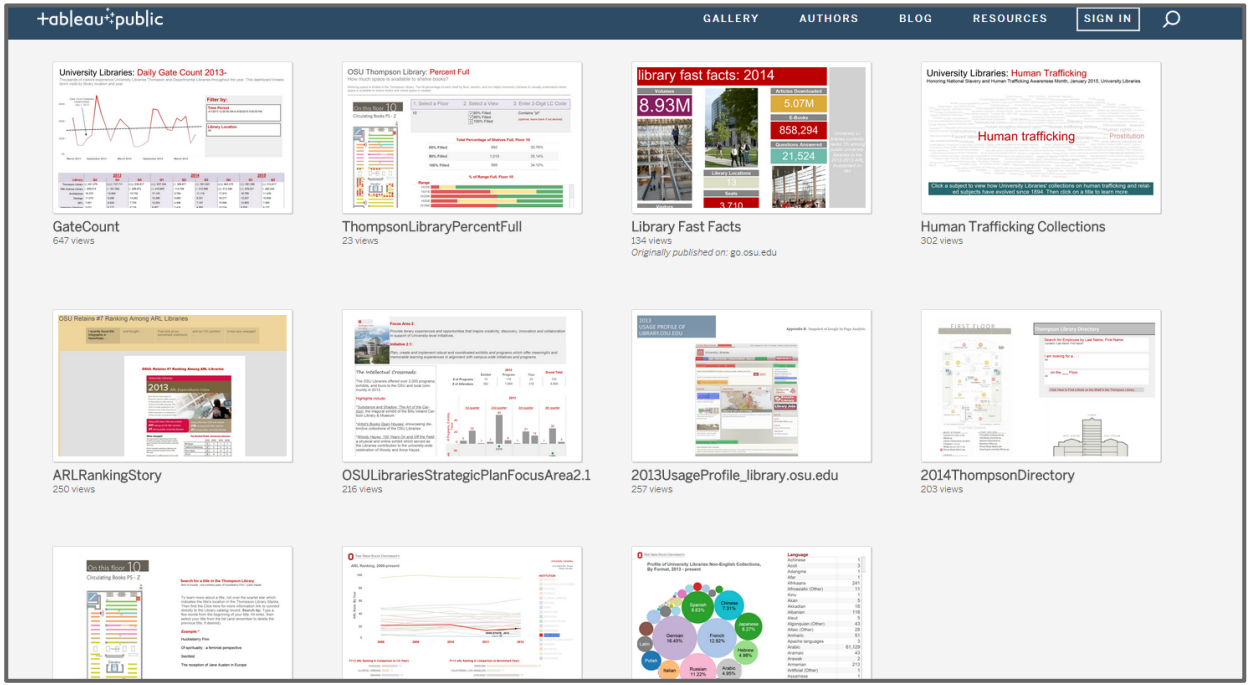


Data displayed:
Survey results

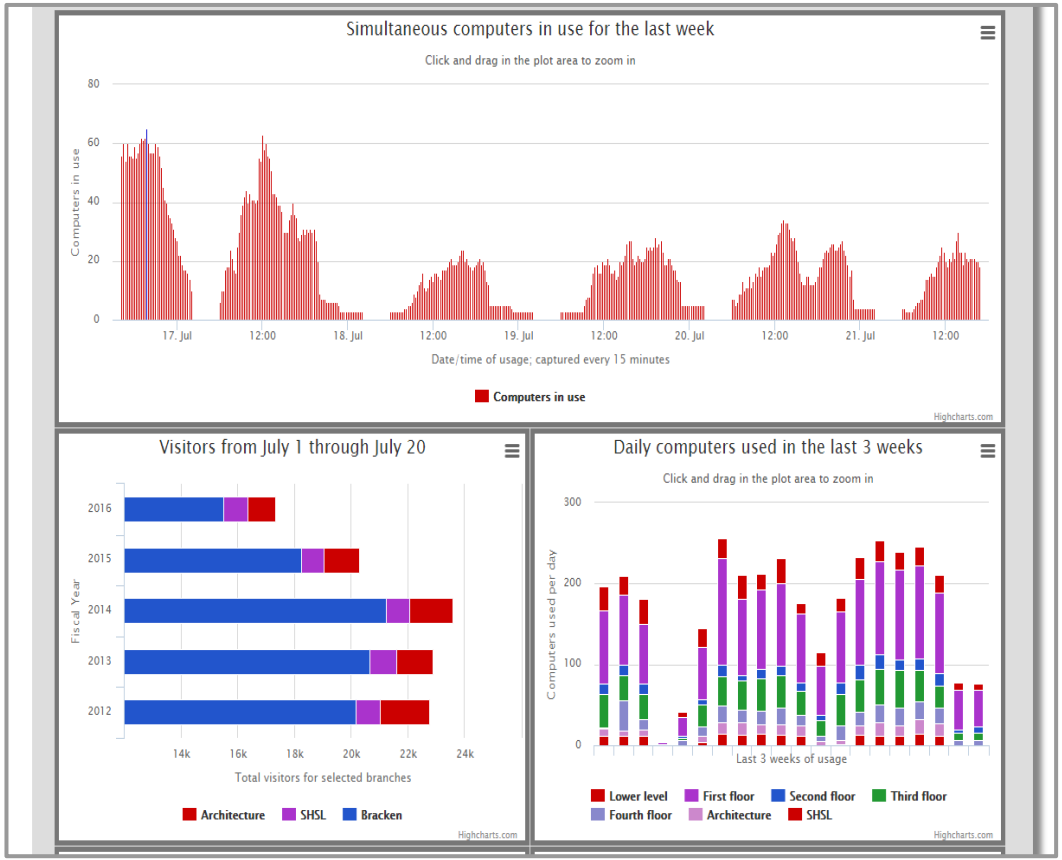
Tool used :
Tableau Public

Source : University of British Columbia Public Dashboards available at https://public.tableau.com/profile/lib.assess#!/

More examples in the Tableau Public Gallery



- We can adapt some Business Intelligence Tools to display library data.
- Some popular tools include:
  - Tableau
  - Qlik
  - Spotfire



Data displayed: Usage Statistics

Tool used : HighCharts

Image Source: http://www.bsu.edu/libraries/dashboard/public.php

HighCharts

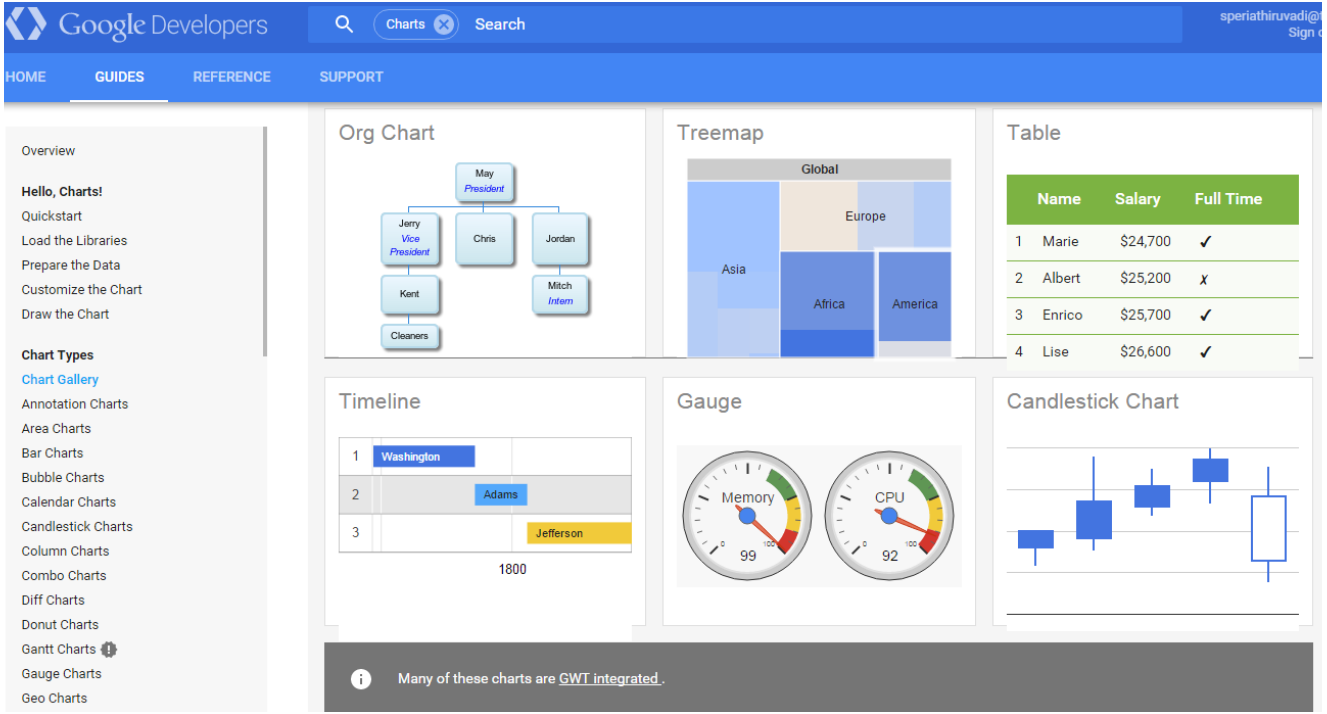
Image Source: Highcharts.com

- Free for non-profit
- Can work well with Google Sheets.
- Programming experience helpful
- Another option:$30/month for cloud version
- Allows download of charts in PDF or image formats.

- Data displayed: Usage Statistics
- Tool used : Google Visualization API

Source : GeorgiaTech Library Dashboards at http://www.library.gatech.edu/dashboard/

Google Visualization API



- Free
- Medium learning curve

Image Source: https://developers.google.com/chart

Piles Of Money - Sample

Overview

A column chart made out of money bills. The height of each money pile is relative to the value. This chart displays only positive values.

Example

	Label	Value
1	France	$10,000
2	Germany	$30,000
3	USA	$20,000
4	Poland	$7,500

Sample Code

```
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="http://visapi-gadgets.googlecode.com/svn/trunk/pilesofmoney/pom.css"/>
    <script type="text/javascript" src="http://visapi-gadgets.googlecode.com/svn/trunk/pilesofmoney/pom.js"></script>
    <script type="text/javascript" src="http://www.google.com/jsapi"></script>
  </head>
  <body>
    <div id="chartdiv"></div>
    <script type="text/javascript">
      google.load("visualization", "1");
      google.setOnLoadCallback(drawChart);
      var chart;
```

- Javascript programming expertise recommended.
- Growing community contributed charts

Image Source: https://developers.google.com/chart

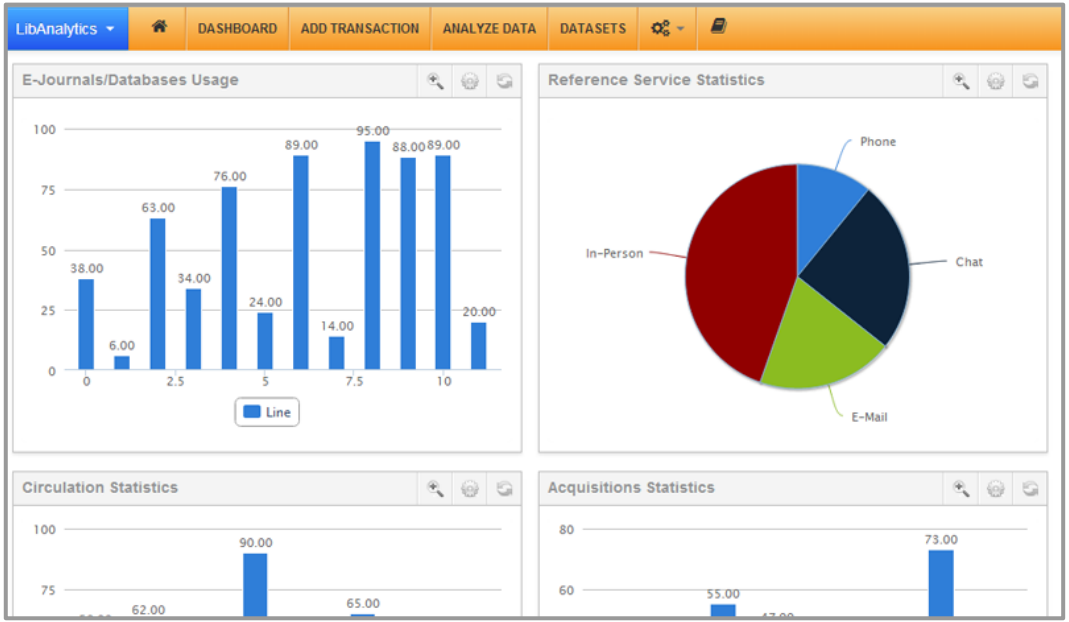


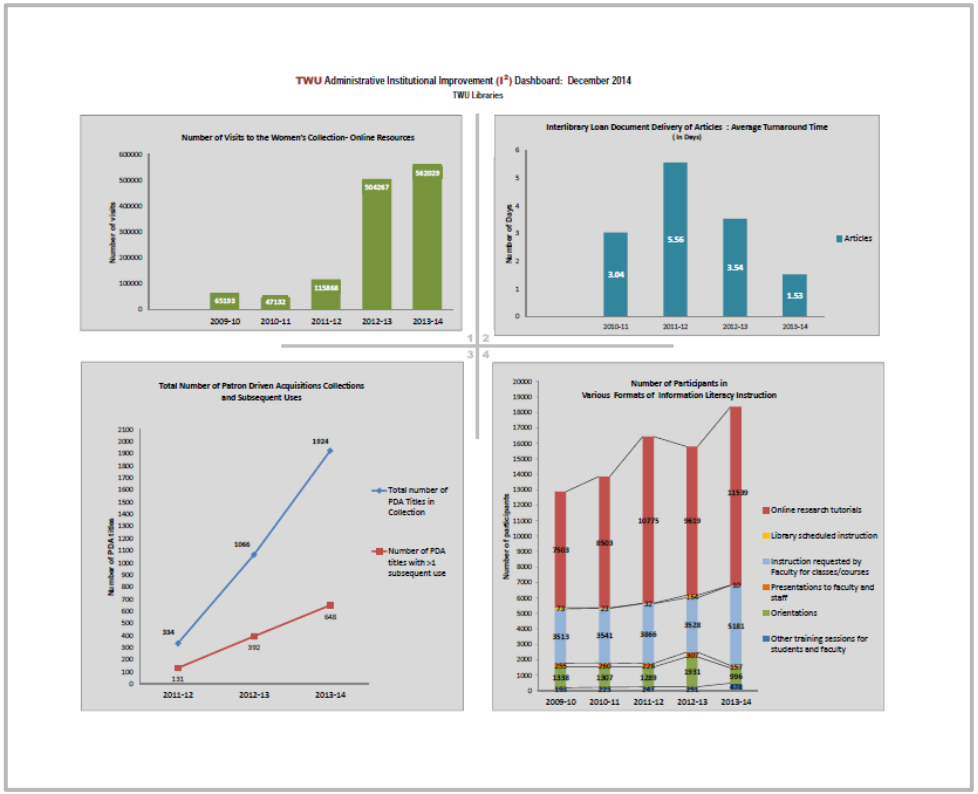
Image Source: http://springshare.com/libanalytics/

Another tool on our watchlist

<u>LibAnalytics Insight</u>

- $7K-8K a year
- Their plans for the coming year look promising:
  - Works well with other SpringShare tools
  - Integration with SUSHI/Counter compliant reports
  - Possibility for integration with library management systems

Last, but not the least … Dashboards in Excel

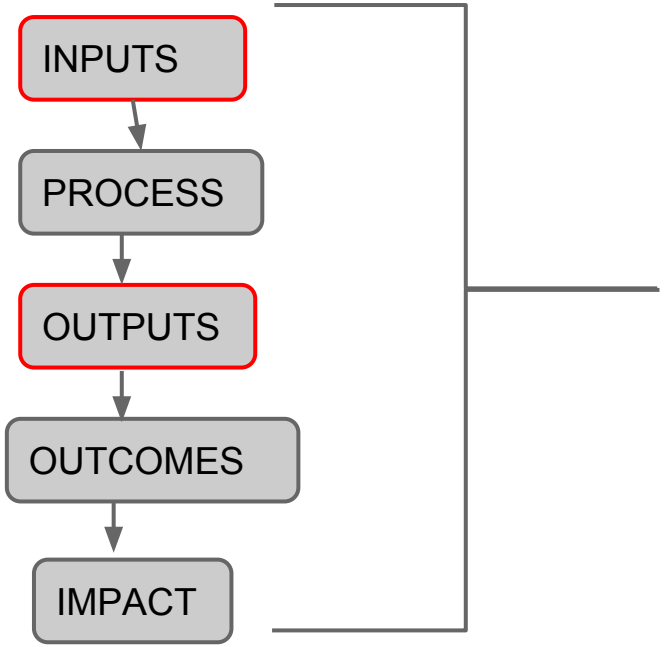


Data displayed:
Program assessment for Institutional Improvement

Tool: *Microsoft Excel*

Part 2 : Implementation at TWU

Thinking about our data,



guided by our strategic goals and objectives

enabling a continuous cycle of improvement

creating a culture of assessment

Adapted based on Viewing Library Metrics from Different Perspectives (Dugan, Hernon, Nitecki , 2009)

What do we want ? - THE PURPOSE

- What data to display?
- Who is our Audience ?
- How do we tie it to our strategic plan?
- What is the ‘Story of our Data’ ?

Practical Considerations - The PROCESS

- What tool to use for displaying our data?
    - back end: data collection,metadata,data storage, and automatic data import
    - front end: performance, interaction, responsive
    - Other factors:
        - cost
        - restriction of access
        - library community support
        - job expertise - scalable and sustainable?
        - ease of use

Our first set of dashboards

We chose Google Tools

- January 2015 TWU.edu became a Google for Education site
- A consistent way to record data across all departments and from their vendor software
- Transition from Excel to Google Sheets was easy for staff
- Did not want to introduce more tools to learn
- This can be a good **prototype** if we decide to move to advance business intelligence tools.
- Get staff involved in the process - An opportunity to talk about a **culture** of assessment

Step 1: Departments record their monthly statistics (mostly output metrics) in their departmental Google Sheets - with appropriate access restrictions

CircStats

File Edit View Insert Format Data Tools Add-ons Help View only

CIRCULATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	CIRCULATION													
2	FY14/15	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	TOTAL
3														
4	Gate Count Typical Week Denton	5,903	4,933	5,430	3,798	3,815	4,642**	3,694***	4,615	1,461				29,955
5														
6	Gate Count													
7	Denton Entrance Gate	35,667	30,836	26,685	14,115	18,579	22,791	22,721	28,549	8,753	8,379			217,075
8	Denton Exit Gate	22,455	18,497	16,755	8,672	11,938	14,345	14,221	17,603	5,858	5,296			135,640
9	TOTAL Average Gates	29,061	24,667	21,720	11,394	15,259	18,568	18,471	23,076	7,306	6,838			176,358
10														
11														
12	Checkouts (1st)													
13	Denton:													
14	M Circ													0
15	TOTAL Denton (1st)	10,160	11,166	7,591	5,757	5,551	6,528	6,565	8,424	4,482	2,578			68,802
16	Dallas	585	470	395	188	472	459	418	741	166	210			4,104
17	Houston	188	94	102	75	498	219	199	109	59	38			1,581
18	TOTAL Checkouts (1st)	10,933	11,730	8,088	6,020	6,521	7,206	7,182	9,274	4,707	2,826			74,487
19														
20														
21	Renewals													
22	Denton													
23	M Circ	203	189	173	20	8	26	18	38	7	4			686
24	Dallas	14	13	5	1	3	2	3	2	3	1			47
25	Houston	0	0	0	0	0	0	0	0	0	0			0
26	TOTAL Renewals	217	202	178	21	11	28	21	40	10	5			733
27														

14/15 13/14 12/13

Step 2: In a central dashboard Google Sheet, link to all departmental sheets

Dashboard-Departmental

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

speriathiruvadi@twu.edu

Comments Share

1	Reference Link for CircStat	https://docs.google.com/a/twu.edu/spreadsheets/d/1LVHC3H24mFyaj4ZCIBAwcY8eUd-A7ghML0ek_cL2B9E/edit?usp=sharing
2	Reference Link for ILL	https://docs.google.com/a/twu.edu/spreadsheets/d/1pK402uxkYTnl9-6WyLI_f0VSat-AYNaH3lrXvEVou8I/edit?usp=sharing
3	Reference Link for Eresources	https://docs.google.com/a/twu.edu/spreadsheets/d/1SWMOcChdyA1VRLrhwTc3hE3VfyqzJOY3oB9Gdi5AgzY/edit?usp=sharing
4	Reference Link for Libguides	https://docs.google.com/a/twu.edu/spreadsheets/d/1A7YUxdd3PaA1-NP0pfBhUAIzfP_fu9GmJb9YQaGGLHM/edit?usp=sharing
5	Reference Link for Website	https://docs.google.com/a/twu.edu/spreadsheets/d/1ZGK_WDSih5iZ9tqm8YSi6jdoCTXr1lwRDGAvT9Pu2Zk/edit?usp=sharing

Circ Data for Dashboard | Circ Charts for Dashboard | ILL | ILL Charts | EResources | Eresources Charts for Dashboard | Website | FilesLinked

Step 3: Dynamically populate data using simple formulae

Dashboard-Departmental

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Comments Share

=iferror((importrange(FilesLinked!B3, "13-14!I500:T500")),"")

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		Service Year	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	TOTAL
2															
3	Ebrary Academic Complete	2013-14	369	407	344	185	164	298	340	450	160	197	197	265	
4	Video Plays	2013-14													
5	Newspapers	2013-14													
6	Ebsco	2013-14	125564	176720	144743	45578	60967	129890	116835	125517	33167	93225	110436	41818	
7	Proquest(may include newspa	2013-14	1709	2353	2241	936	818	962	1922	866	510	582	656	531	
8	Springer Link	2013-14	943	1662	1336	523	575	1110	1393	1498	522	630	915	447	
9	PubMed remote	2013-14	3211	3741	4032	1379	2021	3670	2319	4457	994	2512	4112	1282	
10	Sage	2013-14	2606	3194	2781	1153	1467	2892	3151	3332	801	1858	2078	914	
11	Refworks	2013-14	2651	3170	2174	841	1737	2825	2496	2278	654	2069	1943	1171	
12	Oxford University Press	2013-14	0	0	0	0	42	147	137	124	41	100	79	23	
13	OVID	2013-14	4121	6007	3326	945	3738	6200	4687	4531	697	3076	3418	1117	
14	Elsevier	2013-14	1233	2529	2143	740	1365	2519	2422	2503	723	1567	2247	779	
15	Wiley	2013-14	0	0	0	92	436	1046	707	649	210	855	960	251	
16	Muse	2013-14	-	-	-	-	76	113	181	192	118	159	65	84	
17	Gale	2013-14	0	0	0	0	955	1653	1712	3082	872	1026	1549	401	
18															

Step 3 Continued: Do this for all departments

including Google analytics and Social Media analytics

Dashboard-Departmental

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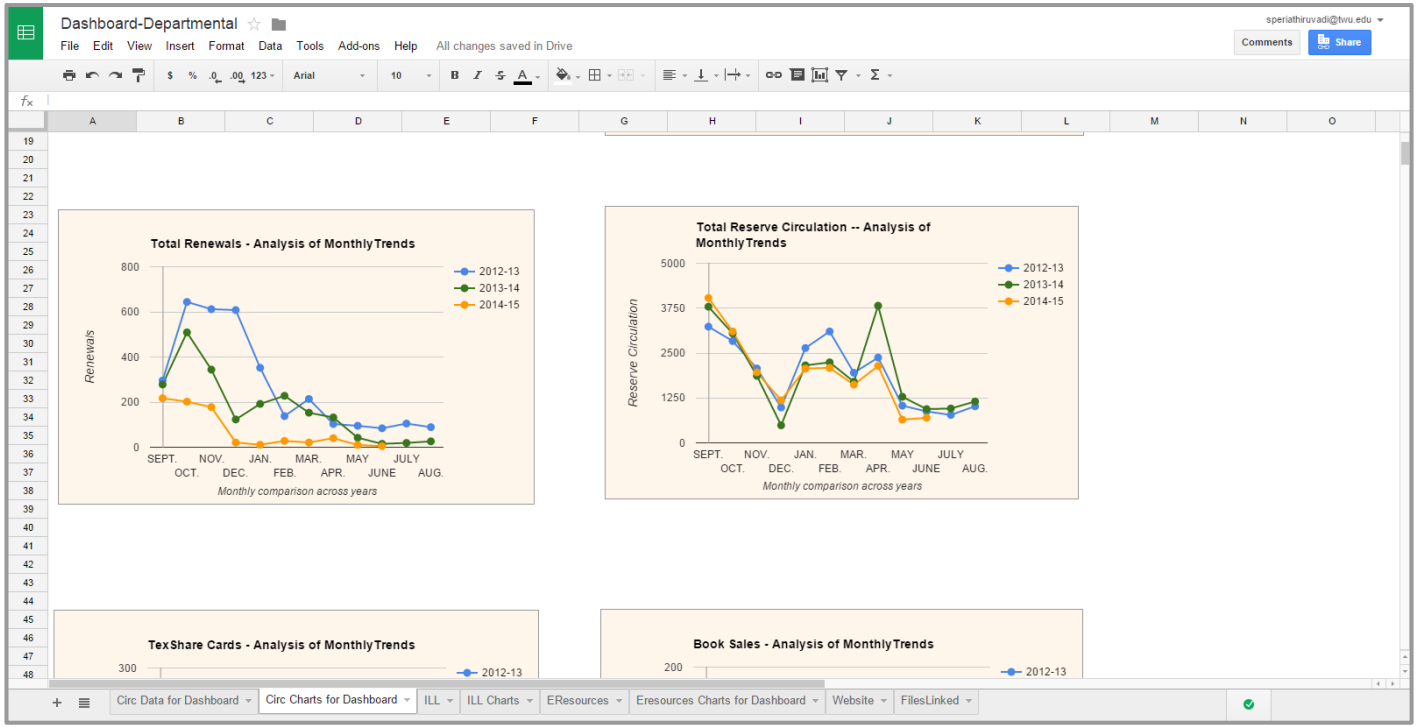
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		Service Year	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.
11		2011 -12												
12		2011 -12												
13														
14														
15	Gate Counts	2012-13	29,772	34,829	25,793	14,938	17,848	27,909	23,212	27,949	12,169	7,409	7,467	12,
16							1**							
17	Total Checkouts	2012-13	7604	8775	6481	3347	7723	10756	8777	10693	4314	3281	3341	2
18	Total Renewals	2012-13	296	644	612	608	352	138	214	103	95	84	105	
19	Total Reserve Circulation	2012-13	3235	2835	2071	985	2639	3101	1951	2374	1035	875	777	1
20	Total TexShare Cards	2012-13	78	13	8	1	125	33	9	2	6	27	8	
21	Total Book Sales	2012-13	159.75	97.25	59.75	99.75	55	68.25	100.75	28.25	21	67.75	128.25	98
22	Total Laptop Checkouts	2012-13	1821	2634	2036	1117	638	1749	1430	1980	746	173	163	
23		2012-13												
24		2012-13												
25		2012-13												
26														
27														
28	Gate Counts	2013-14	35,943	37,020	31,148	7,836	13,735	19,557	17,413	24,038	8,961	7,140	6,925	12,
29	Total Checkouts	2013-14	10,030	10,670	7,813	2,861	5,829	7,465	6,773	8,577	3,952	3,320	3,897	4,
30	Total Renewals	2013-14	278	509	344	123	192	228	153	132	42	15	19	
31	Total Reserve Circulation	2013-14	3,790	3,047	1,864	488	2,157	2,241	1,701	3,817	1,282	939	956	1,
32	Total TexShare Cards	2013-14	53	36	1	3	132	9	5	3	3	14	4	
33	Total Book Sales	2013-14	$89.75	$30.00	$43.50	$75.50	$105.50	$27.25	$89.25	$82.00	$25.00	$41.25	$40.50	$52
34	Total Laptop Checkouts	2013-14	1,802	2,228	1,651	547	714	1,286	1,082	1,865	562	168	187	
35		2013-14												
36		2013-14												
37		2013-14												
38														

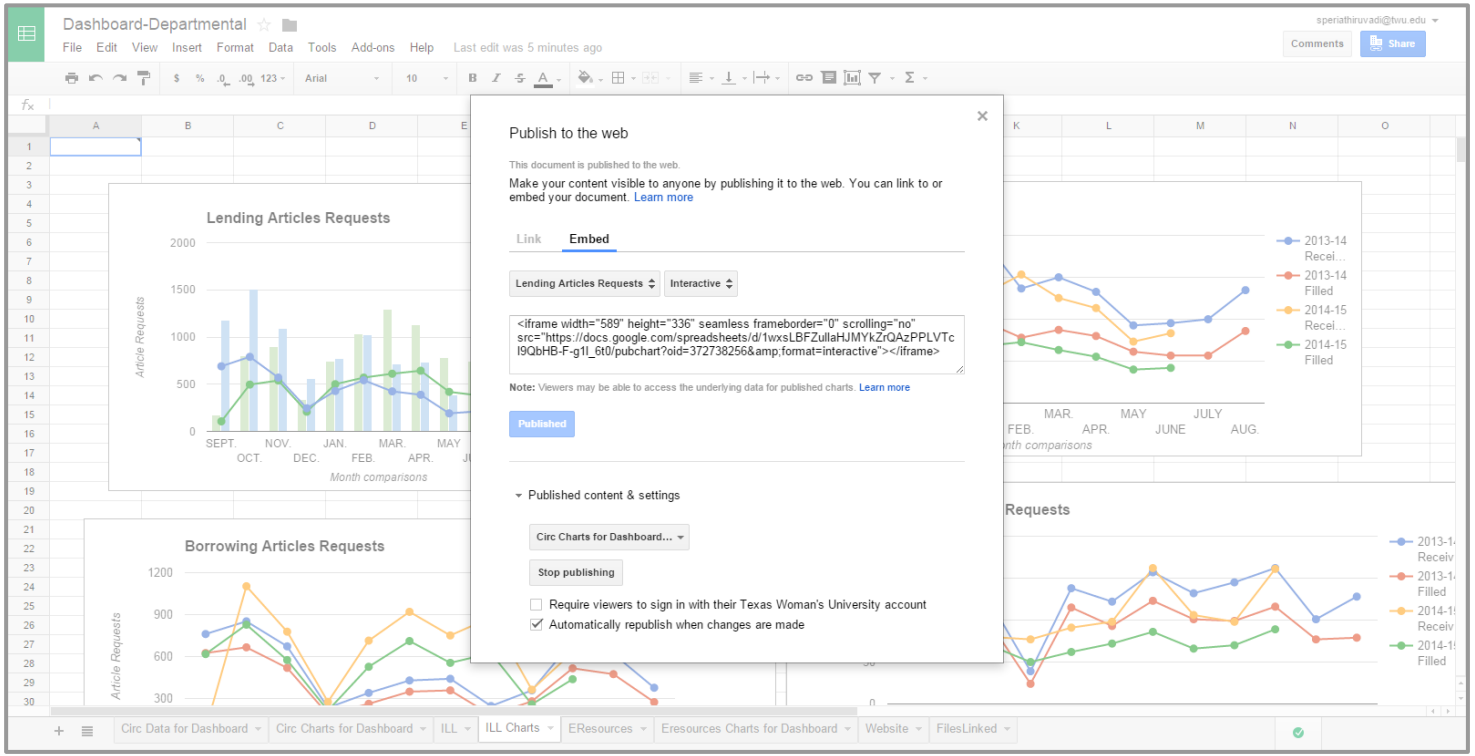
Circ Data for Dashboard | Circ Charts for Dashboard | ILL | ILL Charts | EResources | Eresources Charts for Dashboard | Website | FilesLinked

Step 4 : Create Google charts for each department in a separate worksheet.

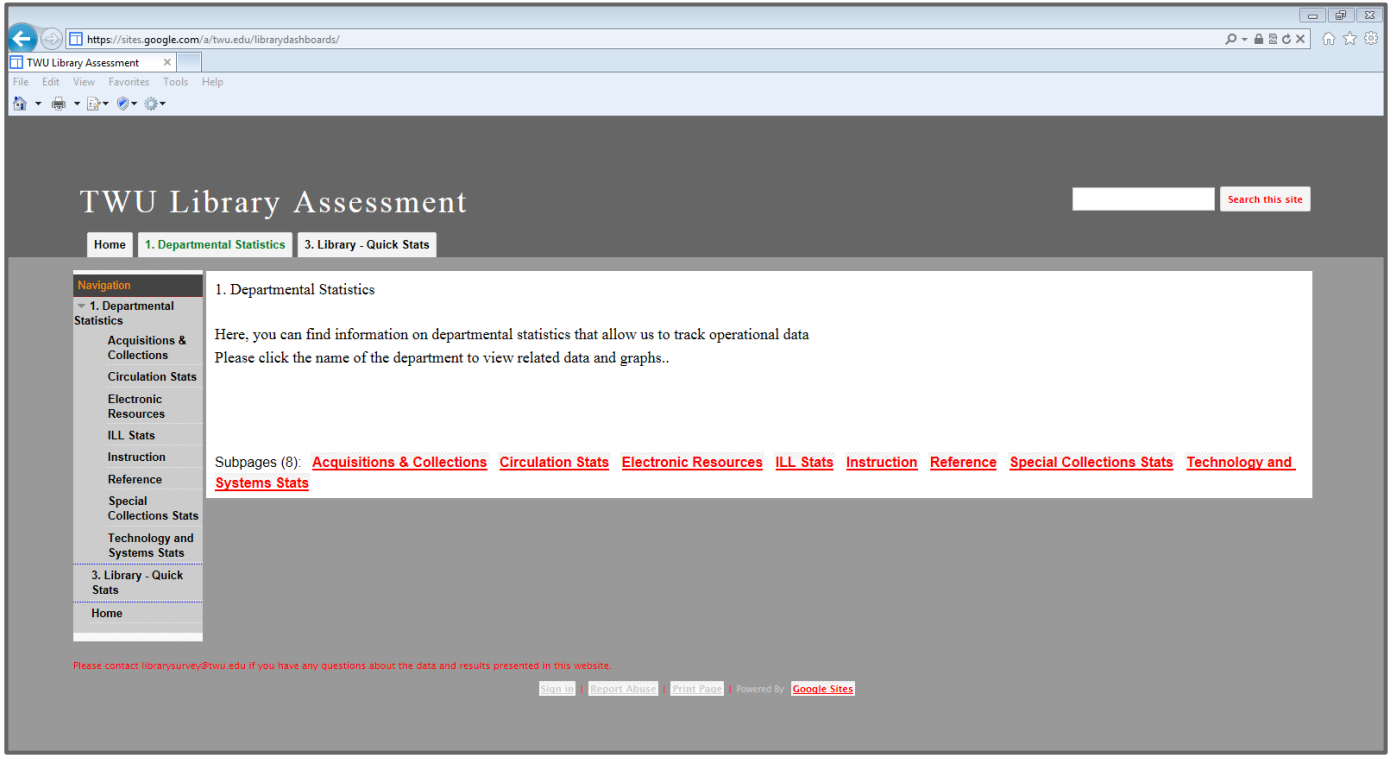


Step 4 : Get embed code for Google charts

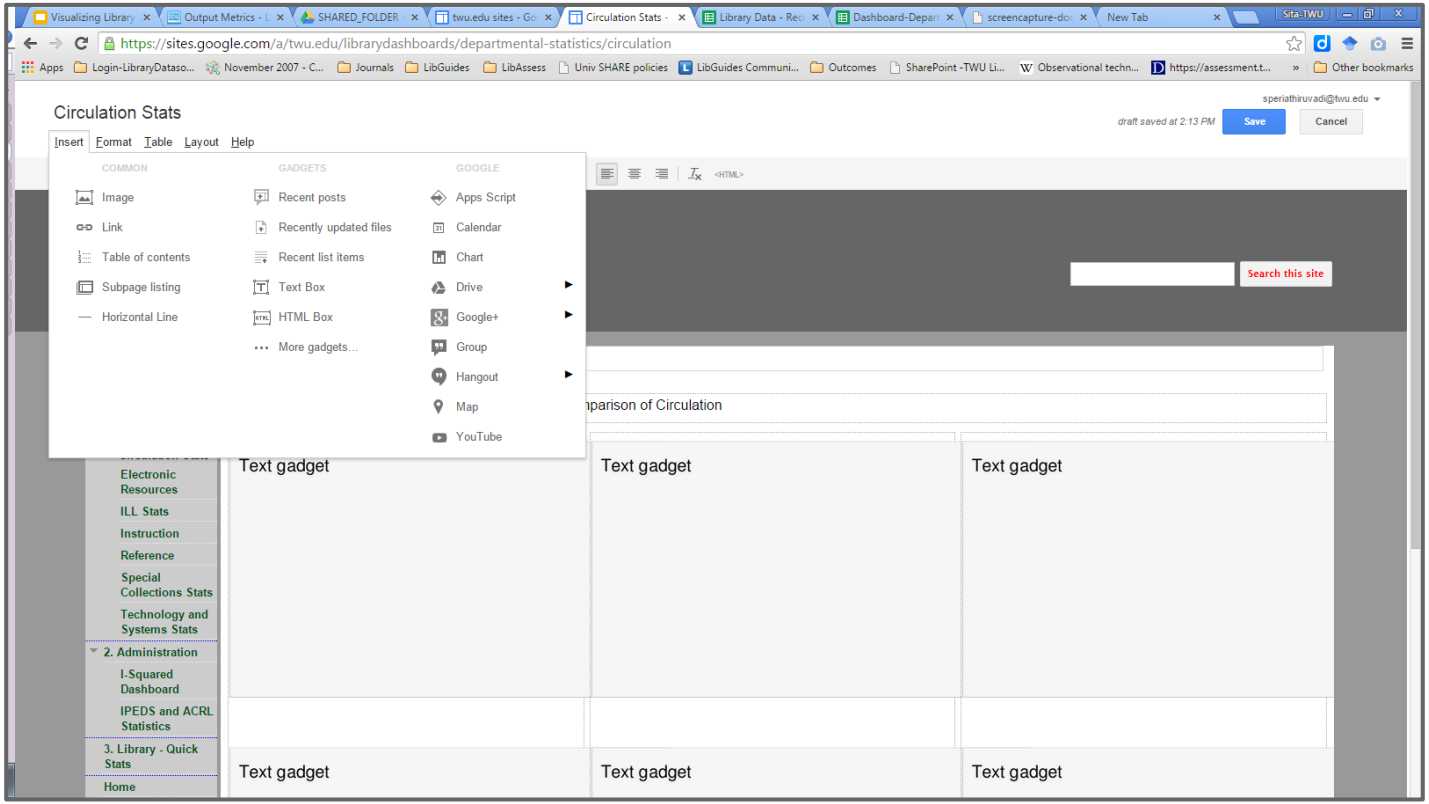
and choose automatically republishing as new data comes in.



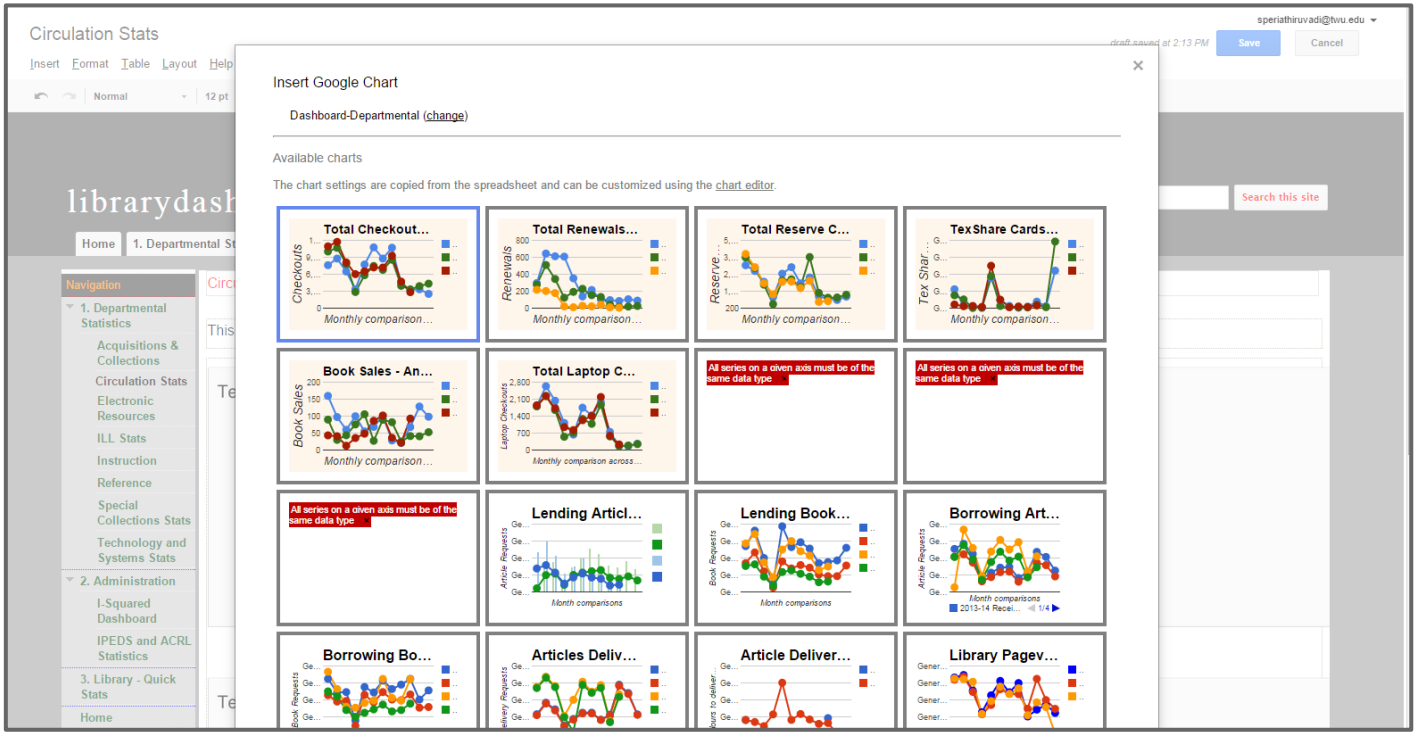
Step 5a : One option is to embed these graphs in Google Sites



Step 5a continued :
Google Sites allow you to insert Google Charts you have created.



Step 5a continued :
Google Sites allow you to insert Google Charts you have created.

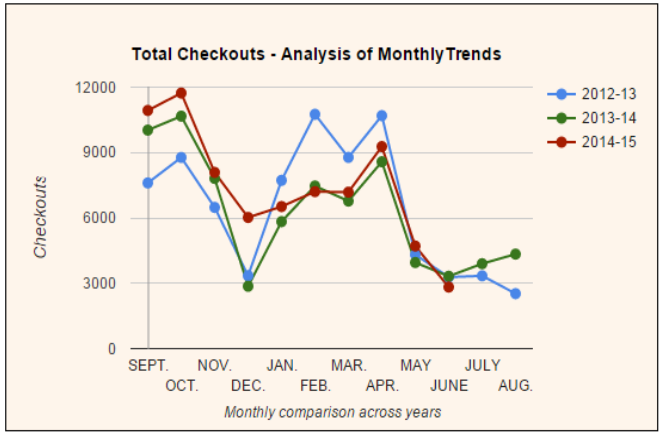


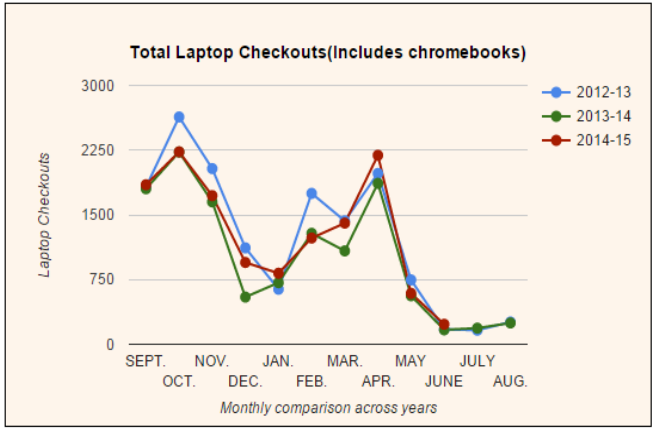
Step 5b: **or** Embed these graphs in LibGuides or Libguides CMS

5c. Or just share the Google Sheet link - staff can bookmark and check periodically.

https://docs.google.com/spreadsheets/d/1wxsLBFZullaHJMYkZrQAzPPLVTcl9QbHB-F-g1l_6t0/pubhtml?gid=1845604064&single=true

Dashboard-Departmental : Circ Charts for Dashboard





Our Next steps

- Continue to identify KEY and RELEVANT data to be included and appropriate display methods.
- Incorporate staff input.
- Focus on process, **outcome** and **impact** metrics
- Streamline the process - move towards more tactical and strategic dashboards.
- Plan for interactive and responsive dashboards.
- Stay updated about data visualization best practices in the library community

Thank you

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http://bit.ly/librarydashboards