An Incident Data Analysis Report for City of LA, IT Department

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Project Coordinator: City of Los Angeles
Data set used: Snow Incident Data for CGU, provided by the City of Los Angeles

Introduction

Our team analyzed data given to Claremont Graduate University by the City of Los Angeles regarding incidents created by city employees to fix problems ranging from IT, repairs, general services, and more. We were given certain metrics to look for with the data (see Table Template Report) and did additional exploratory analysis.

Data Preparation

Data was given to us in an excel spreadsheet (Snow Incident Data for CGU.xlsx). The data was clean; the software we used was Tableau 10.3 to generate the data visualization. In Tableau, we created new fields, such as converting resolved time from minutes to days, took out some null observation, along with creating other types of fields like difference between resolved and closed time in order to get better analysis.

Table Template for Report

METRICS	BRIEF CONCLUSION (S)	APPENDIX #
Time		
Resolved time	Highest resolved time in total for category is Inquiry/Help (35% of total time). But the category that takes the most time to resolve on average is Servers & Data Storage that is 10.76 days. In the contact type, Email is the most used form of contact from clients, this is why it has the most resolve time from contact	A.1(a),(b)(c)
Business resolved	The category that takes the most time to resolve on	A.2(a),(b)

time	average is Servers & Data Storage that is 2.26 days. Most of the Business resolved time is focused on low priority activities which are 70% of the total time , but the low priority incidents has the lowest average business resolve time that is 0.80 days	
Assignment group's business resolved time	ITA-Desktop Support group has the highest business resolved time at 35% of the total resolved time. Also, it is important to noted that ITA is the group that gets the most assigned incidents.	A.3
Priority in relation to business resolved time	Low priority has the most business resolved time and critical priority has the least business resolved time.	A.4
Contact type in relation to business resolved time	Email has the most business resolved time at 51.3% of total and walk-in has the least business resolved time at .8% of total.	A.5
Reassignment count in relation to business resolved time	Ticket number – INC 0041265 had the most reassignment count of 13, its business resolved time is 3hrs. Ticket number – INC 0024280 was reassigned 8 times, and had a business resolve time of 706 hrs.	A.6
Trend analysis		
by day of the week	In the action type in "change," change is low priority and the day most incidents were created were on the 31st day.	A.7
by month	Top three months for resolved time were May, June, July. Also, the top three months of records created are July, August, and October. There is an increase of incidents during the summer.	A.8
Locations		
Locations - Heat map	Incidents seem to be all around the Los Angeles County and in San Pedro area close to Long Beach.	A.9
Category of incidents by location	Top category is Inquiry/Help this category seems to be evenly distributed around the Los Angeles County.	A.10
Reopens by location	Downtown Los Angeles is the area that has the most Reopen Cases.	A.11
Configuration Classification		
incident by type of configuration	The most configuration class is Business Service with a count of 4,550. The most configuration item is Financial Management systems with a count of 2,128.	A.12(a),(b)
type of configuration item in relation to contact type	In Financial Management System, the most contact type is Quick Ticket with 1,550.	A.13
type of configuration item in relation number of reassignment	Financial Management System has the most reassignment count of 1,319.	A.14
The configuration	It is important to note that most of the null field were related	A.15(a),(b)

items that have the most incident created	with Inquiry/Help. Financial Management System(FMS) created the most incident (2128) followed by Payroll System Replacement and ServiceNow Express.	
which department beside Planning has the most tickets without the Configuration Items defined	Beside Planning, Information Technology Agency department has the most tickets without the Configuration Items defined that is 6,235	A.16
Reassignment		
Incidents vs reassignment count	Inquiry/Help has the highest reassignment count at 6,184. Most reassignment count for every category is a low priority task. Also, Software and Business Application has the most critical and high priority task. Finally, ITA – Team innovation has the highest reassignment count with Email/Calendar and Collaboration reassignment count.	A.17 (a)(b)
Contact type/Action type/Category		
Action type vs selected count	It is important to note that, null impacts the data on action type. The most action type is new and resolve time type is also new.	A.18 (a)(b)
most used category	The most Category for action type is Website/Design Hosting and the most action type of category is Test.	A.19(a)(b)
which type of incidents has the highest number in having Phone as the contact type or walk-in	The top two incidents for phone and walk-in by categories are Inquiry/Help and Software & Business. In all the total incidents phone consist of 1,810 and walk-in is 465. There are more people that contact over the phone then walk-in.	A.20(a)(b)
which department has the most ticket categorized as Phone for the contact type.	The top Three departments that have the most ticket categorized by phone are City Planning, General Services, and Information Technology Agency.	A.21

Analysis (Story)

Based on the analysis in the given data, we looked at the type and category used to create an incident; we also observed other factors relevant to our analysis.

While assessing the time efficiency based on category and contact type, we found that the clients call in Help/Inquiry the most and has the highest total resolve time and have one of the lowest average resolve time that is 3.96 days (see figure 1). The Category that takes the most time to resolve on average is Servers & Data Storage. which is 10.76 days which is similar in business resolve time. In the contact type, Email is the most used form of contact from clients, this is why it has the most resolve time from contact type (Figure 2). Sub-address Email shows that on

average this category is the one that takes the longest to resolve. The best average resolve time is Walk-in, but this may be because not as many clients use this contact type. The time efficiency is what our group was looking for to apply our recommendation to create an application to create an incident is doing it through one channel.

Figure 1.

Category	Business Resolve Time	Avg. Business Resolve Time	Resolve time	In Days Avg. Resolve time
Inquiry / Help	9116.12	0.84	42762.98	3.96
Software & Business Appl	5869.24	1.13	27573.13	5.33
Email / Calendar & Collab	1753.23	0.63	8367.53	2.99
Servers & Data Storage	1701.35	2.27	8071.36	10.76
Network Services	1441.46	1.57	6840.50	7.43
Phone Services	1403.62	0.33	6610.31	1.55
Websites / Design & Host	1193.57	1.15	5631.44	5.41
Connectivity	769.54	1.29	3613.80	6.04
Select a category....	411.24	1.81	1961.25	8.64
Consulting & Data Analys	31.54	1.43	148.46	6.75

Figure 2.

Contact Type	Business Resolve Time	Avg. Business Resolve Time	Resolve time	Avg. Resolve time
Email	13368.72	0.93	62989.54	4.39
Phone	1517.90	0.85	7179.56	4.00
Quick Ticket	7078.33	0.81	33075.74	3.77
Self-service	3490.92	0.95	16584.70	4.52
Sub-address Email	392.86	1.41	1833.40	6.59
Walk-in	209.63	0.45	887.39	1.91

Through the data analysis, we found some resource waste, the department Information Technology Agency has the highest reassignment count, whose reassignment Count is 3,229, and it consumed 78.49% total resolve time (Figure 3). ITA opens the most tickets and is also assigned the most incidents to fix any IT problems. The data shows that ITA is wasting resources, because some of these incidents can be fixed by having an application to take some of the workload off of ITA.

Figure 3

opened by Department	Reassignment count	% of Total Business resolve..
Information Technology Agency	3,229	65.78%
Public Works - Sanitation	1,701	5.81%
General Services	1,373	7.55%
Recreation and Parks	1,095	4.67%
Building and Safety	982	1.91%
Housing and Community Invest..	955	3.99%
Personnel	954	3.06%
City Planning	930	7.23%

We also found some incidents had long solve time and high reassignment counts, for example, the incident INC0024280, WOFPI table is timing out, whose reassignments count is 8 times and resolve time lasted 140.0 days! We recommend solving those type of problems in one time to reduce resource waste (figure 4).

Figure 4

Number	Short description	Reassignment count	resolve time by days
INC0017805	Network Updgrade for District office at 1819 S. Western Avenue	1.0	247.9
INC0017448	Configure NetScout Dashboard for the Granicus network	1.0	242.8
INC0025302	Oracle 12c Testing and implementation	4.0	196.8
INC0020740	03/14 Client just returned to work after absence, unable to login to SNOW.	7.0	140.8
INC0024280	WOFPI table is timing out.	8.0	140.0
INC0041265	SNow is not notifying the correct members when a ticket is assigned to l..	13.0	0.2

Our team would like to recommend a simplifying user experience in creating ticket incidents with ease. The best way to simplify and enhance the user experience is to create an application to cater to the needs of the employees of the City of Los Angeles. The data suggests that Email and

Quick ticket are the two best contact types, which means that users are more likely to use this application. The category of Help/Inquiry is the highest in count and resolve time, this means that tickets are being created to ask for help on some basic knowledge of technology. With an application that would have live chat and tutorials, we believe this would reduce the number of incidents and resolve time.

Furthermore, there are inconsistencies with the data, making the data incomplete and with an application there is no need for Null values. Our team also found that there is a difference in time when resolving an incident and the closing out of the ticket (figure 5). The application would close tickets as soon as they would be resolved.

Figure 5

Resolve Time and Difference
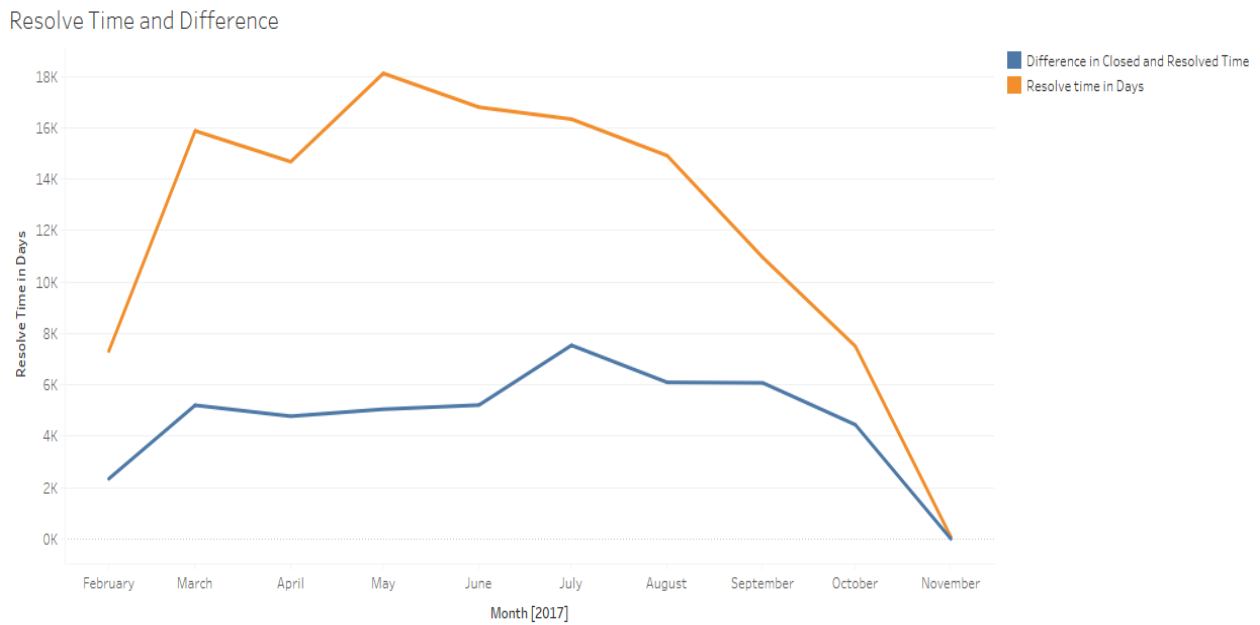
Problem with Difference and Resolve Time

	Email / Calendar & Collaboration	IDs / Accounts & Access	Inquiry / Help	Phone Services	Software & Business Applicat..
	October	October	October	October	October
Difference	-25.84	-1.22	-35.81	-37.57	-1.03
Resolve time in Days	36.18	3.33	41.75	47.50	1.04

Our last recommendation is to hire more people during the summer to lower the resolve time in incidents or with the application, there could be tutorials or help solutions to better assist the employees need (figure 6). Our data showed that the highest incidents occurred during summer. The department of Information Technology Agency receives many of the incidents if they can create the application, it would lower the number of incidents they receive in order to focus on solutions in IT for the City of Los Angeles.

Figures 6

Incidents by month
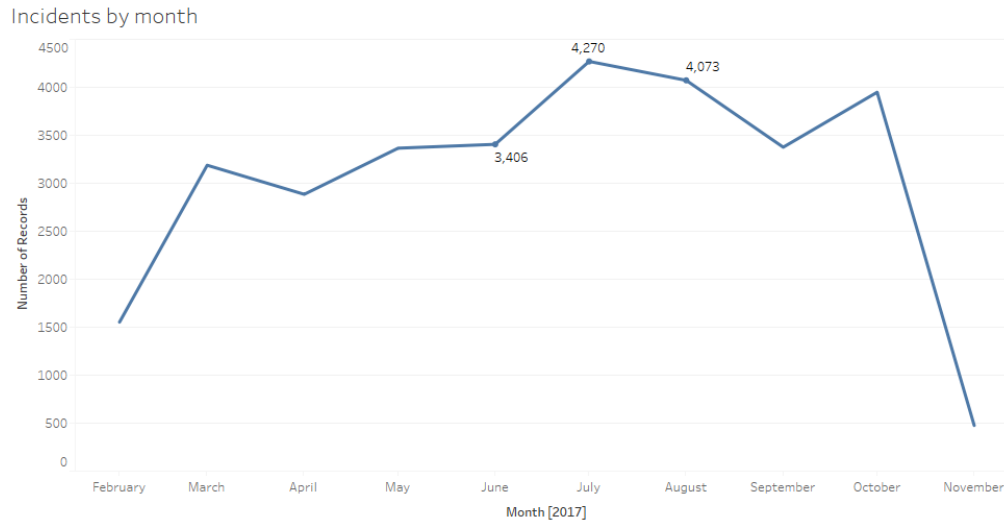
Conclusion

Our analysis concluded with a recommendation to create an application to simplify the user experience in getting these tickets resolved at a quick time response. Some of the data limitations were the number of Null values that had to be excluded. Most incidents were categorized as low-priority and the highest activity of incidents occurred during the summer. Our finding on the time it takes to resolve an incident and to close an incident is interesting to note, because our team was wondering, why they took so long to close? In the month of October, we observed that someone was closing incidents before they were being resolved.

Appendix

A.1

(a)

Total Resolve Time by Category

Category

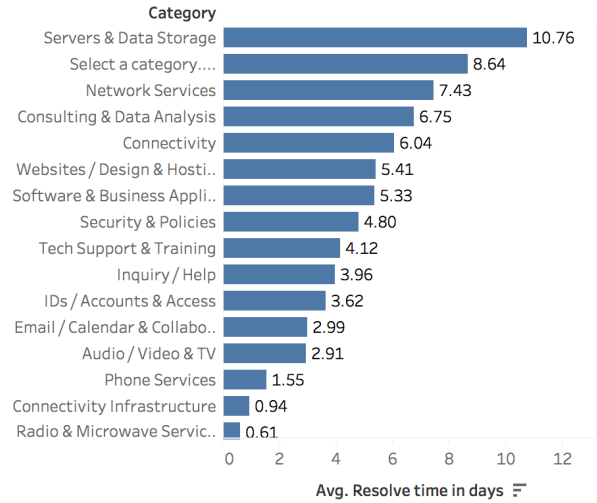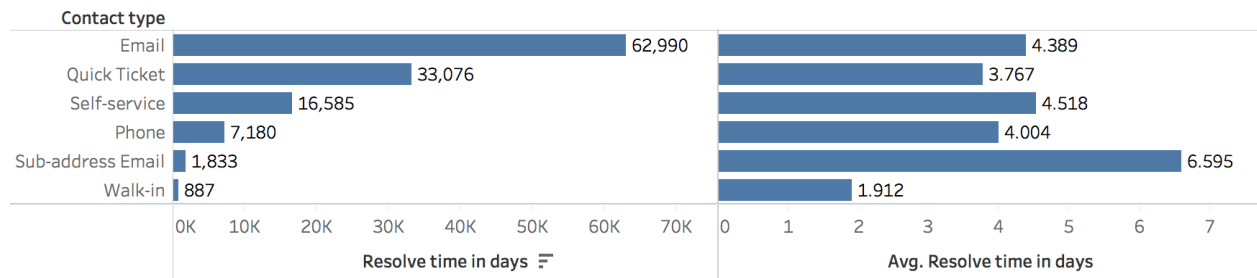|	
Inquiry / Help	42,763
Software & Business Appli..	27,573
Email / Calendar & Collabo..	8,368
Servers & Data Storage	8,071
Network Services	6,840
Phone Services	6,610
Websites / Design & Hosti..	5,631
Security & Policies	3,931
IDs / Accounts & Access	3,629
Connectivity	3,614
Tech Support & Training	3,175
Select a category....	1,961
Audio / Video & TV	195
Consulting & Data Analysis	148
Radio & Microwave Servic..	38
Connectivity Infrastructure	2

0K   10K   20K   30K   40K   50K

Resolve time in days

Average Resolve time by Category

Category

Servers & Data Storage	10.76
Select a category....	8.64
Network Services	7.43
Consulting & Data Analysis	6.75
Connectivity	6.04
Websites / Design & Hosti..	5.41
Software & Business Appli..	5.33
Security & Policies	4.80
Tech Support & Training	4.12
Inquiry / Help	3.96
IDs / Accounts & Access	3.62
Email / Calendar & Collabo..	2.99
Audio / Video & TV	2.91
Phone Services	1.55
Connectivity Infrastructure	0.94
Radio & Microwave Servic..	0.61

0   2   4   6   8   10   12

Avg. Resolve time in days

(b)

Contact type

	Resolve time in days	Avg. Resolve time in days
Email	62,990	4.389
Quick Ticket	33,076	3.767
Self-service	16,585	4.518
Phone	7,180	4.004
Sub-address Email	1,833	6.595
Walk-in	887	1.912

0K 10K 20K 30K 40K 50K 60K 70K   0   1   2   3   4   5   6   7

(c)

Contact type

Contact type	Business Resolve Time in Days	Avg. Business Resolve Time in Days
Email	13,369	0.9314
Quick Ticket	7,078	0.8061
Self-service	3,491	0.9509
Phone	1,518	0.8466
Sub-address Email	393	1.4132
Walk-in	210	0.4518

A.2

(a)

Total Business Resolve time by Category

Category

Category	Business Resolve Time in Days
Inquiry / Help	9,116
Software & Business Appli..	5,869
Email / Calendar & Collabo..	1,753
Servers & Data Storage	1,701
Network Services	1,441
Phone Services	1,404
Websites / Design & Hosti..	1,194
Security & Policies	857
IDs / Accounts & Access	781
Connectivity	770
Tech Support & Training	680
Select a category....	411
Audio / Video & TV	42
Consulting & Data Analysis	32
Radio & Microwave Servic..	7
Connectivity Infrastructure	0

Average Business Resolve time by Category

Category

Category	Avg. Business Resolve Time in Days
Servers & Data Storage	2.268
Select a category....	1.812
Network Services	1.565
Consulting & Data Analysis	1.434
Connectivity	1.287
Websites / Design & Hosti..	1.147
Software & Business Appli..	1.135
Security & Policies	1.046
Tech Support & Training	0.882
Inquiry / Help	0.843
IDs / Accounts & Access	0.779
Email / Calendar & Collabo..	0.626
Audio / Video & TV	0.620
Phone Services	0.329
Connectivity Infrastructure	0.243
Radio & Microwave Servic..	0.116

(b)

Total Business Resolve Time by Priority

Priority

Business Resolve Time in Days

Null	49
1 - Critical	424
2 - High	1,993
3 - Moderate	3,766
4 - Low	18,426
5 - Planning	1,401

Average Business Resolve Time by Priority

Priority

Avg. Business Resolve Time in Days

1 - Critical	0.9527
2 - High	1.1286
3 - Moderate	1.3954
4 - Low	0.8038
5 - Planning	0.9350

A.3

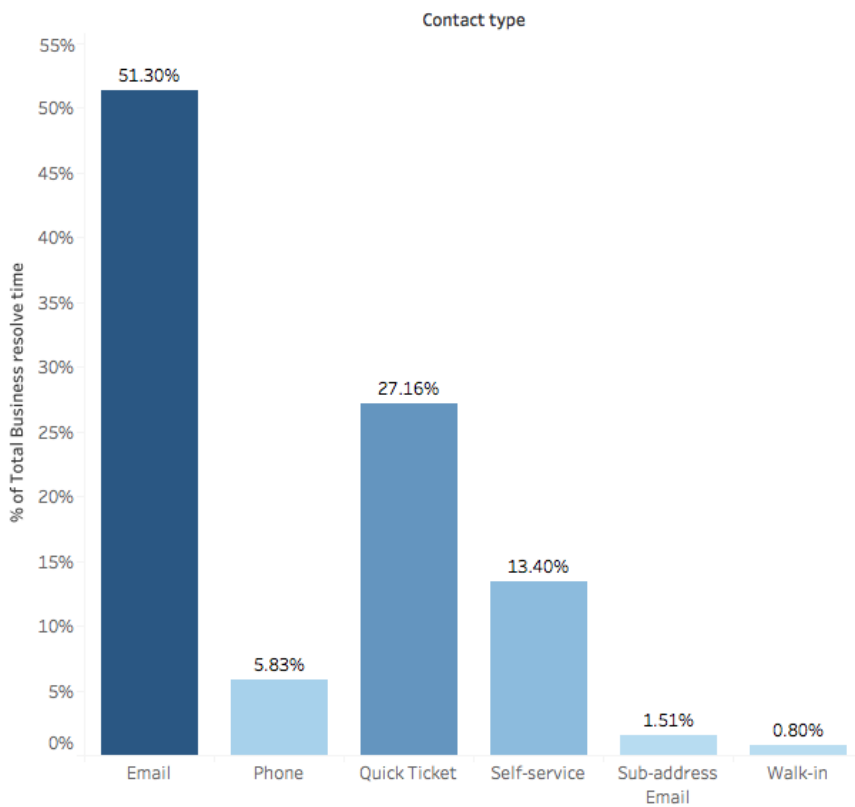## Total Business Resolve Time by Assignment Group

Assignment group

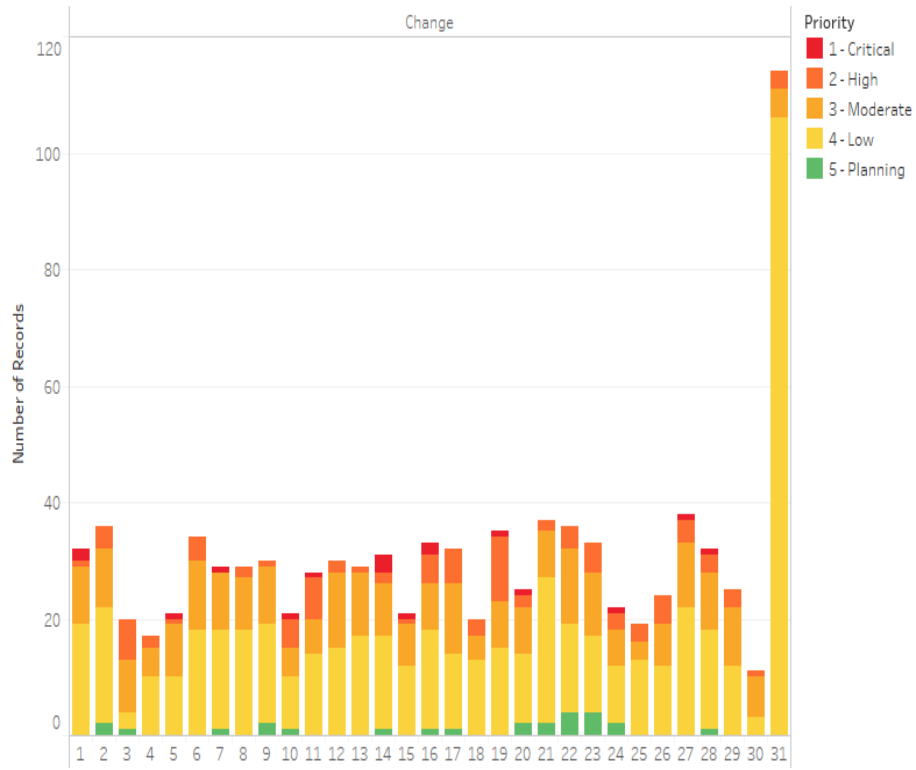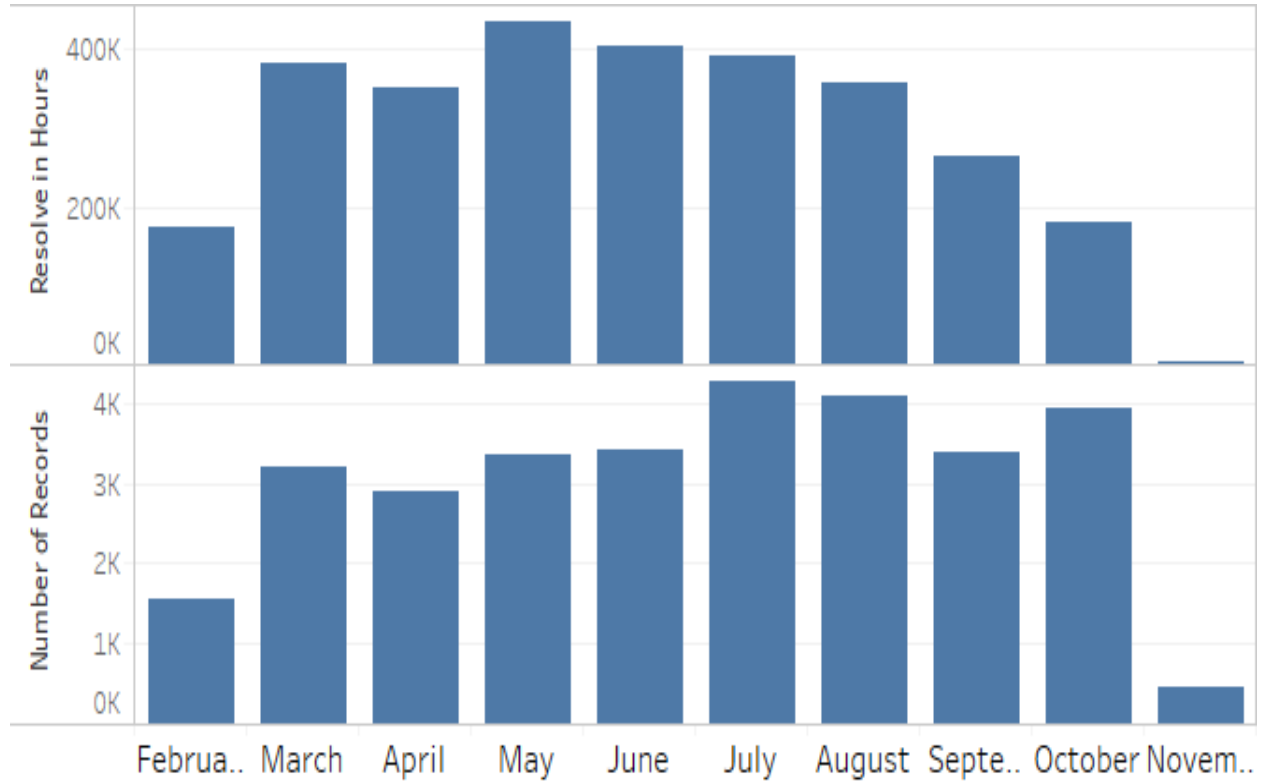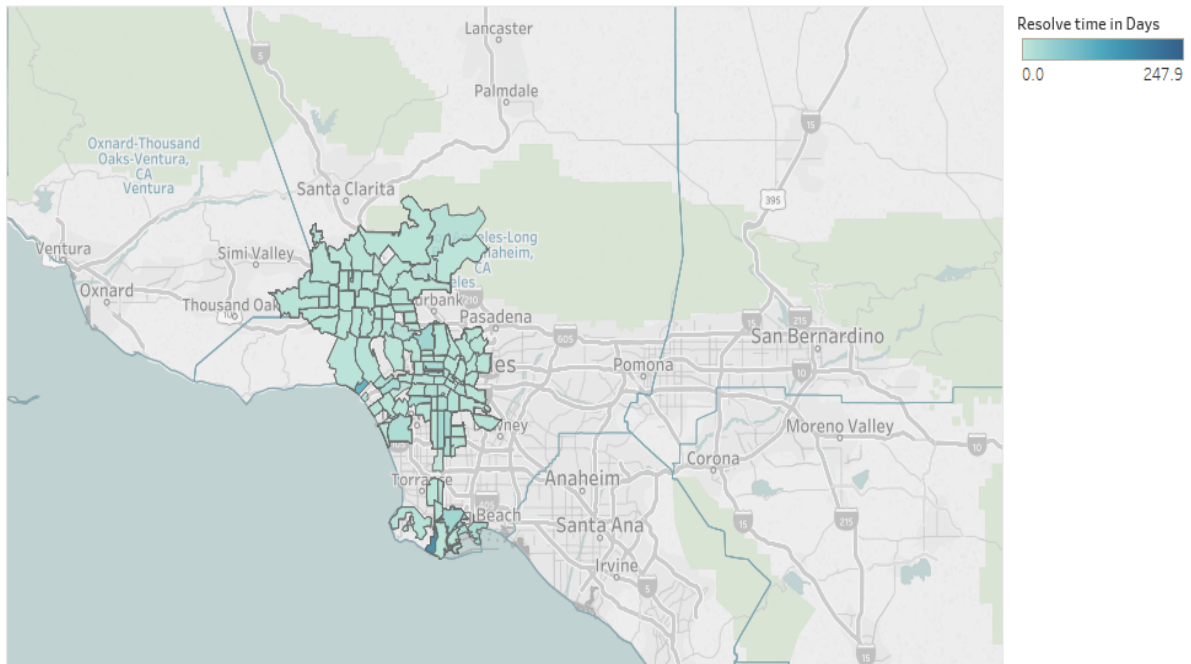|	
ITA-Desktop Support	2,237
ITA-Team Innovate	1,559
ITA-Phone Repair	1,460
ITA-DSA	1,166
VEN-Neocomp	1,045
CTR-PAYADMIN	1,006
GSD-FMS-Level 1 Support	988
ITA-Web Services	983
ITA-Netwk-Maint	960
ITA-IDM	846
ITA-SIS	828
ITA-Security Alarm	734
ITA-MyLA311	676
ITA-Maint-PM	670
BPW-Financial System Su..	660

Business Resolve Time in Days

A.4

A.5

A.6

A.7

A.8

A.9

Incidents in Los Angeles County

A.10

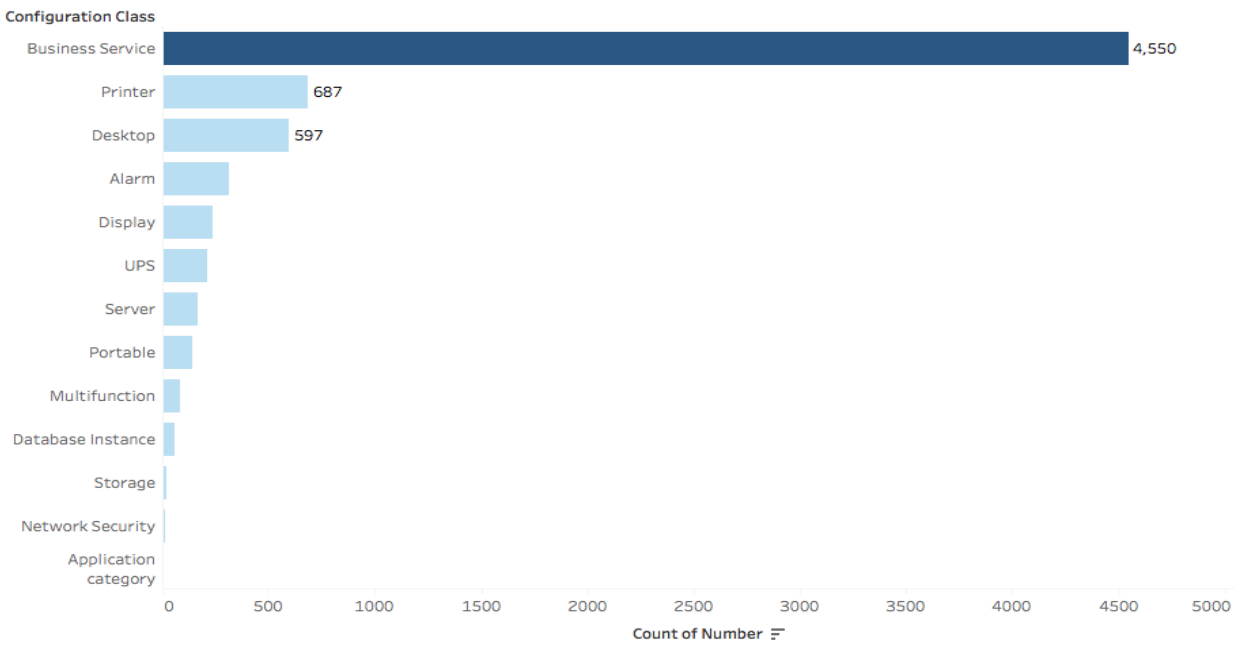**Top 5 Categories**
- Inquiry / Help
- Email / Calendar & Collaboration
- IDs / Accounts & Access
- Phone Services
- Software & Business Applications

A.11

Reopen Heatmap

Downtown LA
- Barnsdall Art Park
- Caltrans District 7 Headquarters - LADOT
- Central Service Yard
- Garland Building
- Street Lighting Field Headquarters
- Other

A.12

(a)

Configuration Class

Business Service	4,550
Printer	687
Desktop	597
Alarm	
Display	
UPS	
Server	
Portable	
Multifunction	
Database Instance	
Storage	
Network Security	
Application category	

Count of Number

(b)

Configuration item

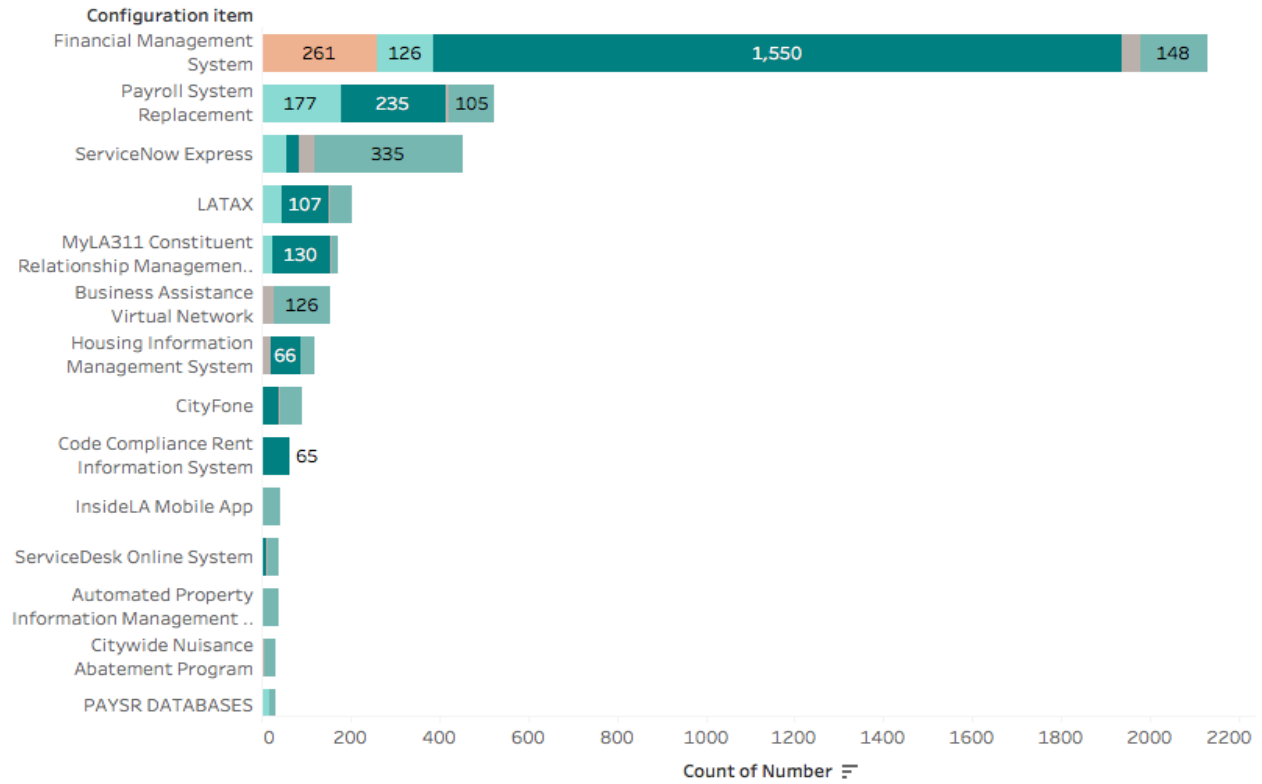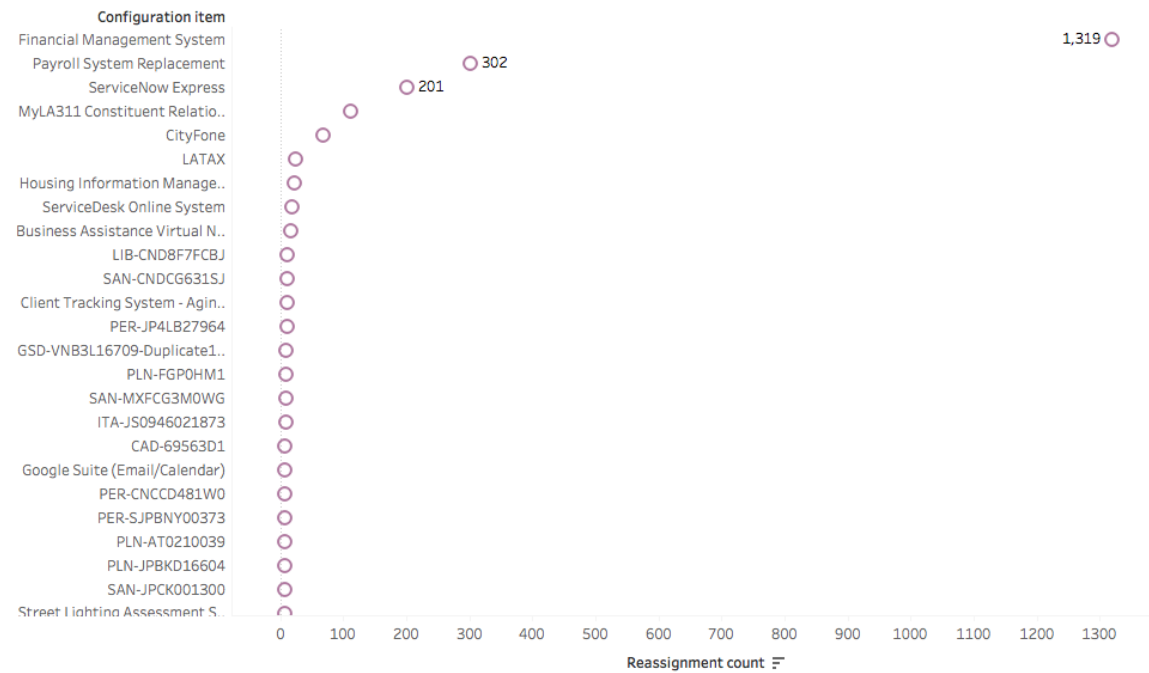|	
Financial Management System	2,128
Payroll System Replacement	525
ServiceNow Express	453
LATAX	
MyLA311 Constituent Relationship Management (CRM)	
Business Assistance Virtual Network	
Housing Information Management System	
CityFone	
Code Compliance Rent Information System	
InsideLA Mobile App	
ServiceDesk Online System	
Automated Property Information Management System	
Citywide Nuisance Abatement Program	
PAYSR DATABASES	

Count of Number

A.13

A.14

A.15

(a)

Configuration Item with Most Incident Created

Configuration item

	Incident Created
Null	23 450
Financial Management System	2 128
Payroll System Replacement	525
ServiceNow Express	453
LATAX	204
MyLA311 Constituent Relationship Ma..	171
Business Assistance Virtual Network	155
Housing Information Management Sys..	119
CityFone	93
Code Compliance Rent Information Sys..	65
InsideLA Mobile App	41
ServiceDesk Online System	38
Automated Property Information Man..	37
Citywide Nuisance Abatement Program	32
PAYSR DATABASES	32

0K 2K 4K 6K 8K 10K 12K 14K 16K 18K 20K 22K 24K 26K
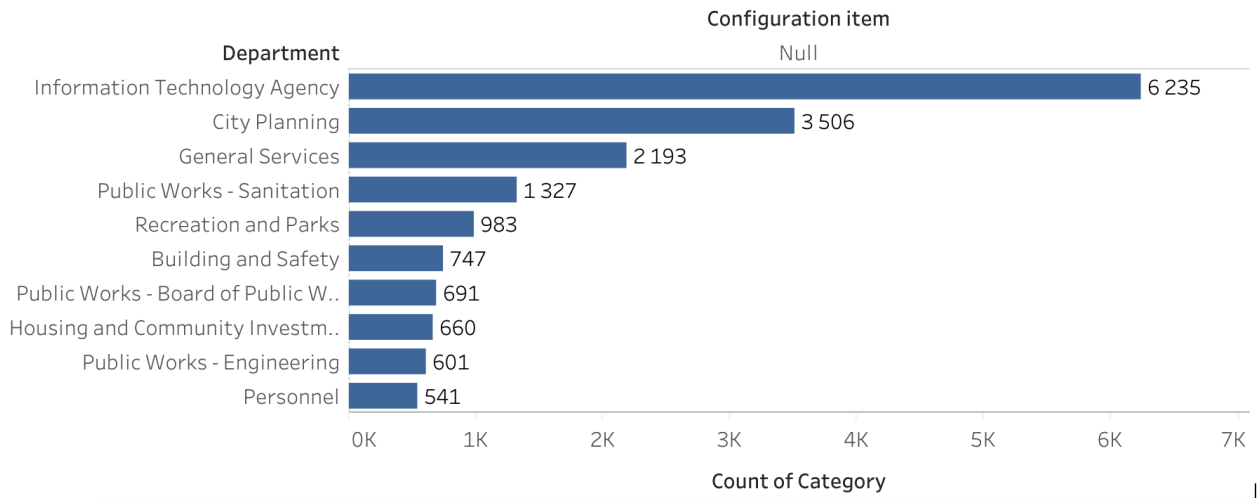
Incident Created

(b)

Incident Created by Financial Management Systems

Category

	Count of Configuration item (Financial Management System)
Software & Business Applications	1 981
Inquiry / Help	87
Servers & Data Storage	22
Connectivity	17
Email / Calendar & Collaboration	6
IDs / Accounts & Access	6
Websites / Design & Hosting	3
Phone Services	2
Security & Policies	2
Network Services	1
Tech Support & Training	1

0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200

Count of Configuration item(Financial Management System)

A.16

Configuration item

Null

Department	Count of Category
Information Technology Agency	6 235
City Planning	3 506
General Services	2 193
Public Works - Sanitation	1 327
Recreation and Parks	983
Building and Safety	747
Public Works - Board of Public W..	691
Housing and Community Investm..	660
Public Works - Engineering	601
Personnel	541

A.17

(a)

Category	Reassignment count
Inquiry / Help	6 184
Email / Calendar & Collabo..	3 345
Software & Business Appli..	2 845
Phone Services	2 008
IDs / Accounts & Access	966
Network Services	805
Tech Support & Training	745
Connectivity	447
Select a category....	286
Websites / Design & Hosti..	220
Servers & Data Storage	185
Security & Policies	162
Audio / Video & TV	45
Radio & Microwave Servic..	26
Consulting & Data Analysis	21
Connectivity Infrastructure	2

(b)

A.18

(a)

(b)

A.19

(a)

(b)

Max. Action type

Category	Null	Preventive Maintenance	Reset Password/D..	Test	Warranty Repair
Audio / Video & TV		■			
Connectivity				■	
Connectivity Infrastructu..	■				
Consulting & Data Analysis				■	
Email / Calendar & Collabo..			■		
IDs / Accounts & Access				■	
Inquiry / Help					■
Network Services				■	
Phone Services				■	
Radio & Microwave Servic..				■	
Security & Policies				■	
Select a category....		■			
Servers & Data Storage				■	
Software & Business Appl..				■	
Tech Support & Training				■	
Websites / Design & Hosti..			■		

A.20

(a)

Phone Vs Walk-in

Contact type
■ Phone
■ Walk-in
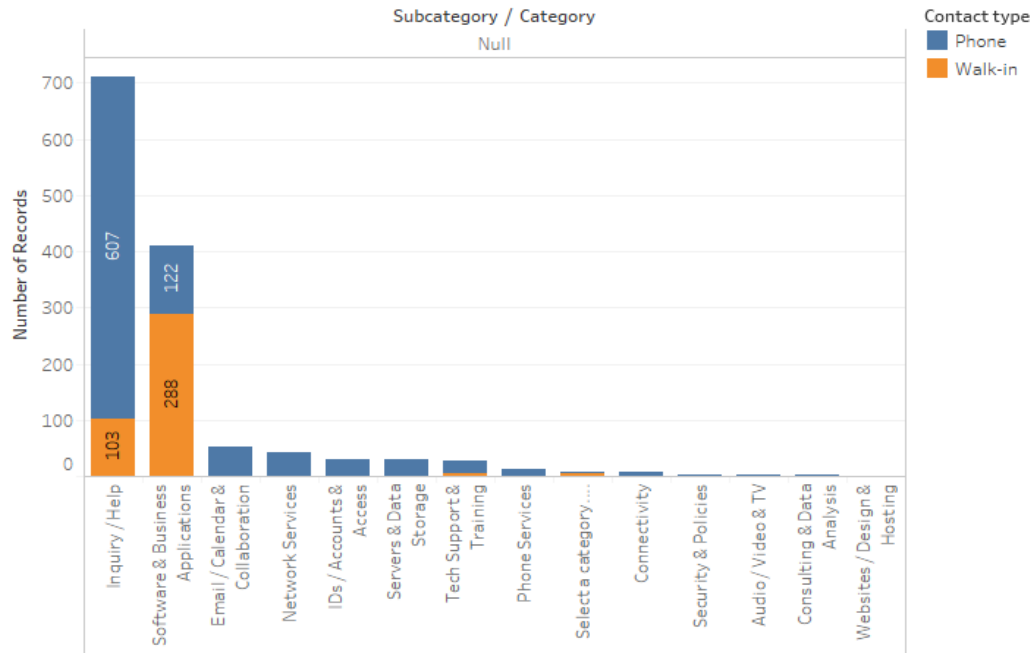

Number of Records:
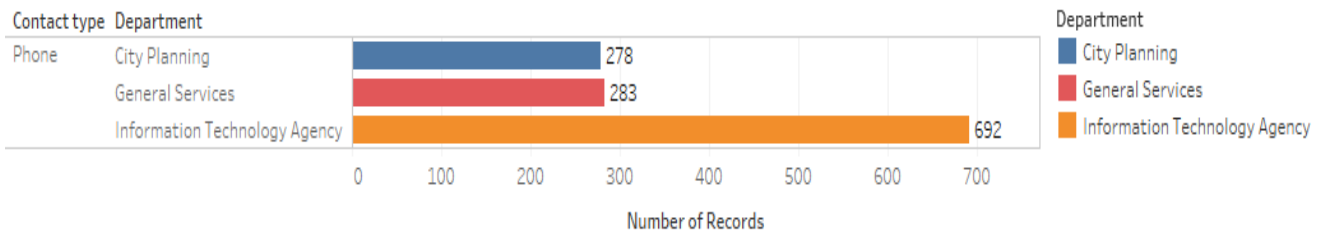465

Number of Records:
1,810

(b)

Phone and Walk-in incidents by categories

A.21

Department Tickets by Phone

Contribution:

Indu Shrestha: A1, A2, A3, A15, A16, A17

Yingfen Huang: A4, A5, A6, A12, A13, A14, A18, A19

Jovany Funes: A7, A8, A9, A10, A11, A20, A21