

| HR SERVICES

PyHR is a provider of human resources business process outsourcing (BPO) services and consulting. Services provided include payroll, benefits, recruitment, learning, workforce administration, time and attendance, background checking and compensation management.



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Github: <https://github.com/jvbonini/Project-I>

DEFINITIONS | BACKGROUND

Ticket : Case ID = Request

Requestors = Employee, 3rd Party, Business Partner(BHR), HROps, Manager

Service Group = Service Family Type Category : Application Management, Compensation..

Service = Type Category: Accounting, AdHoc Report Request, Annual wage statements..

Summary Workflow



AGENDA | TIMELINE

Data Exploration and Clean Up

- Identify Useful Fields
- Use Pandas .value_counts() to determine quality of the data
- Data Munging and Field Mapping
- Export cleansed data as new CSV file

Request Analysis

- Popular Request Services
- Ticket Center Locations
- Days of Week
- Hours of Day
- Service Type

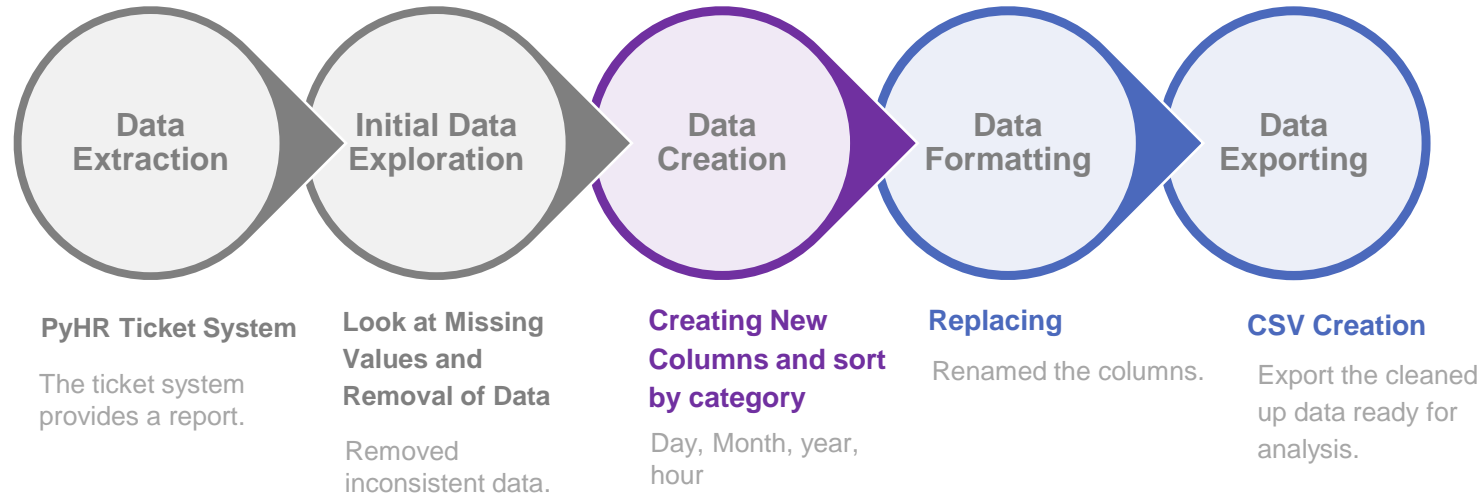
Service Level Analysis

- Close date vs Due date
- Erroneous SLA Periods
- Days to complete
- SLA requirements
- Duration by Ticket
- Duration by location

Limitations and further analysis

- Location based time studies
- Service type by location
- Service type by time of year / seasonality
- Correlations between service spikes and other major company events

DATA EXPLORATION AND CLEAN UP



DATA EXPLORATION | INITIAL DATA LOADING

Utilize the pandas library for Python (Jupyter Notebook)

Read in the data as CSV

Output list of column headers

Explore fields and analyze data quality

Create plan to map fields to common values

```
Case ID ,Company,Region,Status,Source,Creator,Current Agent,Creation Date,Due Date,Closed Date,Service Group,Service,Pended Date,Pending Reason,Latest Communicated Date,Latest Communication to,User Group,Last Transfer Date,Type,Service Center,Case Age
Days,Days From Latest Communication,Days From Last Transfer,Systems,Requestor,
8111665,AU,APAC,Closed,e-mail,E-mail Processor MYHRU,MYHRU_Julius8,11/05/18 22:07,11/20/18 21:00,11/16/18 07:45,09, Leave Management (MYHRU),ESS / HSS Support,,11/16/18 07:44,,Vendor_TL,Case,Manila,8.38,0,0,Business Partner,
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Partner,
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8461029,AU,APAC,Closed,e-mail,E-mail Processor MYHRU,MYHRU_AdamSu,12/14/18 01:43,12/17/18 03:07,12/14/18 03:07,02, Information/Inquiry (Simple) (MYHRU),Employee Data,,Vendor_TL,Case,Manila,0.08,0,0,Business Partner,
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```


DATA EXPLORATION | FINDINGS

Data was overall very clean and easy to work with

- *Required dropping some columns and header/tail rows in order to read properly into a dataframe*

Originating Source had similar strings which were easy to group

- *'e-mail', 'Email', 'email', 'Electronic Mail'*
- *Indicated it was a user input field without data validation*
- *This also applied to the "Service" and "Service Group" fields*

User Groups were obscurely named and done on a Tier system

- *Re-distributed these into more useful categories (i.e. Compensation, Payroll, Business HR, Data Control, etc...)*

Identified a system issue with "Open" tickets receiving a "Closed Date"

- *Determined that the root cause was an IT System integration that occurred over a certain 4 day date range*

Easily able to manipulate Date/Time columns where there were no nulls

- *Needed to handle "Closed Date" and "Pending Date" columns separately, as there were null values for open tickets*

```
# Clean up the source values since they let people type in whatever they want
df_ticket["Source"] = df_ticket["Source"].replace(
    {"e-mail": "E-mail", "Email": "E-mail", "Chat": "E-mail", "MyHRM": "Ticket Management System", "Employee Por

# Clean up the Requestor Data
df_ticket["Requestor"] = df_ticket["Requestor"].replace(
    {"Client 3rd Party": "3rd Party", "Client Business Partner": "Business Partner"})

df_ticket["Service Center"] = df_ticket["Service Center"].replace(
    {"US - AHO": "Washington DC"})

# Clean up the Pending Reason Data
df_ticket["Pending Reason"] = df_ticket["Pending Reason"].replace(
    {"Waiting for Information from 3rd party": "3rd Party",
    "Waiting Information from Client 3rd Party": "3rd Party",
    "Waiting for information from Business Partner": "Business Partner",
    "Waiting Information from Client Business Partner": "Business Partner",
    "Waiting for Information from Employee": "Employee",
    "Waiting Information from Employee": "Employee",
    "Waiting for Information from Manager": "Manager",
    "Waiting Information from Manager": "Manager",
    "Waiting for Validation before Closing": "Validation",
    "Pending Development": "System",
    "Pending System Release": "System",
    "Pending Testing Approval": "System",
    "System locked": "System",
    "Pending Dispute Resolution": "Dispute Resolution",
    "Pending CR Approval": "System",
    "Pending Closure Acceptance": "Closure Acceptance",
    "For next Payroll": "Next Payroll"
})

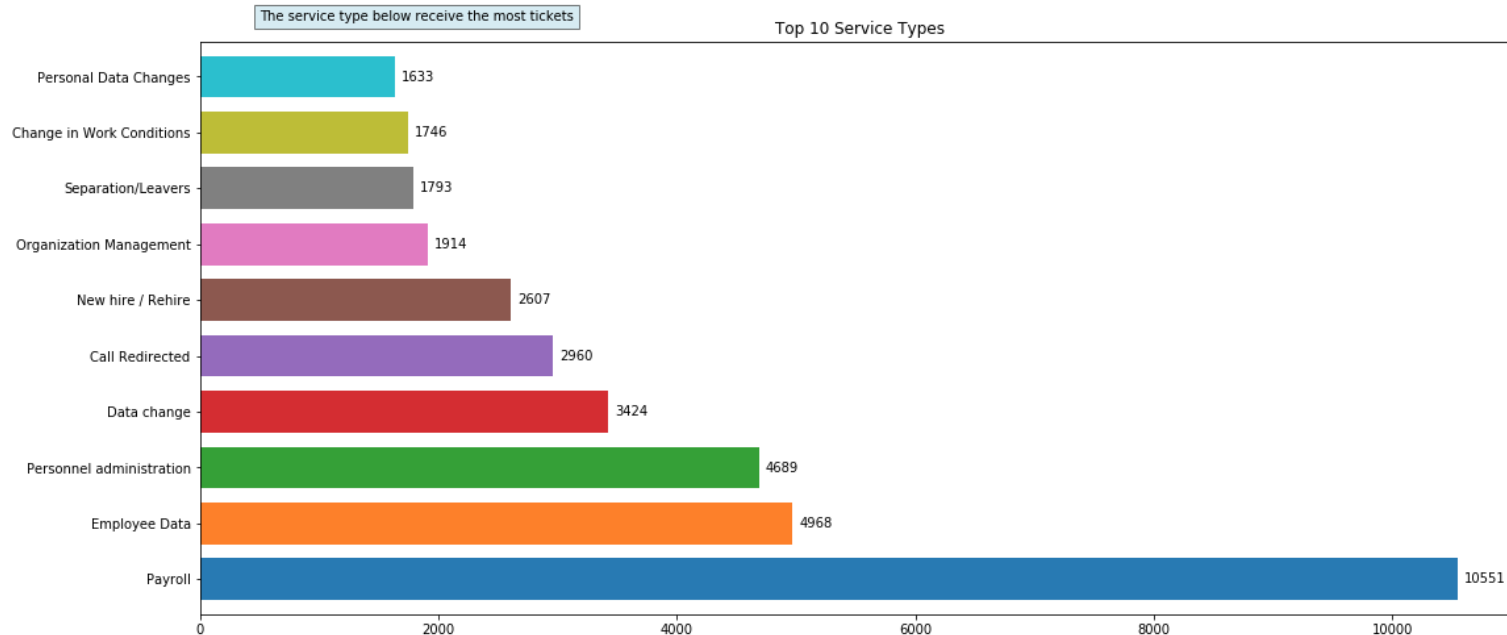
# Clean up User Group
df_ticket["User Group"] = df_ticket["User Group"].replace(
    {"Vendor_T1": "Tier 1",
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    "Vendor - CRQ": "Tier 2 - Business HR",
    "Vendor - CMA": "Tier 2 - Business HR",
    "Vendor_T2_CompensationAdmin": "Tier 2 - Compensation",
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    "Vendor - DCT": "Tier 2 - Data Control",
    "ABV_T2_Reporting": "Tier 2 - Data Control",
    ... ..})
```

Request Analysis

- Popular Request Services
- Ticket Center Locations
- Days of Week
- Hours of Day
- Service Type

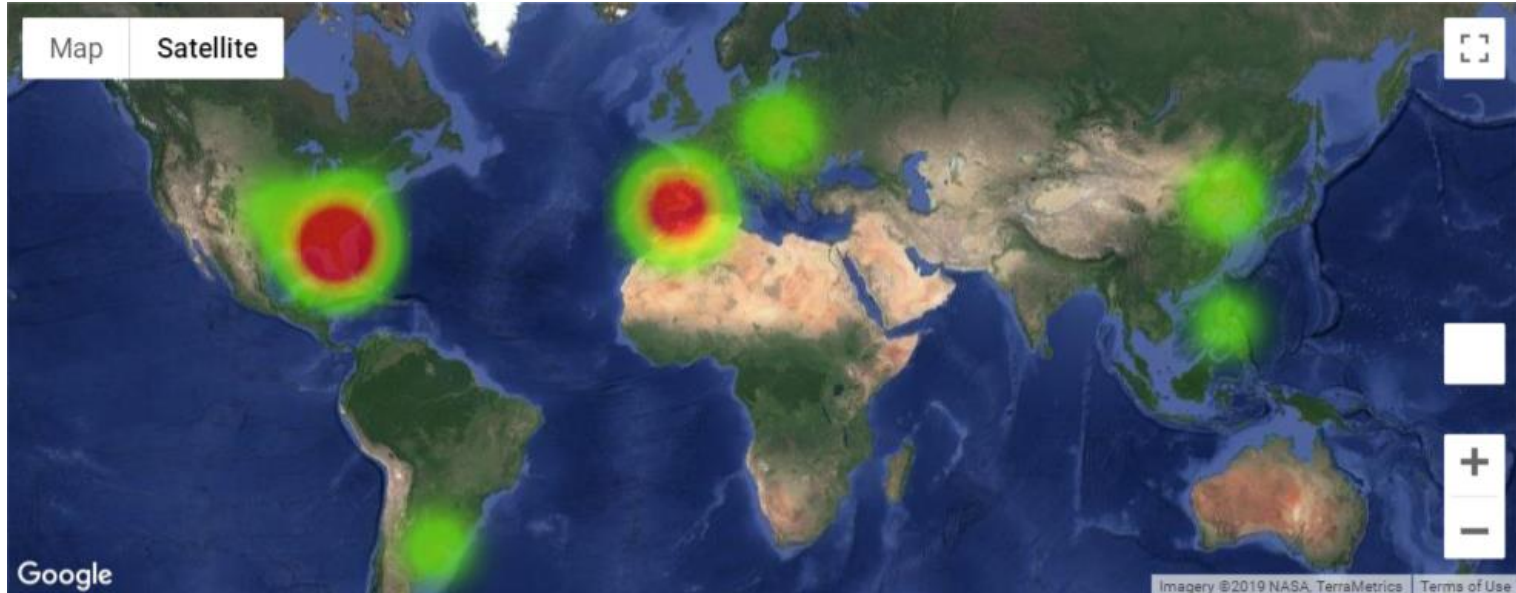
WHAT ARE THE MOST POPULAR REQUEST SERVICE?

- The chart below illustrates the top 10 most common service requests.
- Majority of the services are payroll driven, followed by employee data, and personal administration.
- Payroll service requests are double, in comparison to employee data requests.



VOLUME OF TICKETS PROCESSED – BY LOCATION

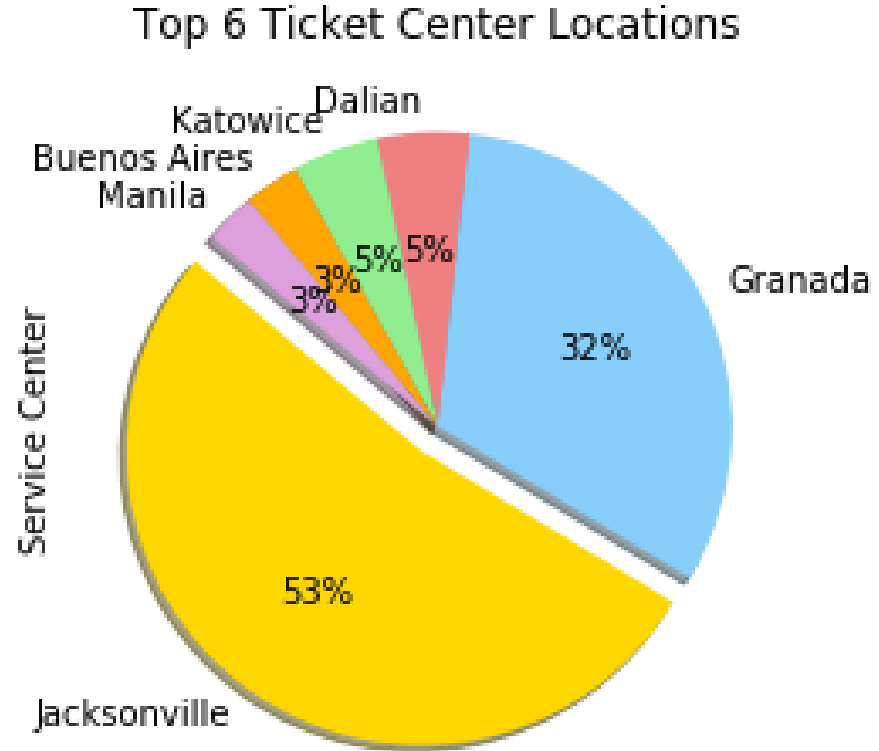
- One area of interest was the location of each "Service Center" and the quantity of fielded inquiries. We began evaluating the number inquiries by location, and used the *Google Maps API* to create a heat map, with the intensity representing the volume of tickets by Service Center
- We can observe from the map that the US and Western Europe covered the majority of the inquiries.



WHAT ARE THE TOP 6 TICKET CENTER LOCATION?

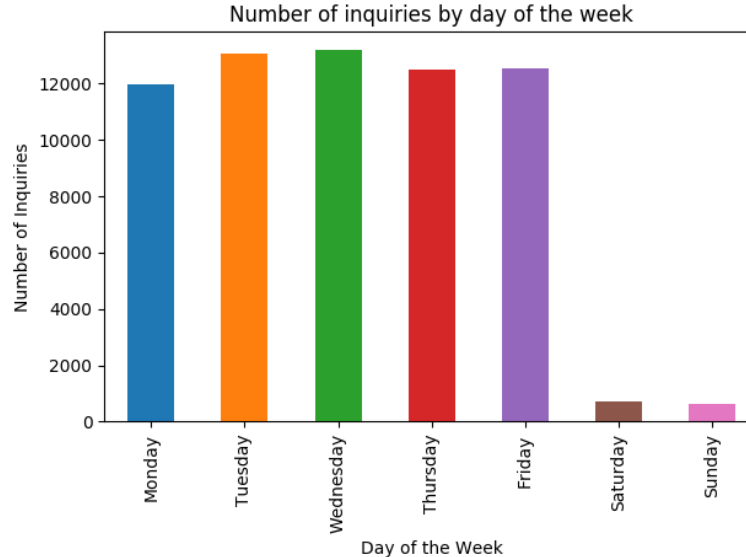
In the previous slide, we saw that US and West Europe made up majority of the inquires.

When we drilled down, we saw **Jacksonville, FL** and **Granada, Spain** were the particular city's majority of tickets resided.



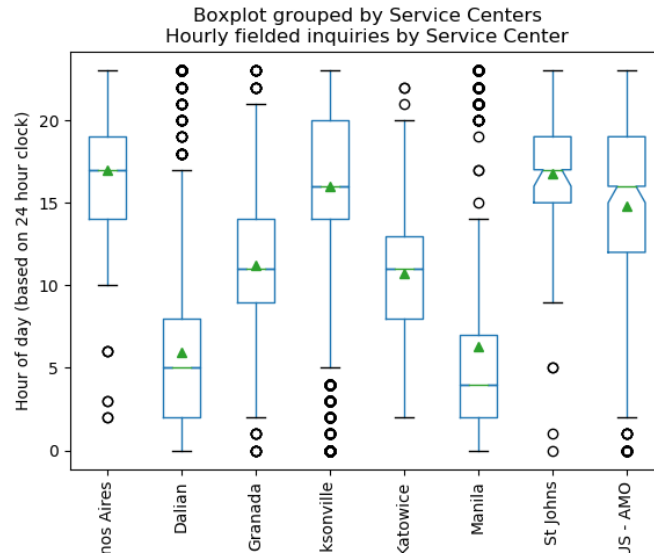
WHICH DAY OF WEEK HAS THE HIGHEST *PyHR* SERVICES UTILIZATION?

- In reviewing the number of inquiries by day of the week, we saw that the majority of tickets were submitted during typical weekday working days
- Interestingly, a small subset of inquiries took place during the weekend, which substantiates the need to investigate if there are potential trends among these inquiries. The company may wish to observe the need for having an inquiry center open on weekends or during "off business hours"



HOW ABOUT **PyHR** SERVICES HOURS UTILIZATION?

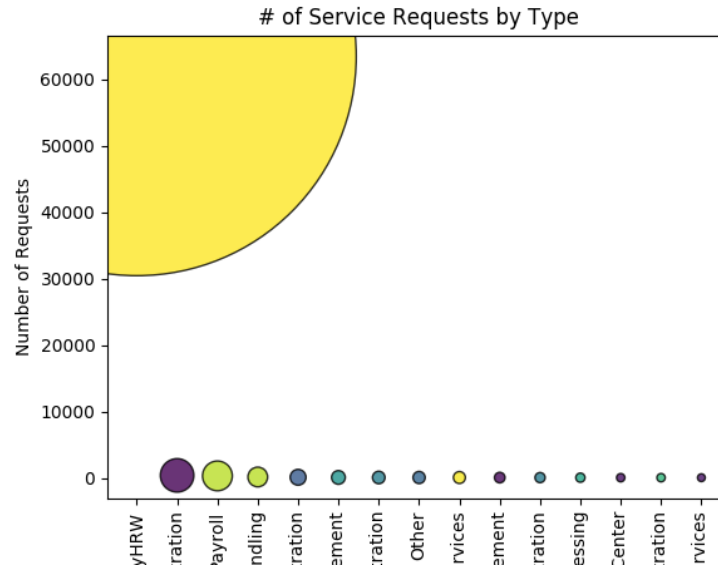
- We also took a look at the distribution of hours that each service center received inquiries. This was necessary in order to better understand if there were overlaps in coverage based on location/timezone
- Based on the above, we are able to see that Dalian, Jacksonville and Manila had a number of outlying inquiries that could potentially be fielded by service centers that clearly had the majority of their inquiries during those time frames



Note: time was reclassified as an integer based on a 24 hour clock to better understand the data that was originally a string

HOW ABOUT *PyHR* SERVICES UTILIZATION?

- Finally, we wanted to better understand whether there was a "service type" that represented the type of inquiries that were received. In the chart, we see that "service type" was based on systems that are used within HR
- Clearly a majority of those inquiries were categorized as those that fell under "MyHRW". This is a broad category, which may further warrant better categorization of inquiries to have a clear understanding of "inquiry type"

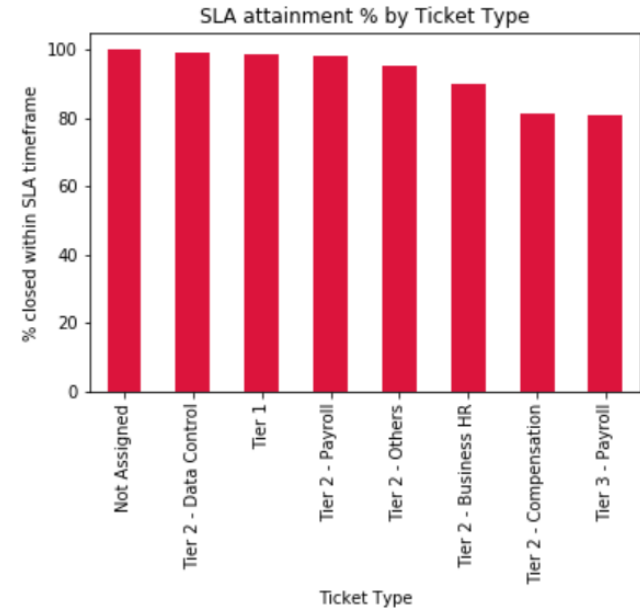
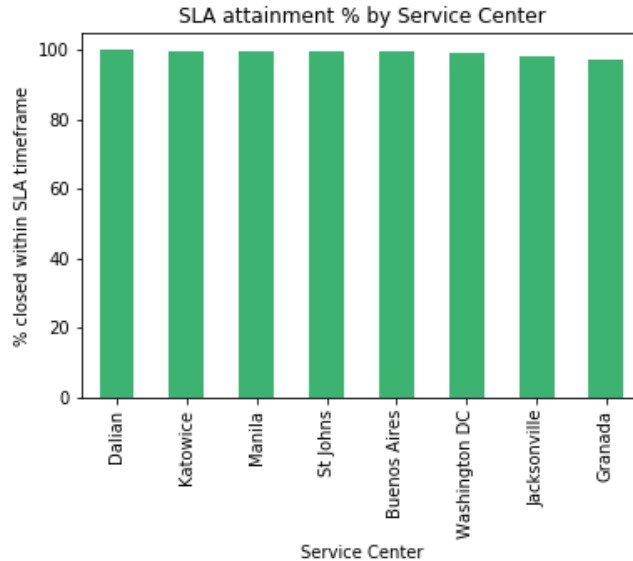
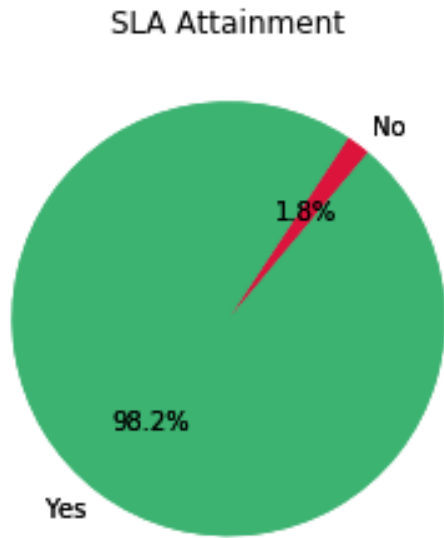


Service Level Analysis

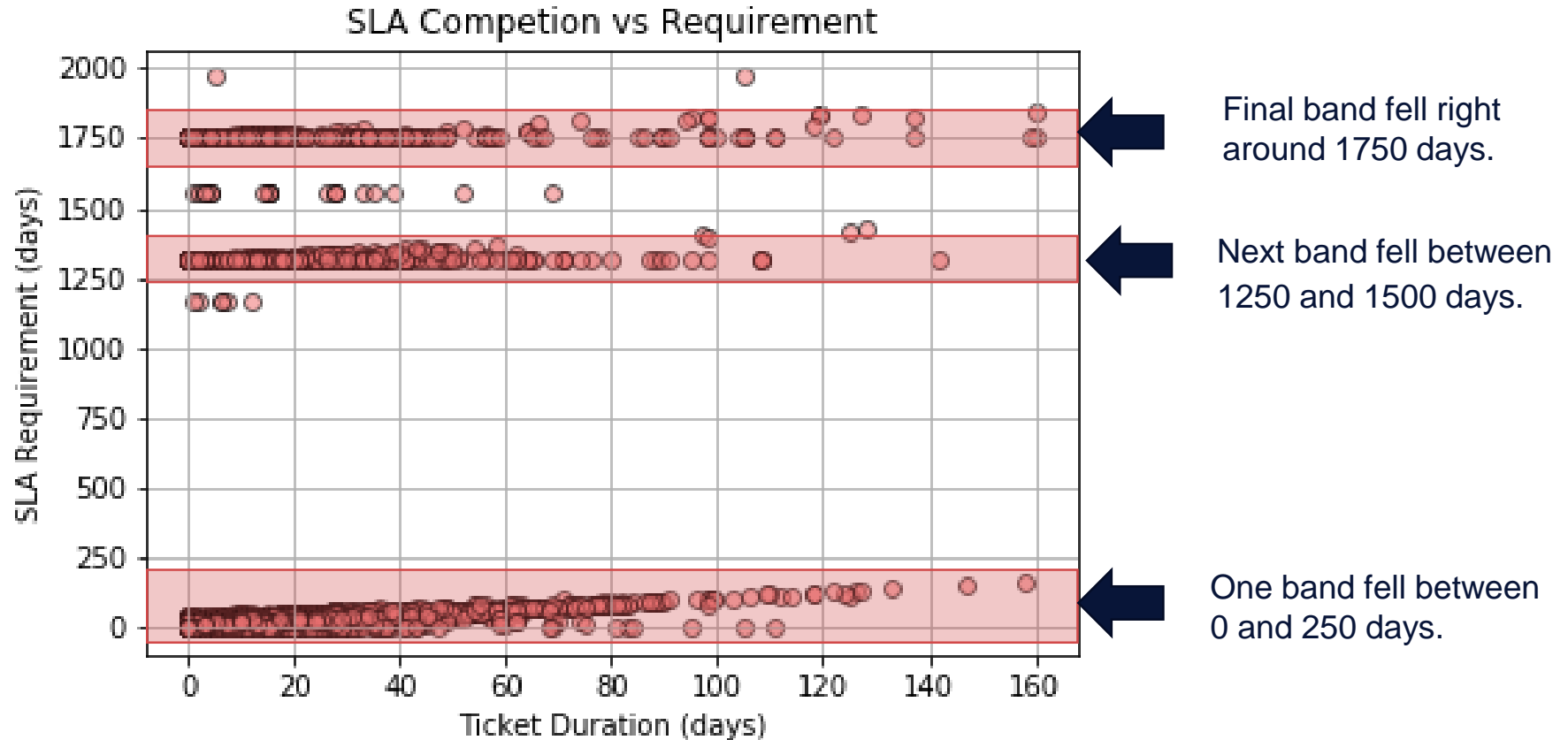
- Close date vs Due date
- Erroneous SLA Periods
- Days to complete
- SLA requirements
- Duration by Ticket
- Duration by location

SERVICE LEVEL AGREEMENT PERIOD

By evaluating the close date versus the due date it appears that 98.2% of Tickets were closed before the SLA due date. This was true across all Service Centers and generally across Ticket Types with the exception of Tier 2 – Compensation and Tier-3 Payroll which were closer to 80%



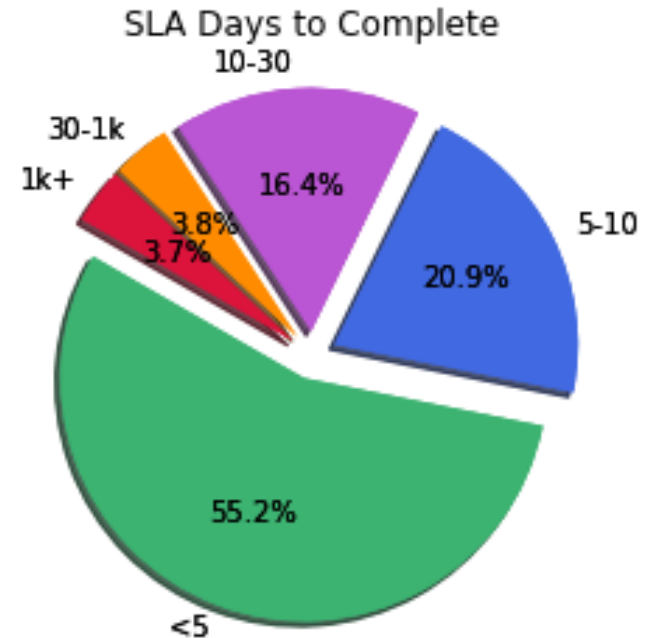
SERVICE LEVEL AGREEMENT PERIOD



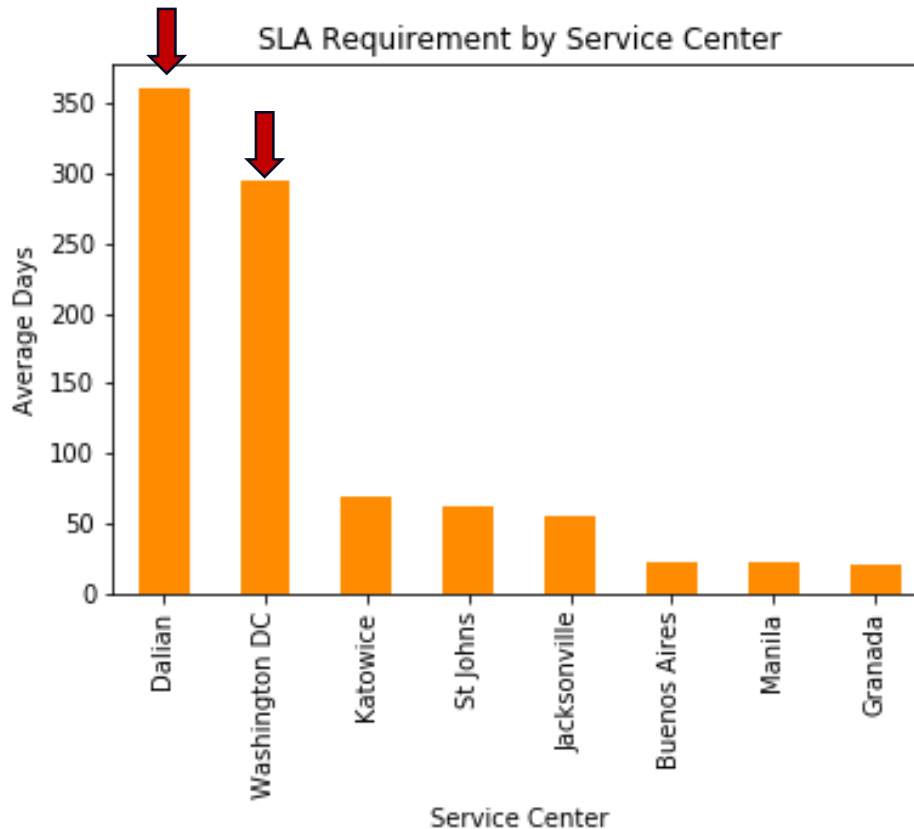
SERVICE LEVEL AGREEMENT PERIOD

Binning the SLA Days to complete into distinct groups we can see that most SLA Requirements are between 1 and 30 days with a minority percentage 7.5% greater than 30 days.

	Ticket Count	Percentage
Days		
<5	34045	55.189016
5-10	12891	20.897095
10-30	10128	16.418104
30-1k	2364	3.832188
1k+	2260	3.663597



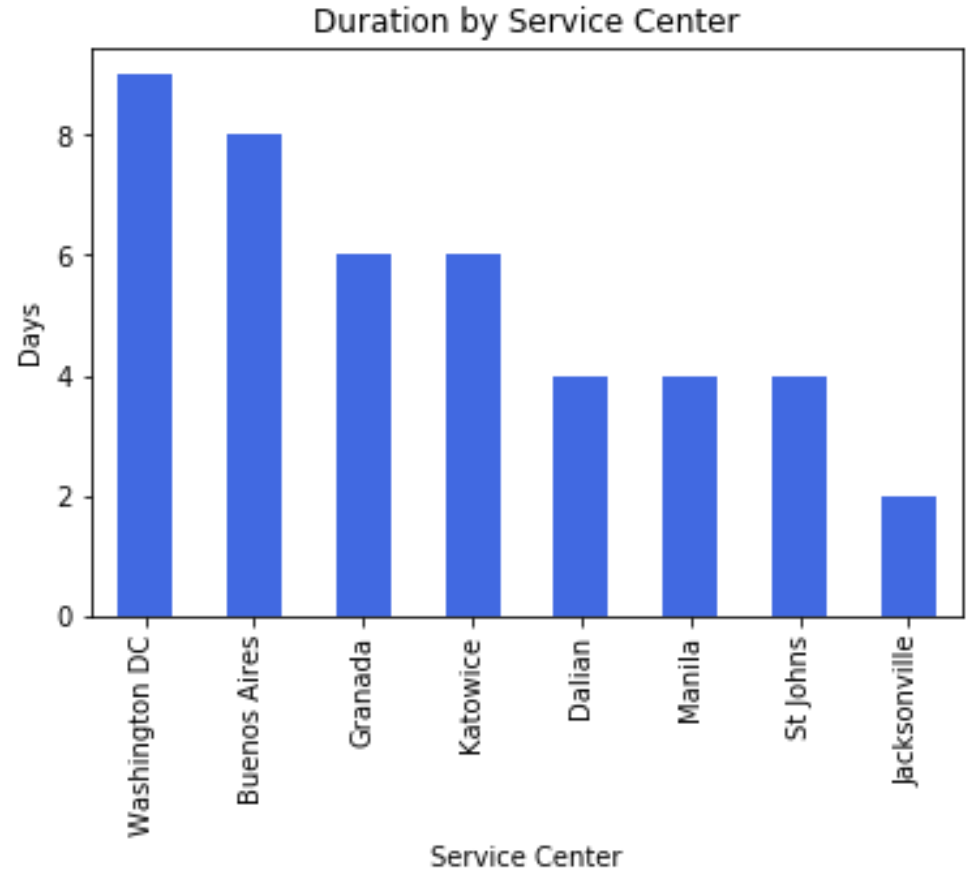
SERVICE LEVEL AGREEMENT PERIOD



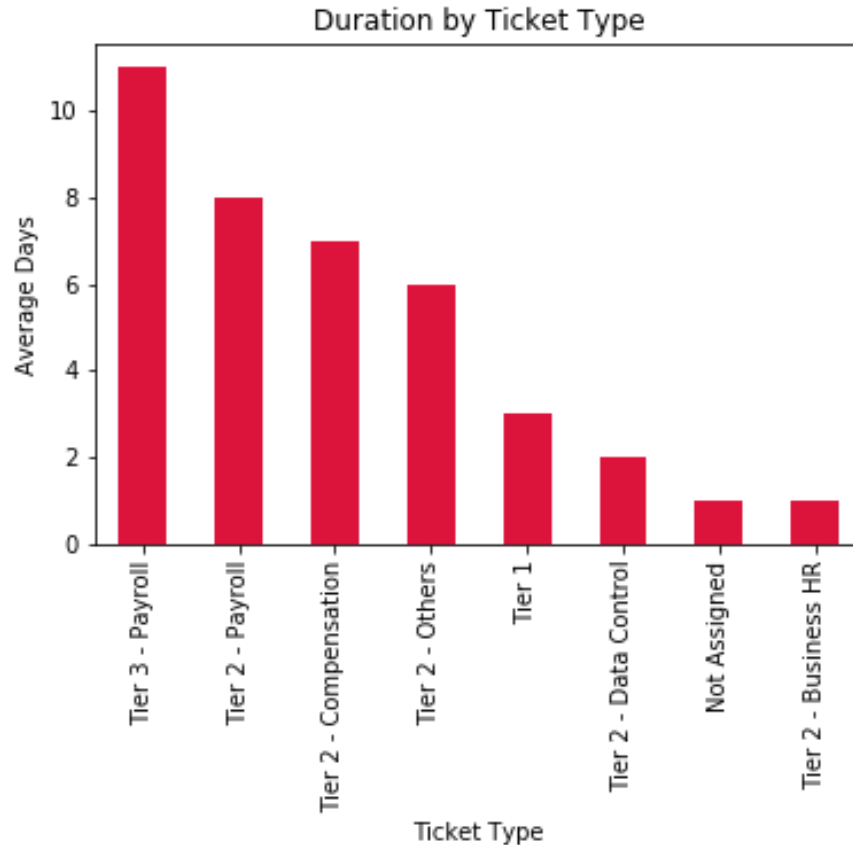
These large SLA periods skew the average data in total resulting in unreasonable SLA requirements especially in Dalian and Washington DC.

SERVICE LEVEL AGREEMENT PERIOD

The 'Washington DC' Service Center has the longest average ticket duration at ~9 days and the 'Jacksonville' service center has the shortest at ~2 days



SERVICE LEVEL AGREEMENT PERIOD



‘Tier 3 – Payroll’ takes 11 days to close and **Tier 2 – Payroll** takes the next most average days at 8 days. This would suggest that on average Payroll issues are most complex and require additional turn-around. **‘Tier 2 – Business HR’** and **‘Not Assigned’** tickets close in 1 day on average suggesting that these issues are typically resolved the same day.

LIMITATIONS AND FURTHER ANALYSIS



Limitations and Further Analysis

- # Run some analysis for bigger data set period
- # Split analysis for each of location
 - Location based time studies
 - Service type by location
- # Service type by time of year / seasonality
- # Inquiries that took place during the weekend
- # Pending tickets
- # Correlations between service spikes and other major company events
 - Company intranet portal articles
 - Earnings Reports
 - Mentions in the news

