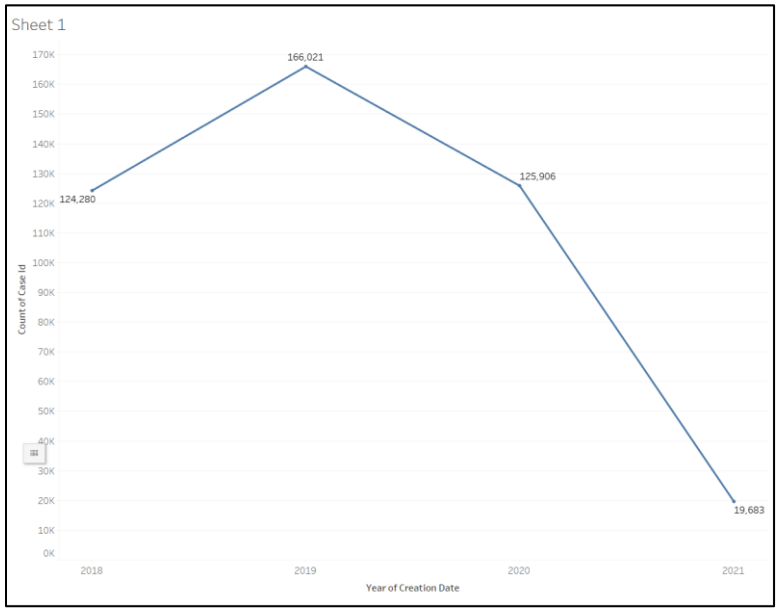
Vaishnavi Veerkumar **NUID: 002202590**

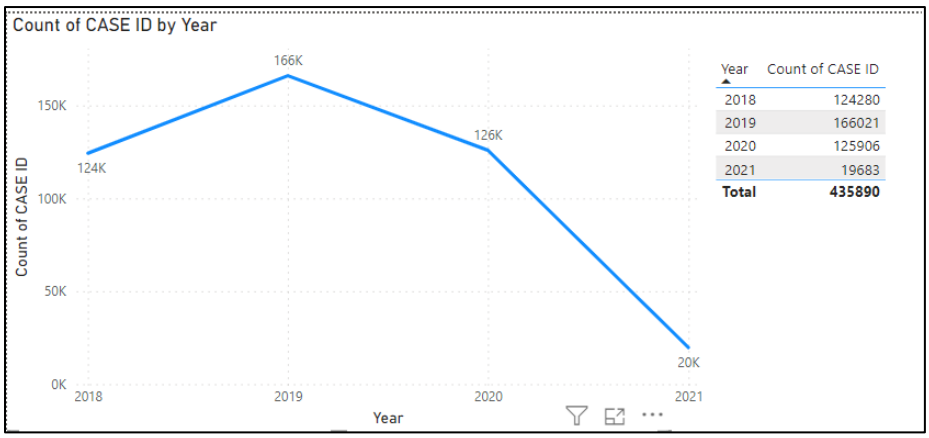
Q1. Service Requests Over Time:

- What is the overall trend in Service Requests over the years 2018-2021?

Tableau:



PowerBI:



```
SQLQuery1-dadabi....SHVEER\vaish (53))*
--Q1(a)
select YEAR([CREATION_DATE]) AS YEAR, count([CASE_ID]) AS NO_OF_SERVICE_REQUESTS
FROM STG_ServiceRequests
WHERE YEAR([CREATION_DATE]) BETWEEN 2018 AND 2021
GROUP BY YEAR([CREATION_DATE])
ORDER BY YEAR([CREATION_DATE])
```

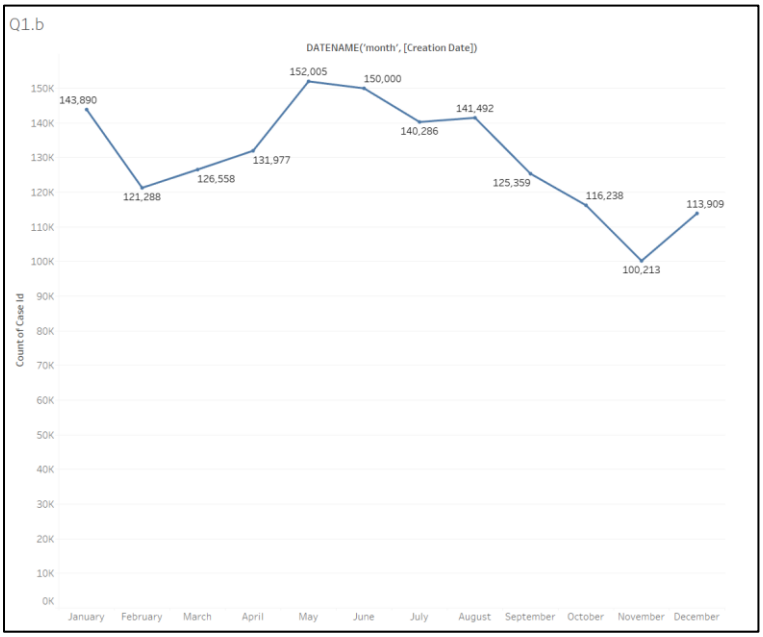
110 %

Results | Messages

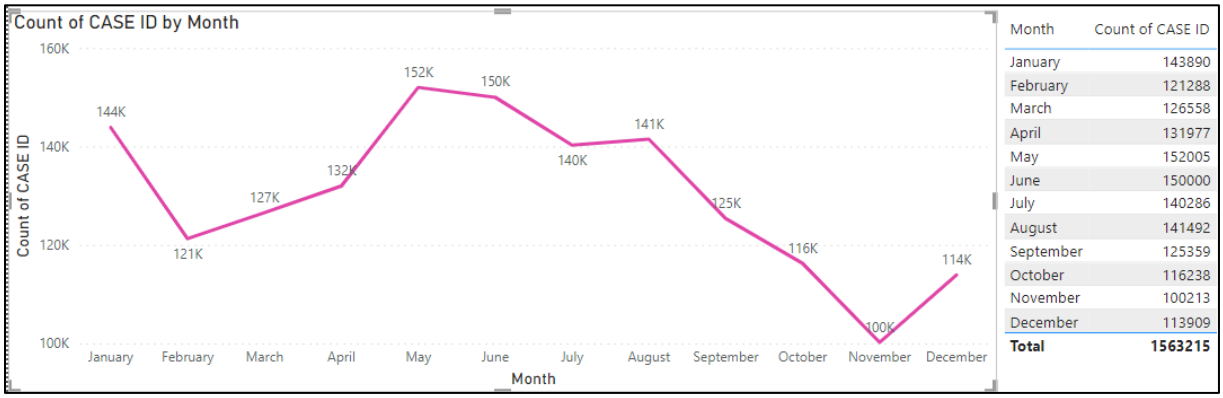
	YEAR	NO_OF_SERVICE_REQUESTS
1	2018	124280
2	2019	166021
3	2020	125906
4	2021	19683

- How have Service Requests changed on a monthly basis?

Tableau:



PowerBI:



Month	Count of CASE ID
January	143890
February	121288
March	126558
April	131977
May	152005
June	150000
July	140286
August	141492
September	125359
October	116238
November	100213
December	113909
Total	**1563215**

```
SQLQuery1-dadabi....SHVEER\vaish (55))*

--Q1(b)

SELECT DATENAME(MONTH,([CREATION DATE])) AS MONTH, COUNT([CASE ID]) AS NO_OF_SERVICE_REQUESTS_MONTHLY
FROM STG_ServiceRequests
GROUP BY DATENAME(MONTH,([CREATION DATE]))
```

110 %

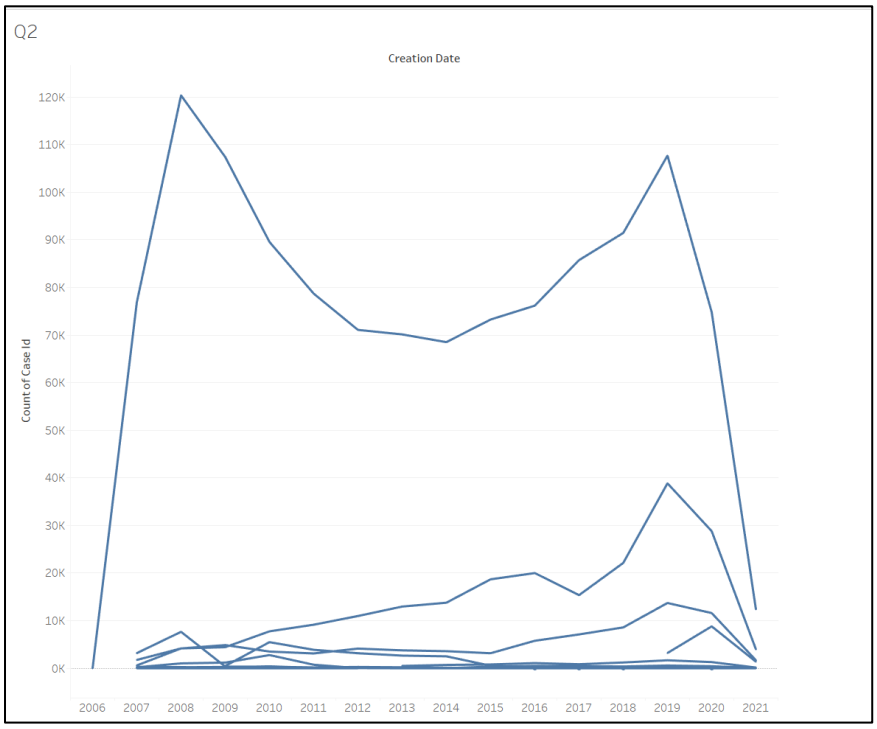
Results | Messages

	MONTH	NO_OF_SERVICE_REQUESTS_MONTHLY
1	February	121288
2	January	143890
3	April	131977
4	December	113909
5	March	126558
6	June	150000
7	October	116238
8	July	140286
9	November	100213
10	August	141492
11	September	125359
12	May	152005

Q2. Volume of service requests received from different sources:

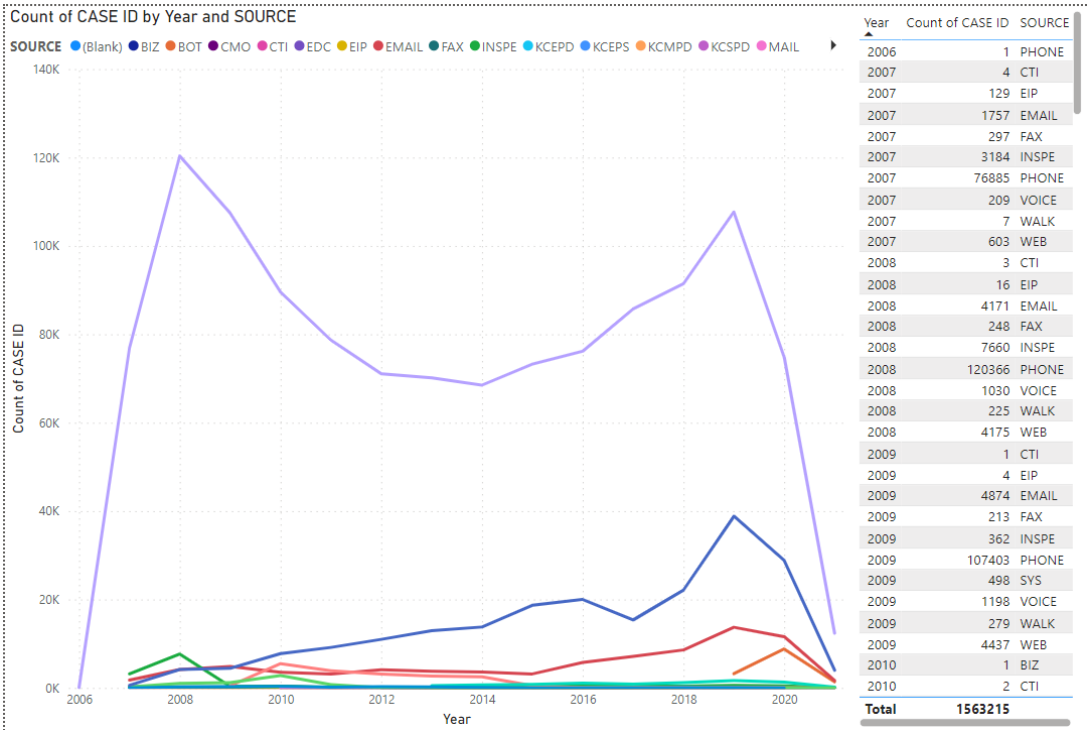
- What is the overall trend in Service Requests over Sources?

Tableau:



Vaishnavi Veerkumar **NUID: 002202590**

PowerBI:



Year	Count of CASE ID	SOURCE
2006	1	PHONE
2007	4	CTI
2007	129	EIP
2007	1757	EMAIL
2007	297	FAX
2007	3184	INSPE
2007	76885	PHONE
2007	209	VOICE
2007	7	WALK
2007	603	WEB
2008	3	CTI
2008	16	EIP
2008	4171	EMAIL
2008	248	FAX
2008	7660	INSPE
2008	120366	PHONE
2008	1030	VOICE
2008	225	WALK
2008	4175	WEB
2009	1	CTI
2009	4	EIP
2009	4874	EMAIL
2009	213	FAX
2009	362	INSPE
2009	107403	PHONE
2009	498	SYS
2009	1198	VOICE
2009	279	WALK
2009	4437	WEB
2010	1	BIZ
2010	2	CTI
Total	**1563215**	

SQLQuery4.sql - VA...SHVEER\vaish (58)) SQLQuery1-dadabi....SHVEER\vaish (55))

```
SELECT COUNT([CASE_ID]) AS NO_OF_SERVICE_REQUESTS,SOURCE,YEAR([CREATION_DATE]) AS [YEAR]
FROM STG_ServiceRequests
GROUP BY YEAR([CREATION_DATE]),SOURCE
ORDER BY [YEAR], SOURCE
```

110 %

Results Messages

	NO_OF_SERVICE_REQUESTS	SOURCE	YEAR
1	1	PHONE	2006
2	4	CTI	2007
3	129	EIP	2007
4	1757	EMAIL	2007
5	297	FAX	2007
6	3184	INSPE	2007
7	76885	PHONE	2007
8	209	VOICE	2007
9	7	WALK	2007
10	603	WEB	2007
11	3	CTI	2008
12	16	EIP	2008
13	4171	EMAIL	2008
14	248	FAX	2008
15	7660	INSPE	2008
16	120366	PHONE	2008
17	1030	VOICE	2008
18	225	WALK	2008
19	4175	WEB	2008
20	1	CTI	2009
21	4	EIP	2009
22	4874	EMAIL	2009
23	213	FAX	2009
24	362	INSPE	2009
25	107403	PHONE	2009
26	498	SYS	2009
27	1198	VOICE	2009
28	279	WALK	2009
29	4437	WEB	2009
30	1	BIZ	2010
31	2	CTI	2010
32	23	EIP	2010
33	3515	EMAIL	2010
34	419	FAX	2010
35	330	INSPE	2010
36	44	MAIL	2010
37	89568	PHONE	2010
38	5490	SYS	2010
39	2780	VOICE	2010

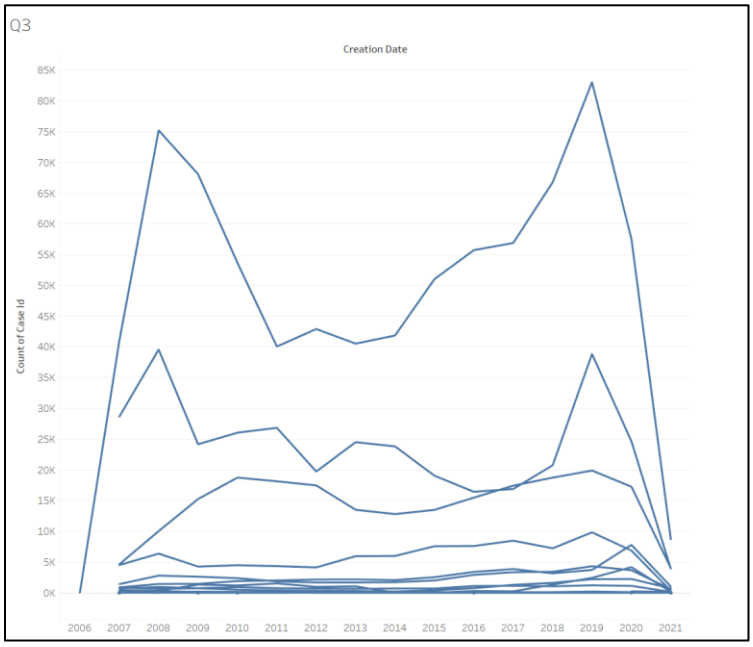
Query executed successfully. VAISHVEER (16.0 RTM)

Vaishnavi Veerkumar **NUID: 002202590**

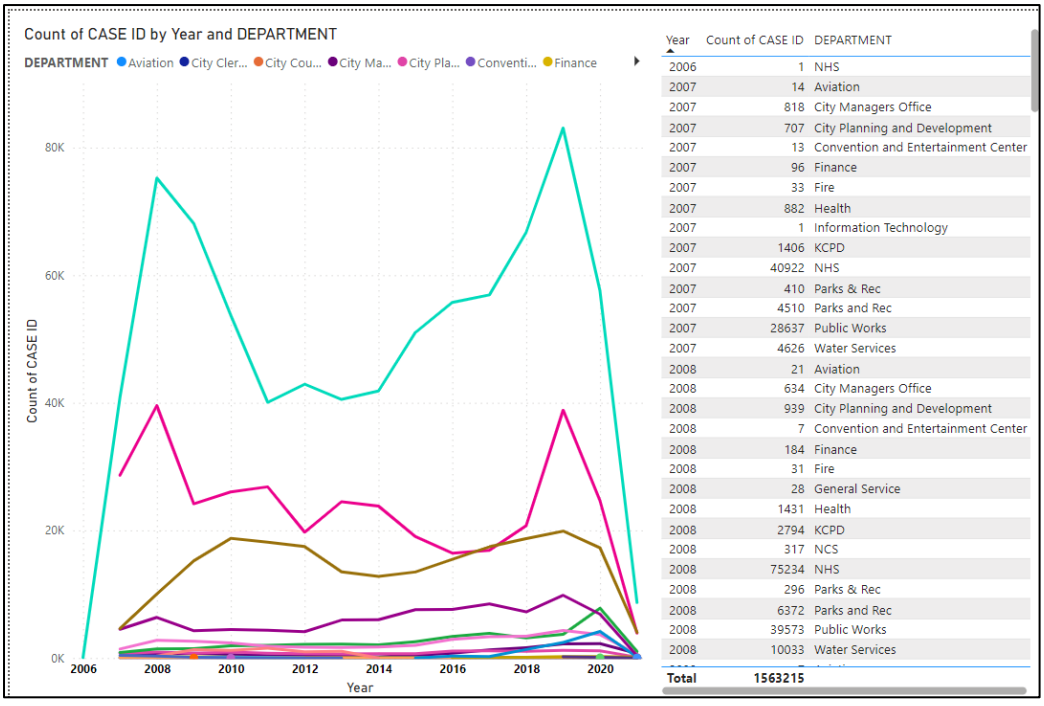
Q3. Volume of service requests received by Department:

- What is the overall trend in Service Requests received by Departments?

Tableau:



PowerBI:



Year	Count of CASE ID	DEPARTMENT
2006	1	NHS
2007	14	Aviation
2007	818	City Managers Office
2007	707	City Planning and Development
2007	13	Convention and Entertainment Center
2007	96	Finance
2007	33	Fire
2007	882	Health
2007	1	Information Technology
2007	1406	KCPD
2007	40922	NHS
2007	410	Parks & Rec
2007	4510	Parks and Rec
2007	28637	Public Works
2007	4626	Water Services
2008	21	Aviation
2008	634	City Managers Office
2008	939	City Planning and Development
2008	7	Convention and Entertainment Center
2008	184	Finance
2008	31	Fire
2008	28	General Service
2008	1431	Health
2008	2794	KCPD
2008	317	NCS
2008	75234	NHS
2008	296	Parks & Rec
2008	6372	Parks and Rec
2008	39573	Public Works
2008	10033	Water Services
Total	**1563215**	

SQLQuery4.sql - VA....SHVEER\vaish (58)) SQLQuery1-dadabi....SHVEER\vaish (55))

```
SELECT COUNT([CASE_ID]) AS NO_OF_SERVICE_REQUESTS,[DEPARTMENT],YEAR([CREATION_DATE]) AS [YEAR]
FROM STG_ServiceRequests
GROUP BY YEAR([CREATION_DATE]),[DEPARTMENT]
ORDER BY [YEAR], [DEPARTMENT]
```

110 % Results Messages

	NO_OF_SERVICE_REQUESTS	DEPARTMENT	YEAR
1	1	NHS	2006
2	14	Aviation	2007
3	818	City Managers Office	2007
4	707	City Planning and Development	2007
5	13	Convention and Entertainment Center	2007
6	96	Finance	2007
7	33	Fire	2007
8	882	Health	2007
9	1	Information Technology	2007
10	1406	KCPD	2007
11	40922	NHS	2007
12	410	Parks & Rec	2007
13	4510	Parks and Rec	2007
14	28637	Public Works	2007
15	4626	Water Services	2007
16	21	Aviation	2008
17	634	City Managers Office	2008
18	939	City Planning and Development	2008
19	7	Convention and Entertainment Center	2008
20	184	Finance	2008
21	31	Fire	2008
22	28	General Service	2008
23	1431	Health	2008
24	2794	KCPD	2008
25	317	NCS	2008
26	75234	NHS	2008
27	296	Parks & Rec	2008
28	6372	Parks and Rec	2008
29	39573	Public Works	2008
30	10033	Water Services	2008
31	7	Aviation	2009
32	736	City Managers Office	2009
33	744	City Planning and Development	2009
34	175	Finance	2009
35	37	Fire	2009
36	127	General Service	2009
37	1453	Health	2009
38	116	Housing Community Dev	2009
39	14	Information Technology	2009
40	2619	KCPD	2009

Query executed successfully. VAISHVEER (16.0 RTM)

(4) Top 10 Performance Metrics (Response Time) per CATEGORY and Type of Request:

- What are the top 10 cases whose response time was fastest? Categorize it with Category1 and Type of Request.

MIN-DAYS TO CLOSE	CASE ID	TYPE	CATEGORY1
0	2007000016	Investigation	Permit
0	2007000018	Investigation	Zoning
0	2007000021	Abandoned	Vehicle
0	2007000024	All	Aviation
0	2007000026	Rodent	Animal
0	2007000038	Board Up	Property Violations
0	2007000059	Street	Pothole
0	2007000060	Private Property	Property Violations
0	2007000062	Street	Sweeping
0	2007000063	Alley	Cleaning
0	2007000064	Cleaning	Ditch
0	2007000066	Street	Snow & Ice
0	2007000073	Repair	Guard Rail
0	2007000074	Street	Steel Plate
0	2007000076	Street	Sealing
0	2007000078	Street	Pothole
0	2007000080	Alley	Cleaning
0	2007000082	Street	Sweeping
0	2007000084	Repair	Guard Rail
0	2007000085	Street	Sealing
0	2007000087	Cleaning	Ditch
0	2007000090	Street	Snow & Ice
0	2007000094	Alley	Cleaning
0	2007000095	Street	Sweeping
0	2007000100	Street	Snow & Ice

0

SQLQuery4.sql - VA...SHVEER\vaish (58)) SQLQuery1-dadabi....SHVEER\vaish (55))

```
--Q4

SELECT TOP 10 [CASE_ID],MIN([DAYS_TO_CLOSE]) AS FASTEST_RESPONSE_TIME,CATEGORY1,[TYPE]
FROM STG_ServiceRequests
WHERE [DAYS_TO_CLOSE] IS NOT NULL
AND [DAYS_TO_CLOSE] >=0
GROUP BY CATEGORY1,[TYPE],[CASE_ID]
ORDER BY FASTEST_RESPONSE_TIME ASC
```

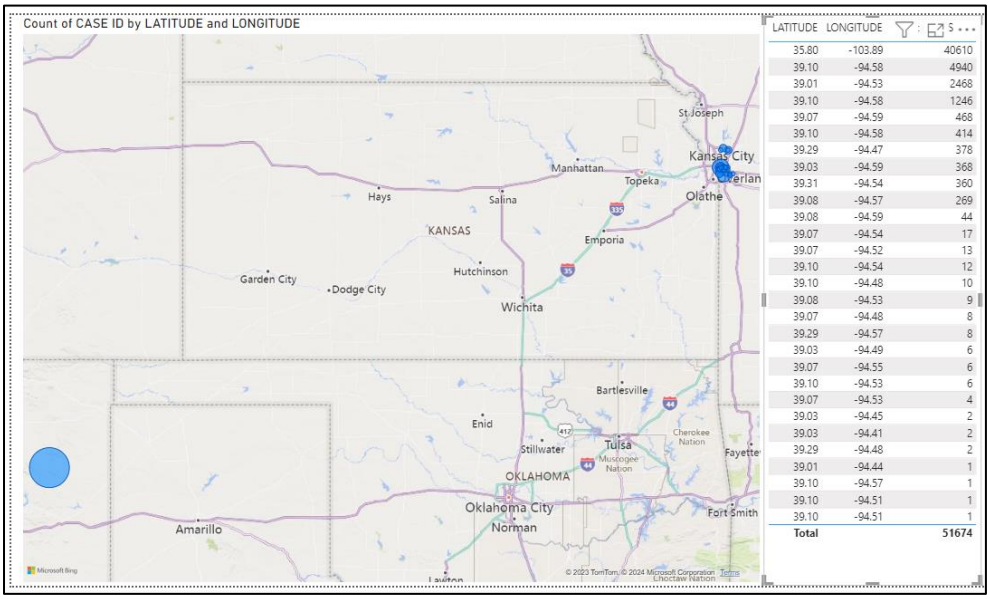
110 %

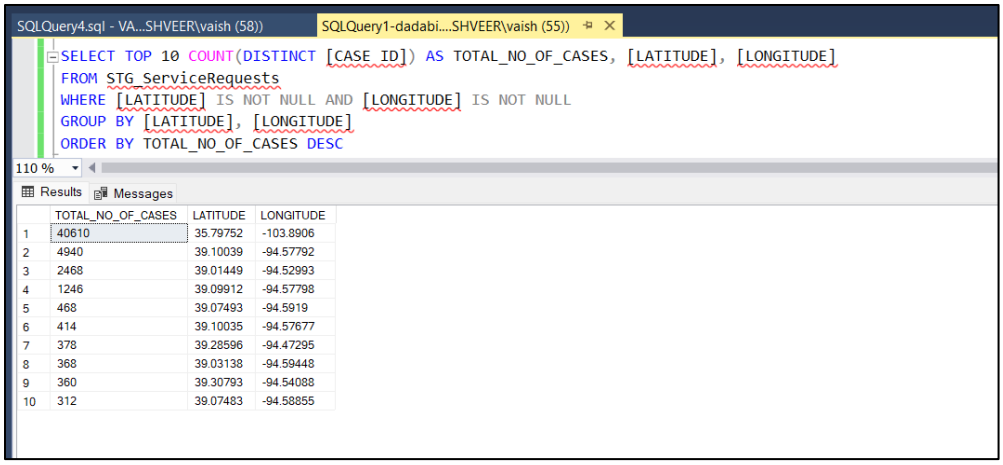
Results Messages

	CASE ID	FASTEST_RESPONSE_TIME	CATEGORY1	TYPE
1	2012040350	0	Traffic Study	Traffic Study
2	2012026655	0	Water Leak	Investigations
3	2009095725	0	Property & Nuisance Violations	Private Property
4	2015011160	0	Street Light	Damage
5	2015014639	0	Trash	Contractor
6	2013044635	0	Park	Maintenance
7	2020137452	0	Trees	Trimming
8	2020035056	0	Trash	Trash Collection
9	2009175332	0	Vehicle	Abandoned
10	2014003740	0	Water Leak	Investigations

Q5. Geographical Visualization:

- What are the Top 10 areas where most number of request were raised?





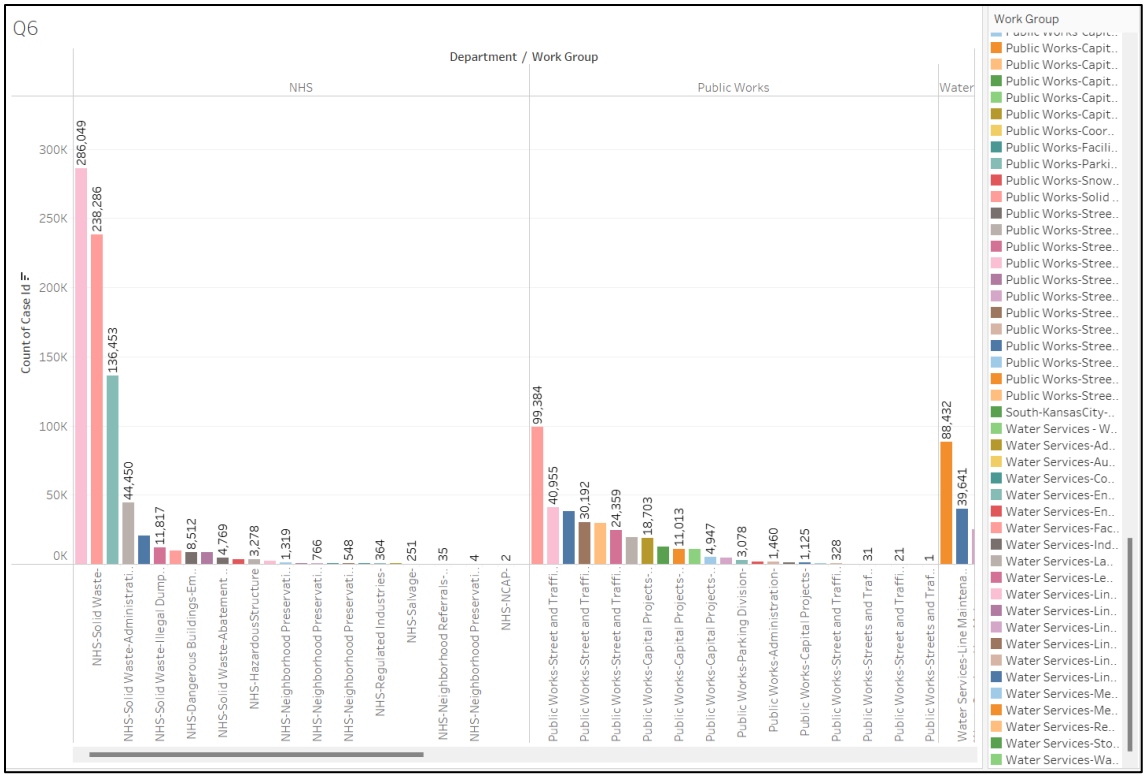
	TOTAL_NO_OF_CASES	LATITUDE	LONGITUDE
1	40610	35.79752	-103.8906
2	4940	39.10039	-94.57792
3	2468	39.01449	-94.52993
4	1246	39.09912	-94.57798
5	468	39.07493	-94.5919
6	414	39.10035	-94.57677
7	378	39.28596	-94.47295
8	368	39.03138	-94.59448
9	360	39.30793	-94.54088
10	312	39.07483	-94.58855

Q6. Departmental Workload Comparison:

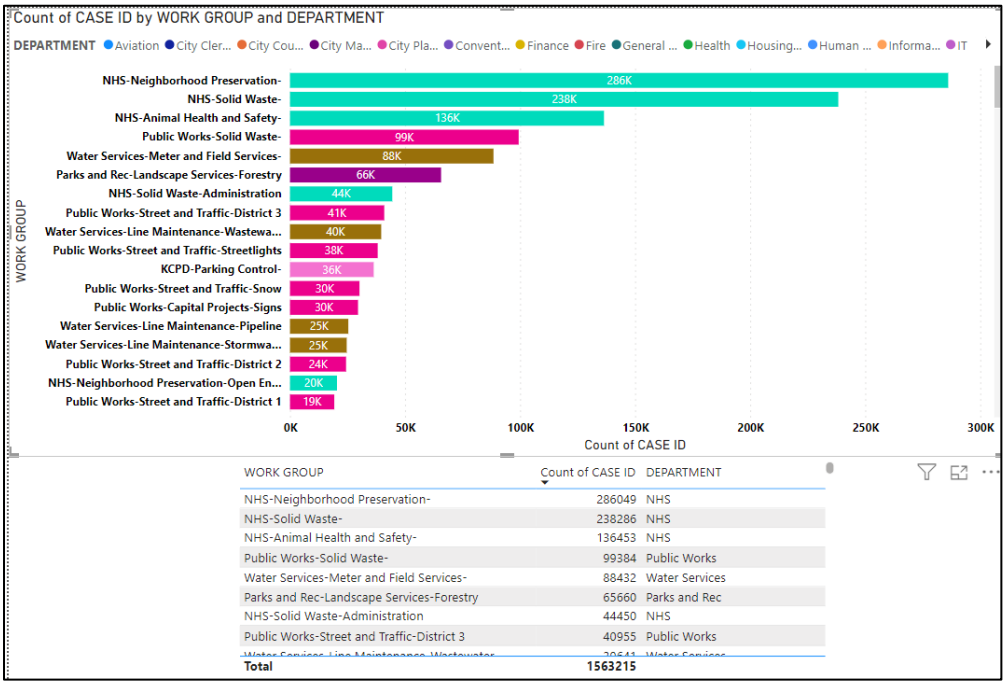
- How does the workload vary among different departments and work groups? Create a visual representation to highlight the distribution.

Tableau:

Vaishnavi Veerkumar **NUID: 002202590**



PowerBI:



```
SELECT COUNT([CASE_ID]) AS NO_OF_REQUESTS,DEPARTMENT,[WORK_GROUP]
FROM STG_ServiceRequests
GROUP BY DEPARTMENT,[WORK_GROUP]
ORDER BY NO_OF_REQUESTS DESC
```

Results | Messages

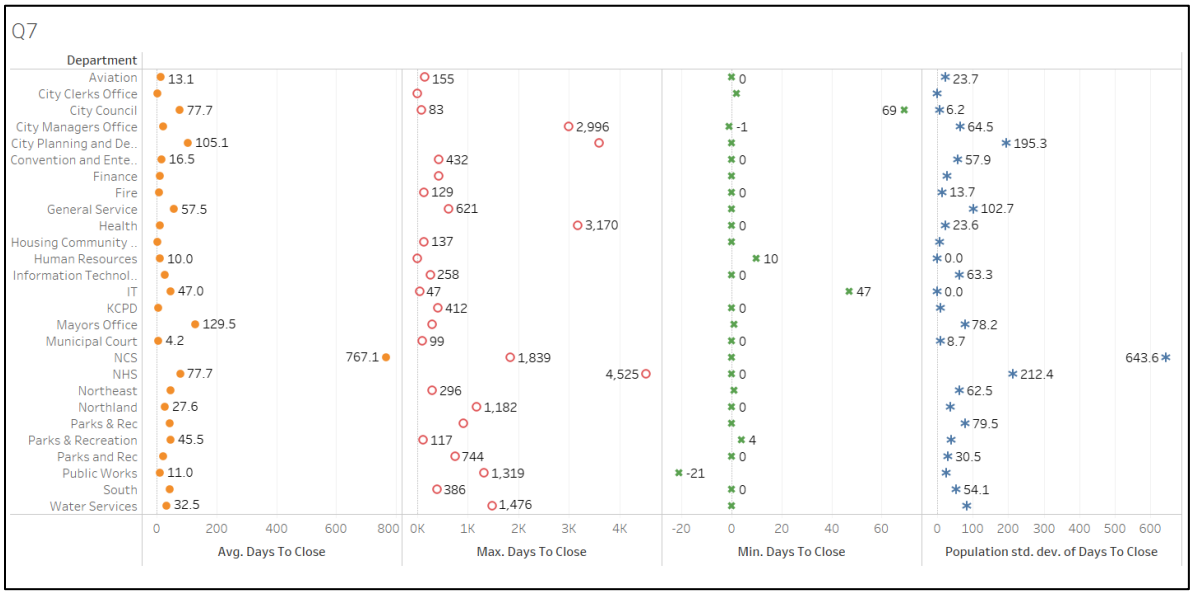
	NO_OF_REQUESTS	DEPARTMENT	WORK GROUP
1	286049	NHS	NHS-Neighborhood Preservation-
2	238286	NHS	NHS-Solid Waste-
3	136453	NHS	NHS-Animal Health and Safety-
4	99384	Public Works	Public Works-Solid Waste-
5	88432	Water Services	Water Services-Meter and Field Services-
6	65660	Parks and Rec	Parks and Rec-Landscape Services-Forestry
7	44450	NHS	NHS-Solid Waste-Administration
8	40955	Public Works	Public Works-Street and Traffic-District 3
9	39641	Water Services	Water Services-Line Maintenance-Wastewater
10	38108	Public Works	Public Works-Street and Traffic-Streetlights
11	36369	KCPD	KCPD-Parking Control-
12	30192	Public Works	Public Works-Street and Traffic-Snow
13	29558	Public Works	Public Works-Capital Projects-Signs
14	25342	Water Services	Water Services-Line Maintenance-Pipeline
15	24636	Water Services	Water Services-Line Maintenance-Stormwater
16	24359	Public Works	Public Works-Street and Traffic-District 2
17	20421	NHS	NHS-Neighborhood Preservation-Open Entry
18	19239	Public Works	Public Works-Street and Traffic-District 1
19	18703	Public Works	Public Works-Capital Projects-Traffic Signals
20	16760	Health	Health-Rat-
21	12636	Public Works	Public Works-Capital Projects-Traffic Control
22	11817	NHS	NHS-Solid Waste-Illegal Dumping
23	11013	Public Works	Public Works-Capital Projects-Sidewalks
24	10673	Public Works	Public Works-Capital Projects-Traffic Permits
25	9870	NHS	NHS-Dangerous Buildings-
26	8837	Water Services	Water Services-Line Maintenance-Restoration
27	8591	Northland	Northland-Neighborhood-Inc
28	8512	NHS	NHS-Dangerous Buildings-Emergency
29	8304	NHS	NHS-Neighborhood Preservation-Abatement
30	8170	City Planning and Development	City Planning and Development-Permit Compliance-
31	8106	City Managers Office	City Managers Office-311 Call Center-Support
32	7269	Water Services	Water Services-Line Maintenance-Leaf Brush
33	6616	Health	Health-Food Protection-
34	5458	Water Services	Water Services-Engineering-Water and Sewer
35	5117	Water Services	Water Services-Administration-
36	5024	Parks and Rec	Parks and Rec-Landscape Services-Weeds
37	4947	Public Works	Public Works-Capital Projects-Preservation
38	4914	Parks and Rec	Parks and Rec-Central Region-
39	4807	NCS	NCS-Neighborhood Preservation-LT List

Query executed successfully. VAISHVEER (16.0 RTM) VAISHVEER\vaish (55)

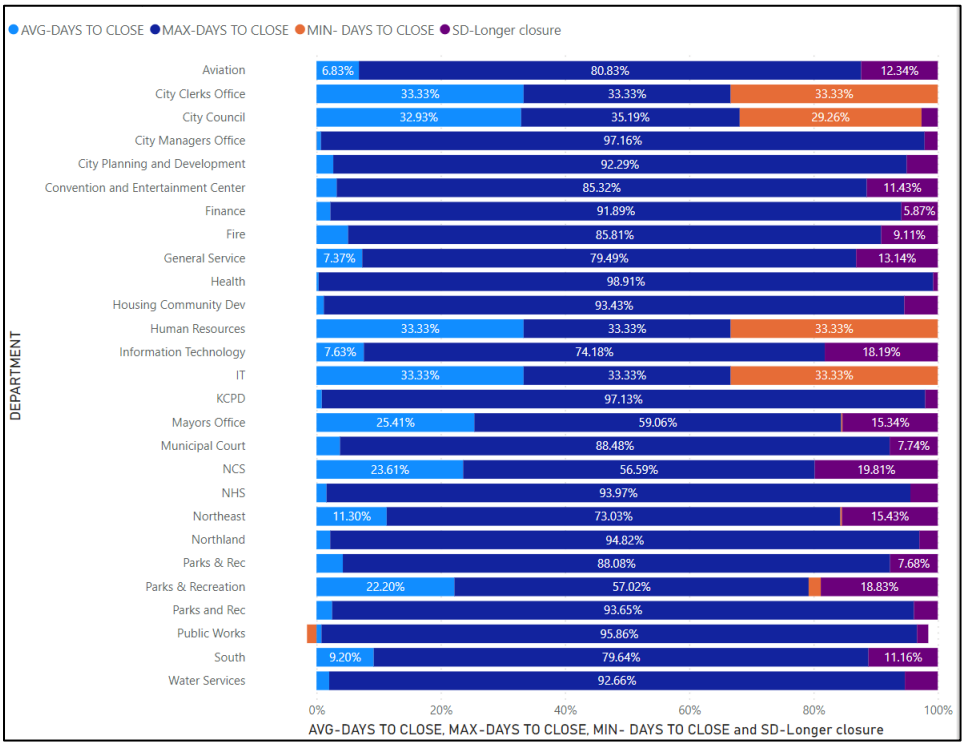
Q7. Response Time Analysis:

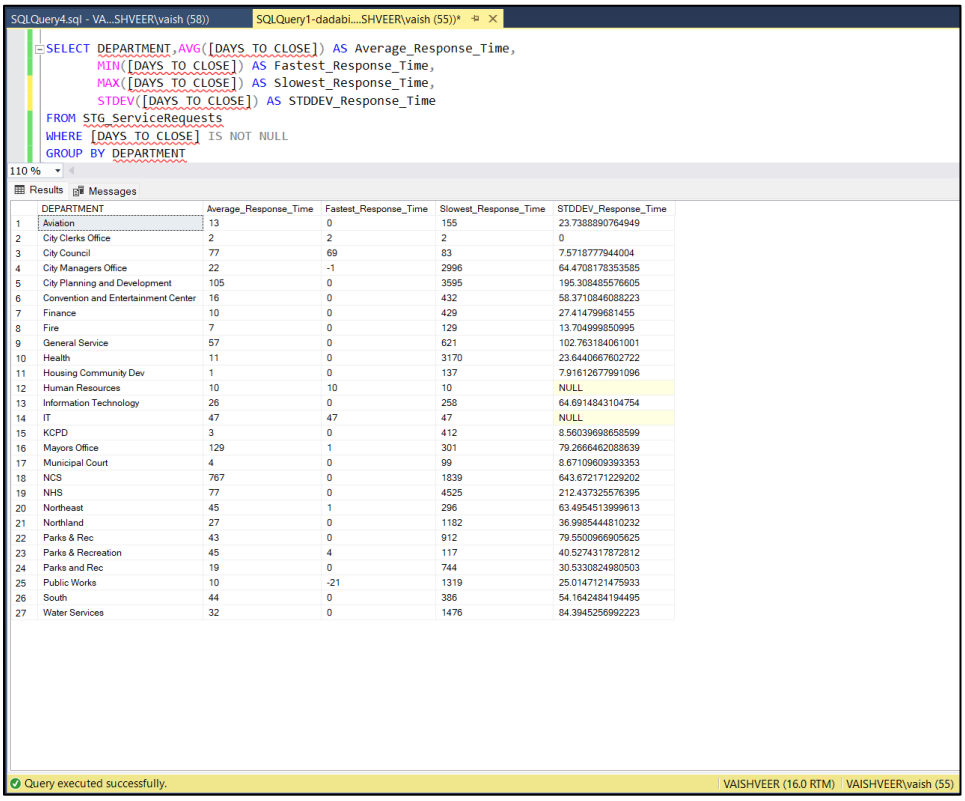
- Visualize the distribution of response times for each department. Are there any outliers or patterns in response times?

Tableau:



PowerBI:





```sql
SELECT DEPARTMENT,AVG([DAYS_TO_CLOSE]) AS Average_Response_Time,
       MIN([DAYS_TO_CLOSE]) AS Fastest_Response_Time,
       MAX([DAYS_TO_CLOSE]) AS Slowest_Response_Time,
       STDEV([DAYS_TO_CLOSE]) AS STDDEV_Response_Time
FROM STG_ServiceRequests
WHERE [DAYS_TO_CLOSE] IS NOT NULL
GROUP BY DEPARTMENT
```

Results Messages

	DEPARTMENT	Average_Response_Time	Fastest_Response_Time	Slowest_Response_Time	STDDEV_Response_Time
1	Aviation	13	0	155	23.7388890764949
2	City Clerks Office	2	2	2	0
3	City Council	77	69	83	7.5718777944004
4	City Managers Office	22	-1	2996	64.4708178353585
5	City Planning and Development	105	0	3595	195.308485576605
6	Convention and Entertainment Center	16	0	432	58.3710846088223
7	Finance	10	0	429	27.414799681455
8	Fire	7	0	129	13.704999850995
9	General Service	57	0	621	102.763184061001
10	Health	11	0	3170	23.6440667602722
11	Housing Community Dev	1	0	137	7.91612677991096
12	Human Resources	10	10	10	NULL
13	Information Technology	26	0	258	64.6914843104754
14	IT	47	47	47	NULL
15	KCPD	3	0	412	8.56039698658599
16	Mayors Office	129	1	301	79.2666462088639
17	Municipal Court	4	0	99	8.67109609393353
18	NCS	767	0	1839	643.672171229202
19	NHS	77	0	4525	212.437325576395
20	Northeast	45	1	296	63.4954513999613
21	Northland	27	0	1182	36.9985444810232
22	Parks & Rec	43	0	912	79.5500966905625
23	Parks & Recreation	45	4	117	40.5274317872812
24	Parks and Rec	19	0	744	30.5330824980503
25	Public Works	10	-21	1319	25.0147121475933
26	South	44	0	386	54.1642484194495
27	Water Services	32	0	1476	84.3945256992223

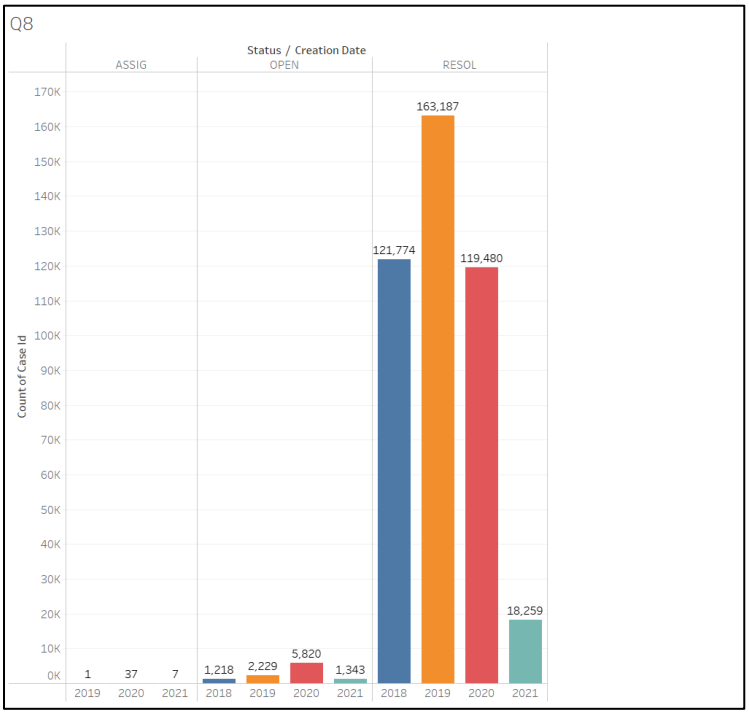
Query executed successfully. VAISHVEER (16.0 RTM) VAISHVEER\vaish (55)

Vaishnavi Veerkumar **NUID: 002202590**

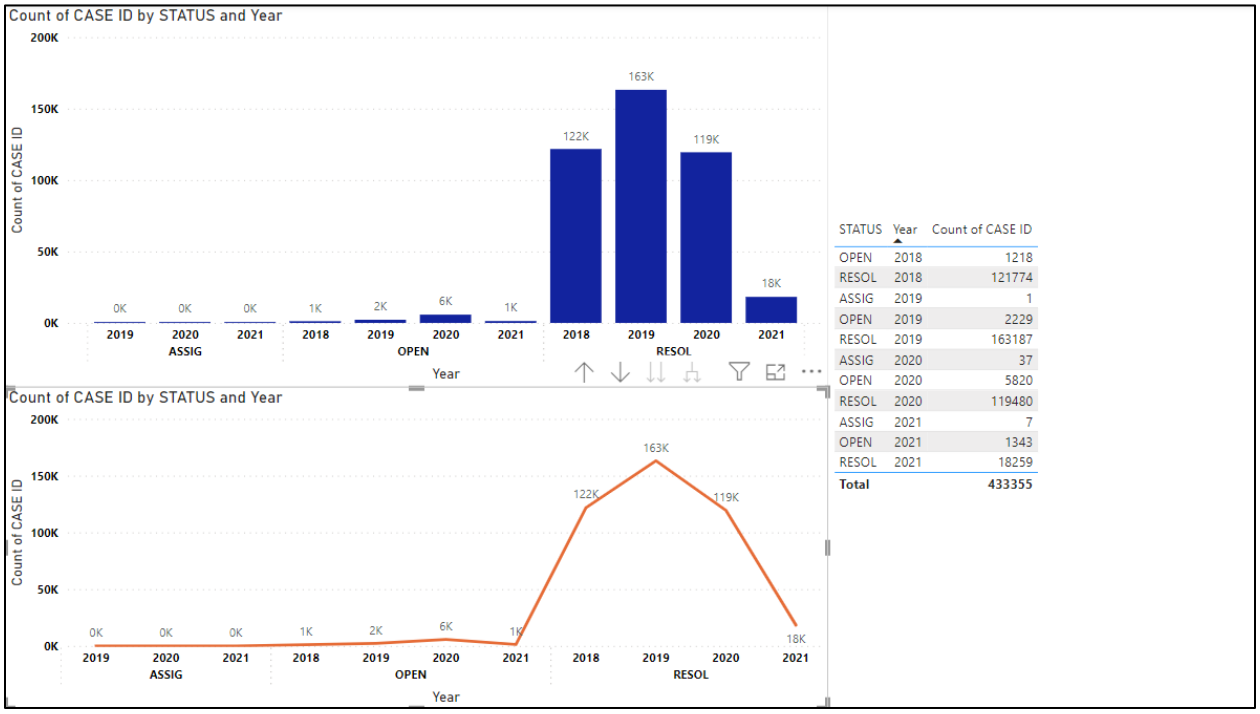
Q8 Service Request Status Composition:

- Create a visualization to show the composition of service request statuses (open, closed, in progress). How has this composition changed over the years 2018-2021?

Tableau:



PowerBI



```
SQLQuery4.sql - VA...SHVEER\vaish (58))   SQLQuery1-dadabi....SHVEER\vaish (55))*
--Q8

SELECT COUNT([CASE_ID]) AS NO_OF_SERVICE_REQUESTS, STATUS, YEAR([CREATION_DATE]) AS [YEAR]
FROM STG_ServiceRequests
WHERE (YEAR([CREATION_DATE]) BETWEEN 2018 AND 2021) AND ([STATUS] IN ('RESOL', 'OPEN', 'ASSIG'))
GROUP BY YEAR([CREATION_DATE]), STATUS
ORDER BY YEAR([CREATION_DATE]) ASC;
```

110 %

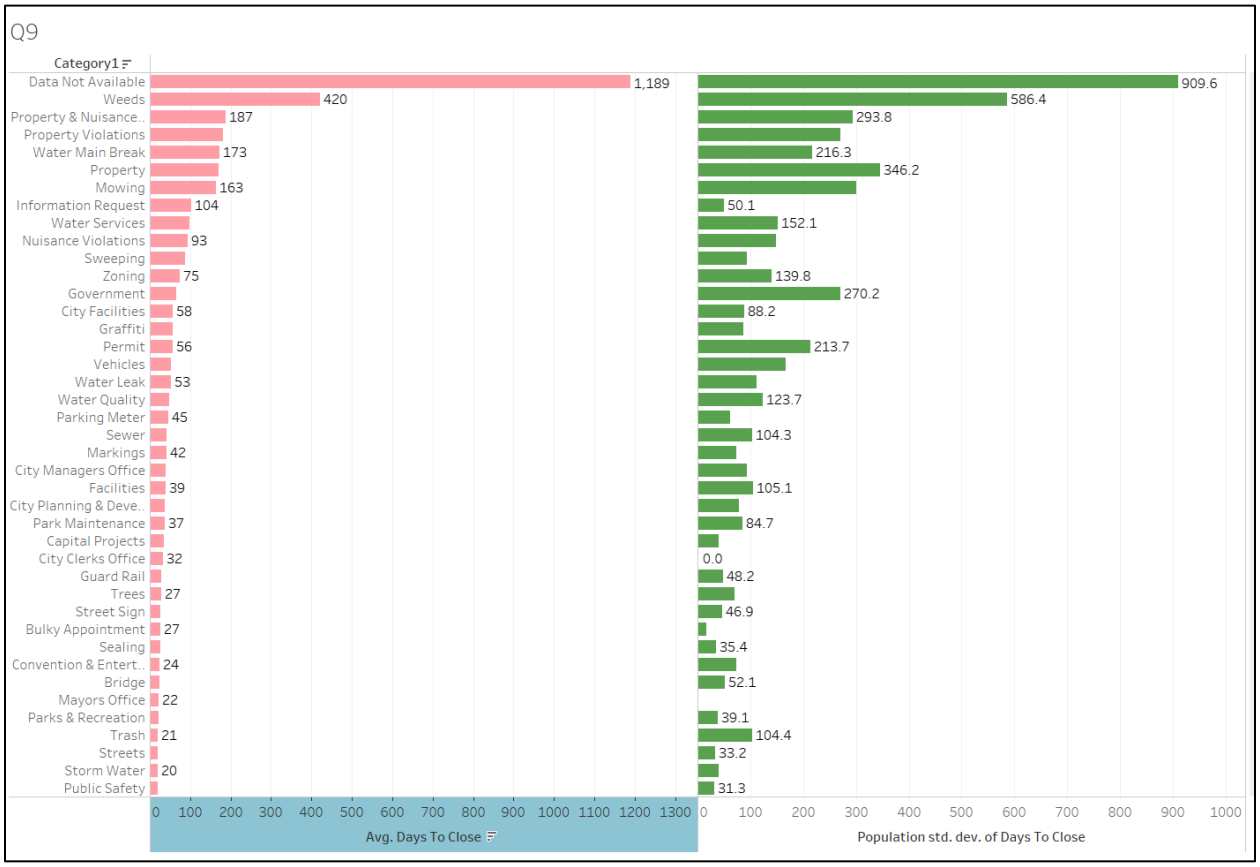
Results | Messages

	NO_OF_SERVICE_REQUESTS	STATUS	YEAR
1	1218	OPEN	2018
2	121774	RESOL	2018
3	2229	OPEN	2019
4	1	ASSIG	2019
5	163187	RESOL	2019
6	5820	OPEN	2020
7	37	ASSIG	2020
8	119480	RESOL	2020
9	7	ASSIG	2021
10	1343	OPEN	2021
11	18259	RESOL	2021

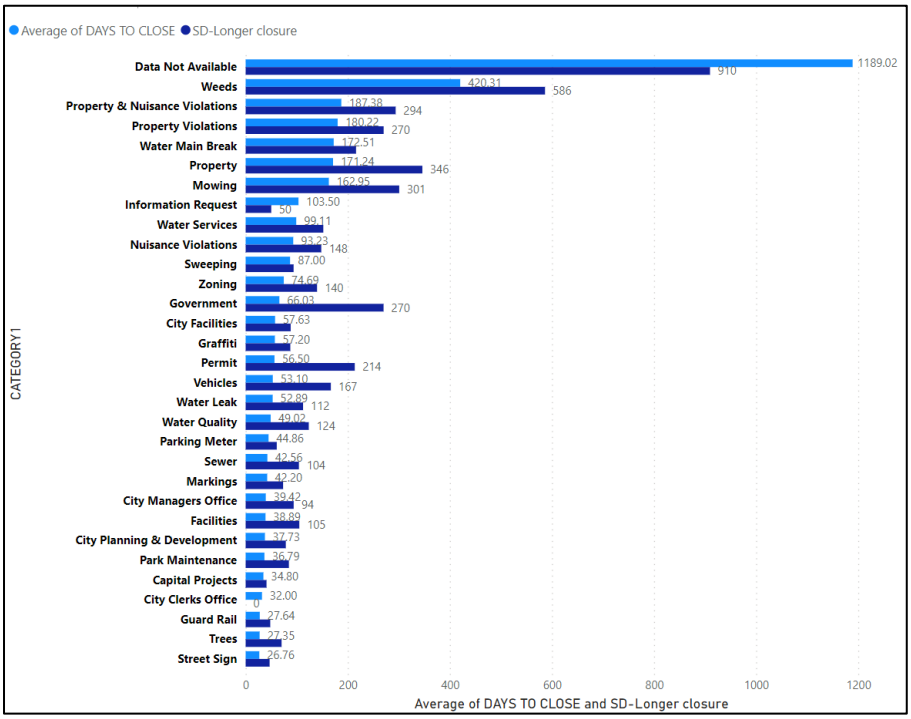
Q9. Time to Closure Analysis:

• Visualize the average days to close service requests for each category1. Are there categories with consistently longer closure times?

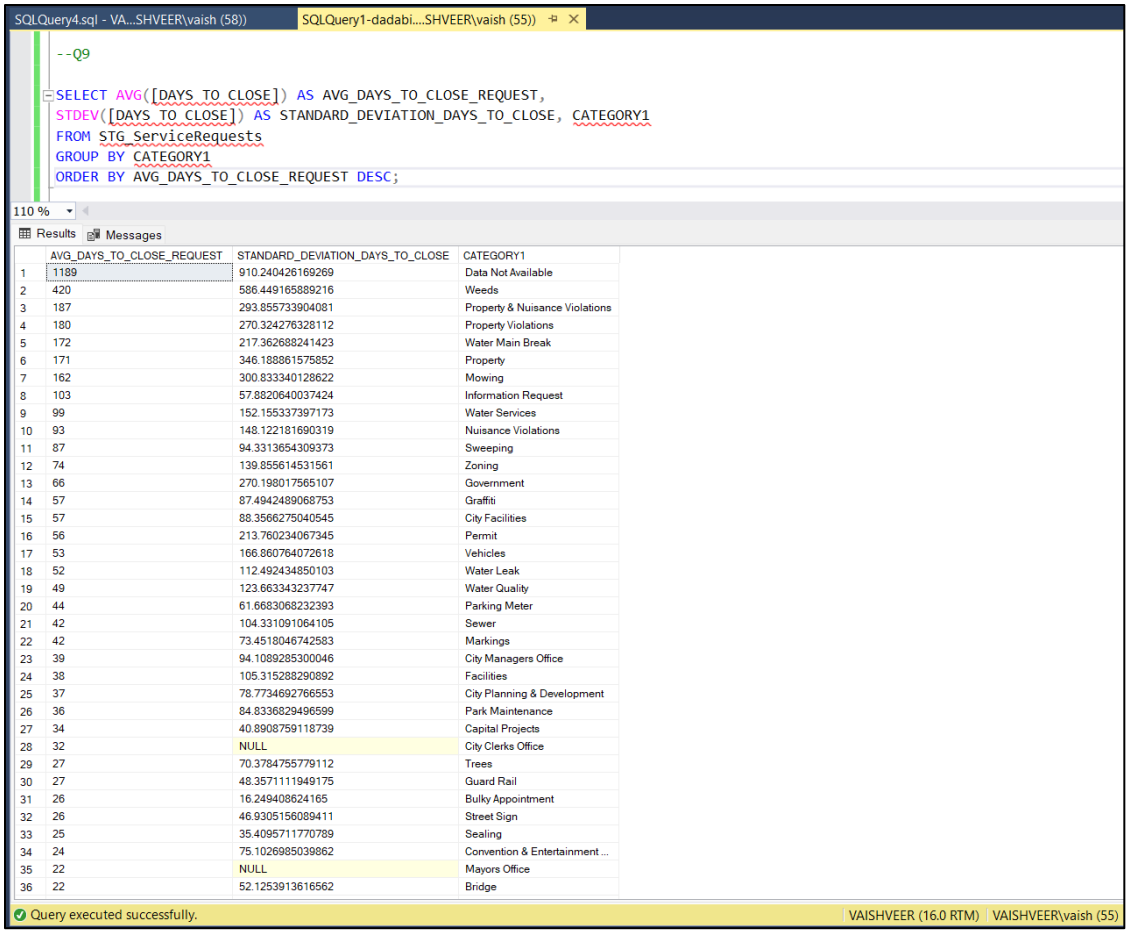
Tableau:



Power BI:



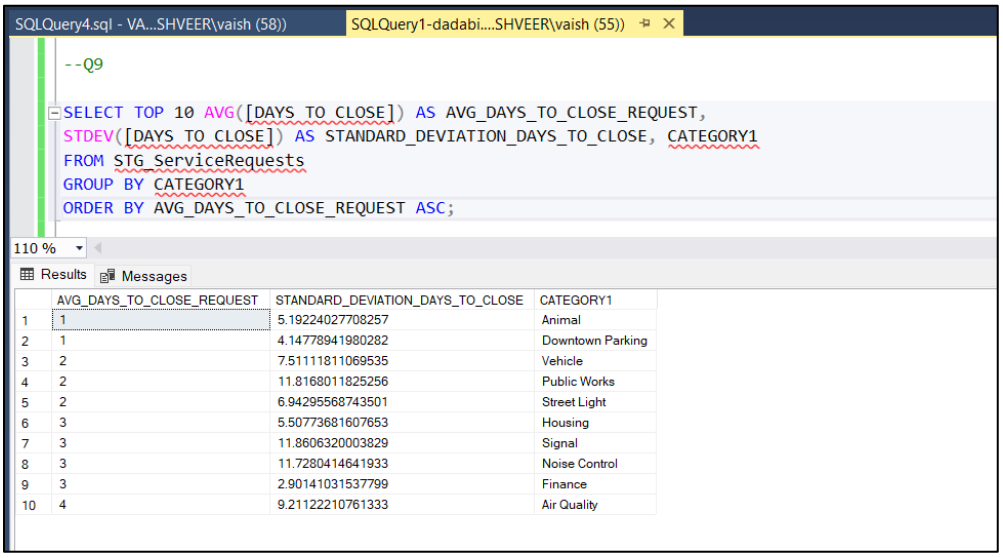
CATEGORY1	Average of DAYS TO CLOSE	SD-Longer closure
Data Not Available	1189.02	909.63
Weeds	420.31	586.43
Property & Nuisance Violations	187.38	293.85
Property Violations	180.22	270.32
Water Main Break	172.51	216.26
Property	171.24	346.19
Mowing	162.95	300.83
Information Request	103.50	50.13
Total	**51.53**	**169.57**



```
--Q9

SELECT AVG([DAYS_TO_CLOSE]) AS AVG_DAYS_TO_CLOSE_REQUEST,
STDEV([DAYS_TO_CLOSE]) AS STANDARD_DEVIATION_DAYS_TO_CLOSE, CATEGORY1
FROM STG_ServiceRequests
GROUP BY CATEGORY1
ORDER BY AVG_DAYS_TO_CLOSE_REQUEST DESC;
```

	AVG_DAYS_TO_CLOSE_REQUEST	STANDARD_DEVIATION_DAYS_TO_CLOSE	CATEGORY1
1	1189	910.240426169269	Data Not Available
2	420	586.449165889216	Weeds
3	187	293.855733904081	Property & Nuisance Violations
4	180	270.324276328112	Property Violations
5	172	217.362688241423	Water Main Break
6	171	346.188861575852	Property
7	162	300.833340128622	Mowing
8	103	57.8820640037424	Information Request
9	99	152.155337397173	Water Services
10	93	148.122181690319	Nuisance Violations
11	87	94.3313654309373	Sweeping
12	74	139.855614531561	Zoning
13	66	270.198017565107	Government
14	57	87.4942489068753	Graffiti
15	57	88.3566275040545	City Facilities
16	56	213.760234067345	Permit
17	53	166.860764072618	Vehicles
18	52	112.492434850103	Water Leak
19	49	123.663343237747	Water Quality
20	44	61.6683068232393	Parking Meter
21	42	104.331091064105	Sewer
22	42	73.4518046742583	Markings
23	39	94.1089285300046	City Managers Office
24	38	105.315288290892	Facilities
25	37	78.7734692766553	City Planning & Development
26	36	84.8336829496599	Park Maintenance
27	34	40.8908759118739	Capital Projects
28	32	NULL	City Clerks Office
29	27	70.3784755779112	Trees
30	27	48.3571111949175	Guard Rail
31	26	16.249408624165	Bulky Appointment
32	26	46.9305156089411	Street Sign
33	25	35.4095711770789	Sealing
34	24	75.1026985039862	Convention & Entertainment ...
35	22	NULL	Mayors Office
36	22	52.1253913616562	Bridge

• Show top 10



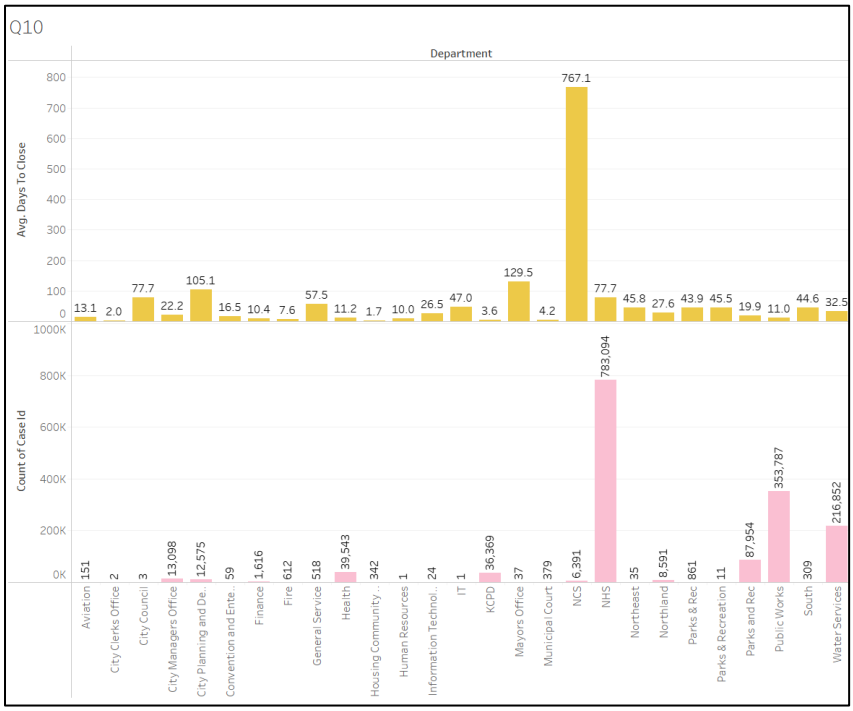
```
--Q9

SELECT TOP 10 AVG([DAYS_TO_CLOSE]) AS AVG_DAYS_TO_CLOSE_REQUEST,
STDEV([DAYS_TO_CLOSE]) AS STANDARD_DEVIATION_DAYS_TO_CLOSE, CATEGORY1
FROM STG_ServiceRequests
GROUP BY CATEGORY1
ORDER BY AVG_DAYS_TO_CLOSE_REQUEST ASC;
```

	AVG_DAYS_TO_CLOSE_REQUEST	STANDARD_DEVIATION_DAYS_TO_CLOSE	CATEGORY1
1	1	5.19224027708257	Animal
2	1	4.14778941980282	Downtown Parking
3	2	7.51111811069535	Vehicle
4	2	11.8168011825256	Public Works
5	2	6.94295568743501	Street Light
6	3	5.50773681607653	Housing
7	3	11.8606320003829	Signal
8	3	11.7280414641933	Noise Control
9	3	2.90141031537799	Finance
10	4	9.21122210761333	Air Quality

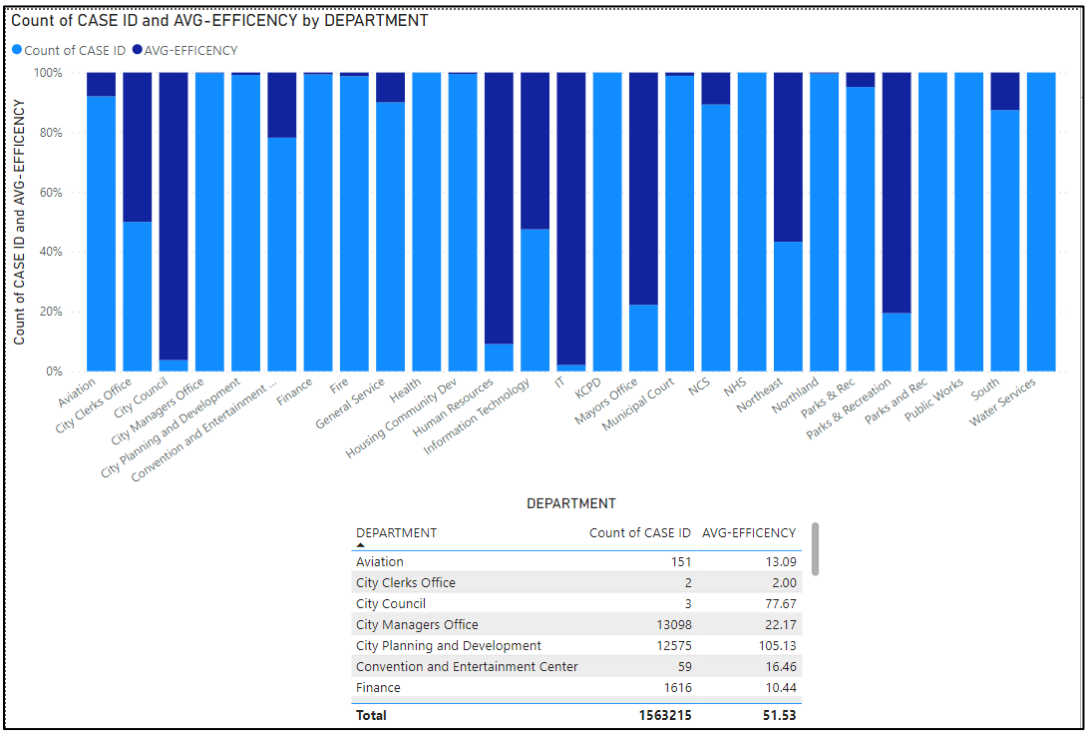
Q10. Workload Efficiency:

- Create a visualization to show the relationship between workload (number of service requests) and efficiency (days to close) for each department?

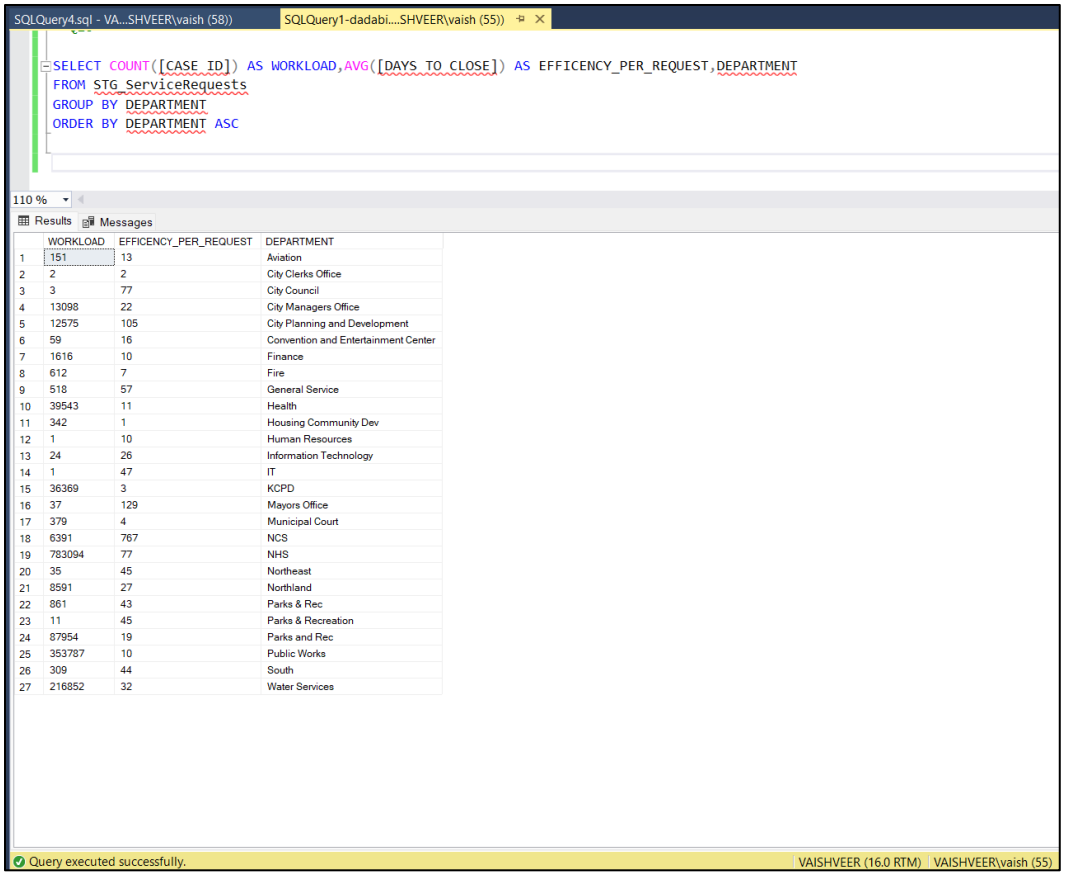
Tableau:



Power BI:



DEPARTMENT	Count of CASE ID	AVG-EFFICENCY
Aviation	151	13.09
City Clerks Office	2	2.00
City Council	3	77.67
City Managers Office	13098	22.17
City Planning and Development	12575	105.13
Convention and Entertainment Center	59	16.46
Finance	1616	10.44
Total	**1563215**	**51.53**



SQLQuery4.sql - VA...SHVEER\vaish (58)) | SQLQuery1-dadabi....SHVEER\vaish (55))

```
SELECT COUNT([CASE_ID]) AS WORKLOAD,AVG([DAYS_TO_CLOSE]) AS EFFICENCY_PER_REQUEST,DEPARTMENT
FROM STG_ServiceRequests
GROUP BY DEPARTMENT
ORDER BY DEPARTMENT ASC
```

110 %

Results | Messages

	WORKLOAD	EFFICENCY_PER_REQUEST	DEPARTMENT
1	151	13	Aviation
2	2	2	City Clerks Office
3	3	77	City Council
4	13098	22	City Managers Office
5	12575	105	City Planning and Development
6	59	16	Convention and Entertainment Center
7	1616	10	Finance
8	612	7	Fire
9	518	57	General Service
10	39543	11	Health
11	342	1	Housing Community Dev
12	1	10	Human Resources
13	24	26	Information Technology
14	1	47	IT
15	36369	3	KCPD
16	37	129	Mayors Office
17	379	4	Municipal Court
18	6391	767	NCS
19	783094	77	NHS
20	35	45	Northeast
21	8591	27	Northland
22	861	43	Parks & Rec
23	11	45	Parks & Recreation
24	87954	19	Parks and Rec
25	353787	10	Public Works
26	309	44	South
27	216852	32	Water Services

Query executed successfully. VAISHVEER (16.0 RTM) VAISHVEER\vaish (55)