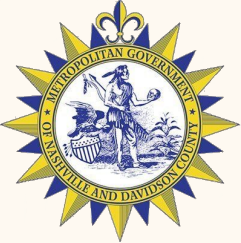# Metro Codes Permit Timeline Analysis
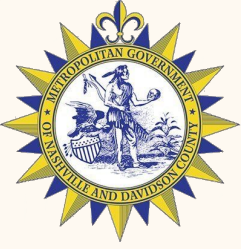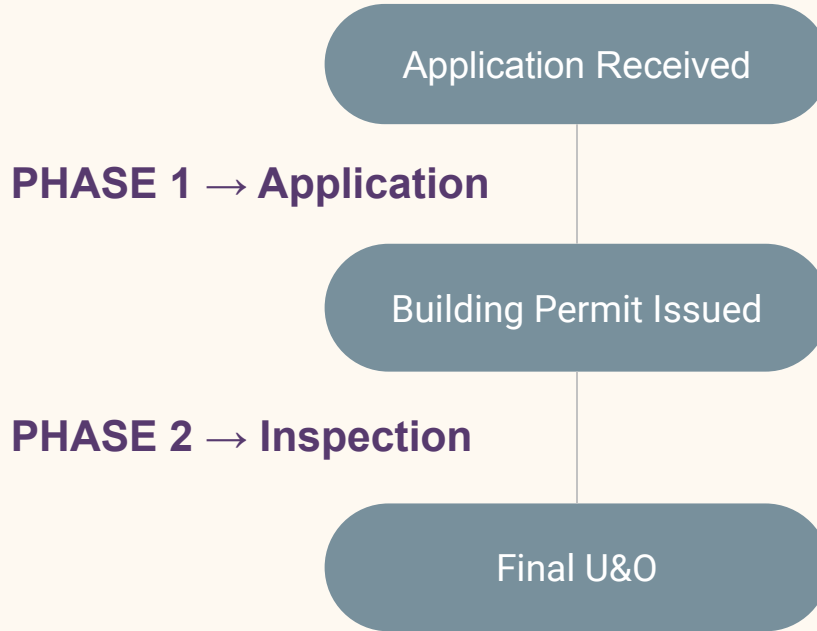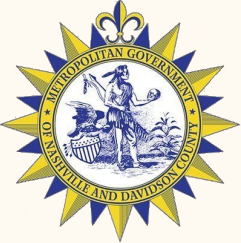
Data Analytics Cohort DDA4

Data Questions

- *What is an expected timeframe for each construction type and workflow type?*

- *For each permit type, how long does it take from application to complete review for the different workflow items?*

Workflow Phases

Application Received

PHASE 1 → Application
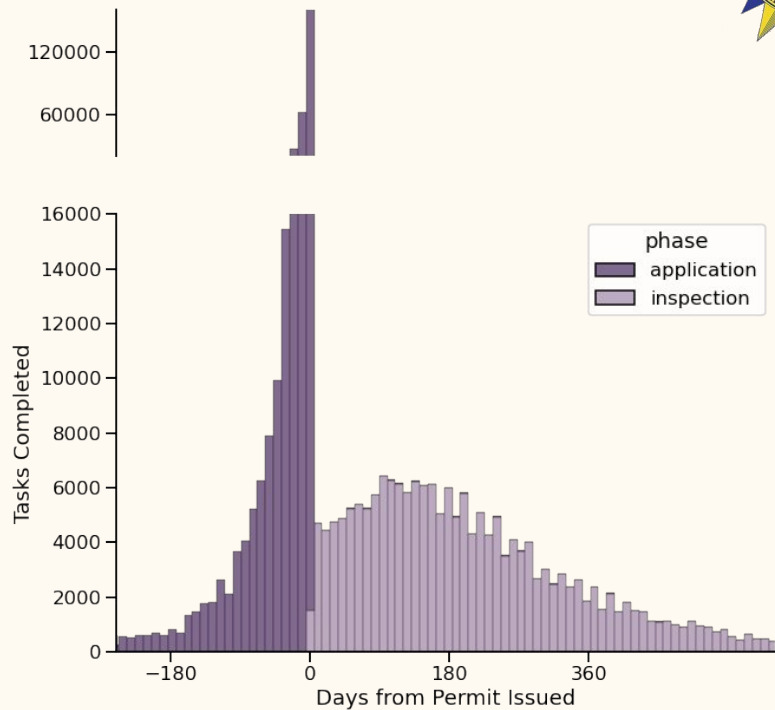
Building Permit Issued
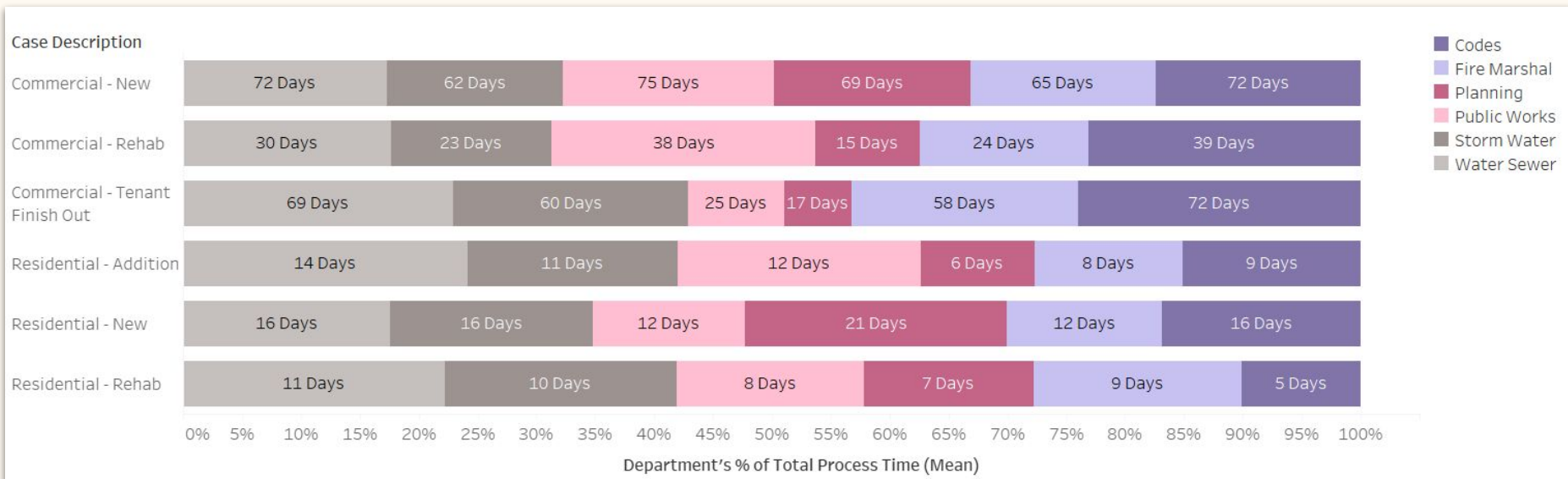
PHASE 2 → Inspection

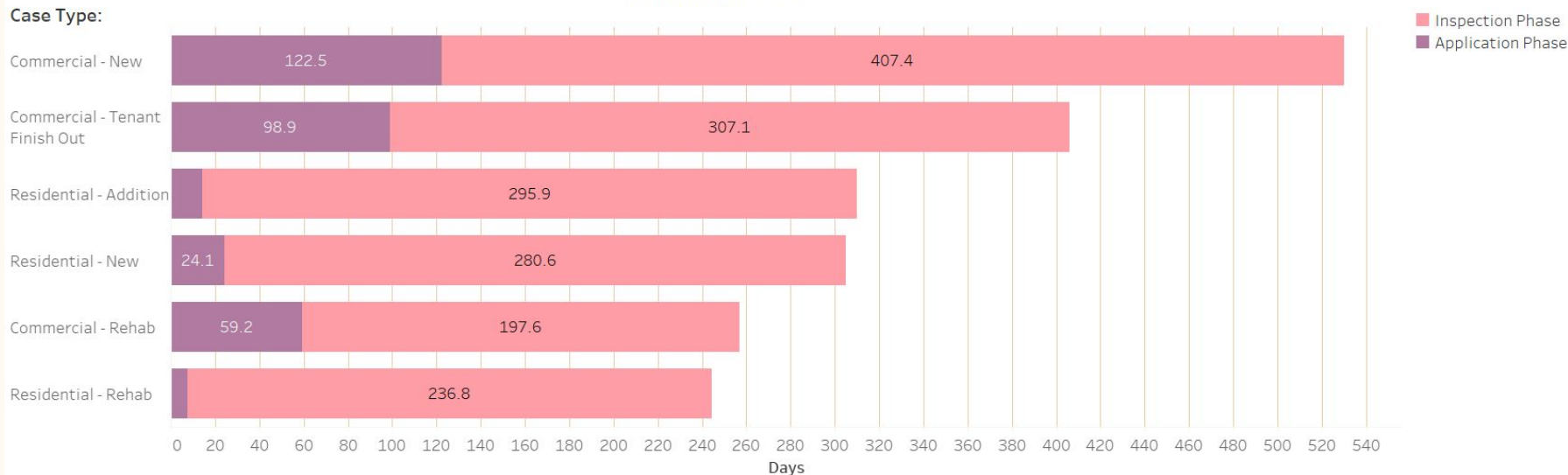Final U&O

Data Manipulation

- Removed permits that have not been issued (T&D permit numbers)
- Kept the last date for each Task on a Permit
- Decided Tasks for Application vs Inspection phase (95% rule)
- For Inspection phase tasks, kept only Permits that have a Final U&O
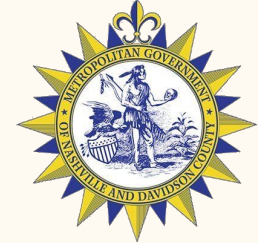- Focused on Top 6 Permit Types

Average Days to Complete Tasks by Case Type and Department (Application Phase)

Case Description

Case Description	Water Sewer	Storm Water	Public Works	Planning	Fire Marshal	Codes
Commercial - New	72 Days	62 Days	75 Days	69 Days	65 Days	72 Days
Commercial - Rehab	30 Days	23 Days	38 Days	15 Days	24 Days	39 Days
Commercial - Tenant Finish Out	69 Days	60 Days	25 Days	17 Days	58 Days	72 Days
Residential - Addition	14 Days	11 Days	12 Days	6 Days	8 Days	9 Days
Residential - New	16 Days	16 Days	12 Days	21 Days	12 Days	16 Days
Residential - Rehab	11 Days	10 Days	8 Days	7 Days	9 Days	5 Days

Legend: Codes, Fire Marshal, Planning, Public Works, Storm Water, Water Sewer

Department's % of Total Process Time (Mean)

Average Days to Complete Tasks by Case Type and Phase

Case Type:

	Inspection Phase	Application Phase

Case Type	Application Phase	Inspection Phase
Commercial - New	122.5	407.4
Commercial - Tenant Finish Out	98.9	307.1
Residential - Addition		295.9
Residential - New	24.1	280.6
Commercial - Rehab	59.2	197.6
Residential - Rehab		236.8

Days

Planning (Residential)

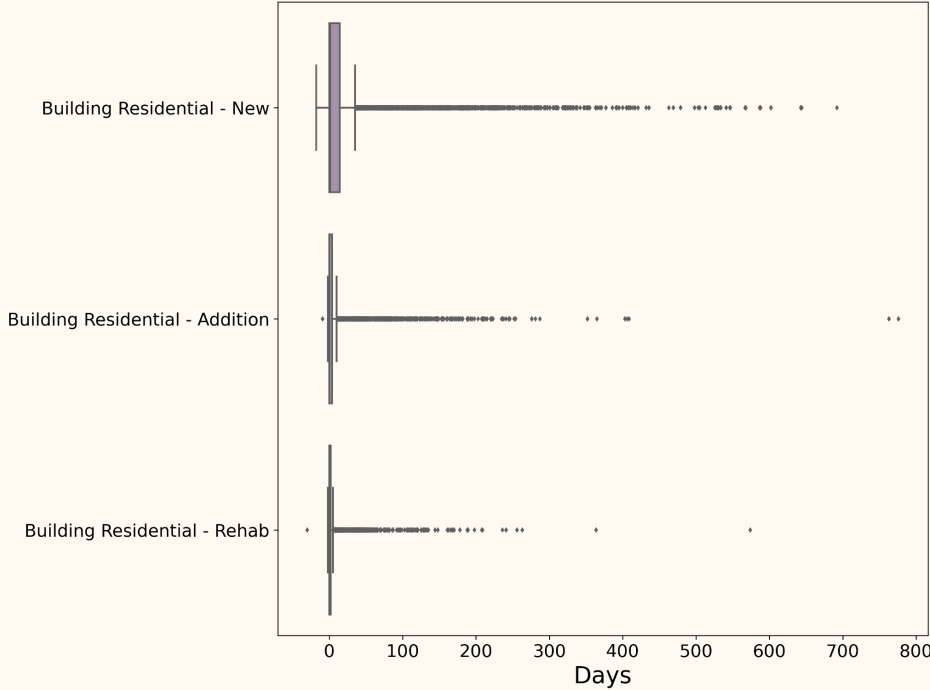Distribution of Elapsed Time: Planning (Residential)
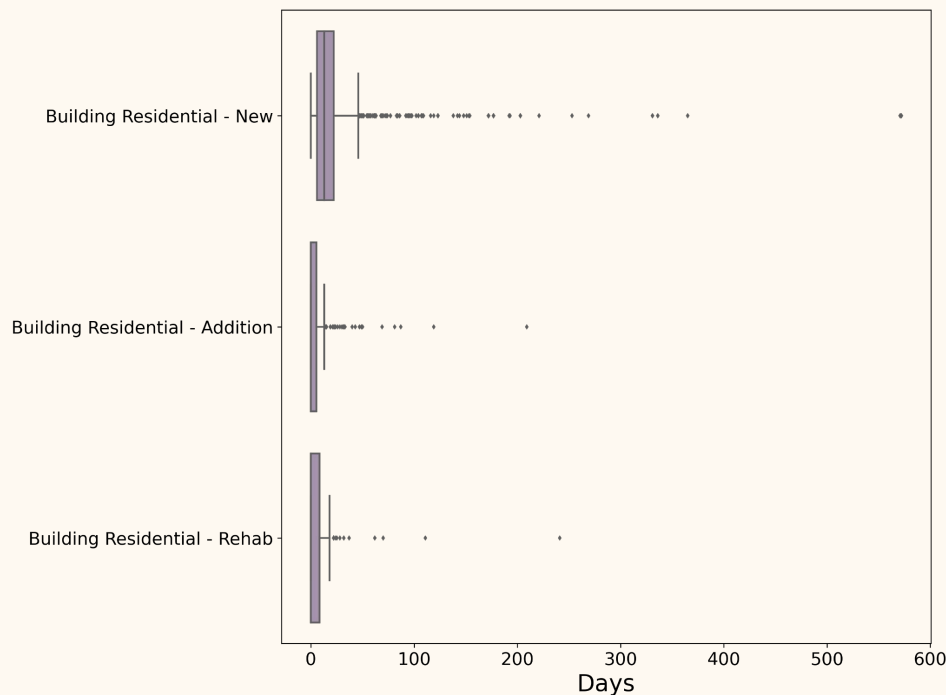
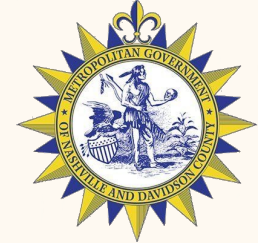| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Residential - New	Planning Subdivision Review (Avg 104 days)	Subdivision Review of Bldg App (Avg 15 days)	21 days	43 days
Building Residential - Addition	Subdivision Review of Bldg App (Avg 15 days)	Planning Zoning Review (Avg 6 days)	70 days	87 days
Building Residential - Rehab	Planning Subdivision Review (Avg 10 days)	Subdivision Review of Bldg App (Avg 0 days)	7 days	21 days

Codes (Residential)

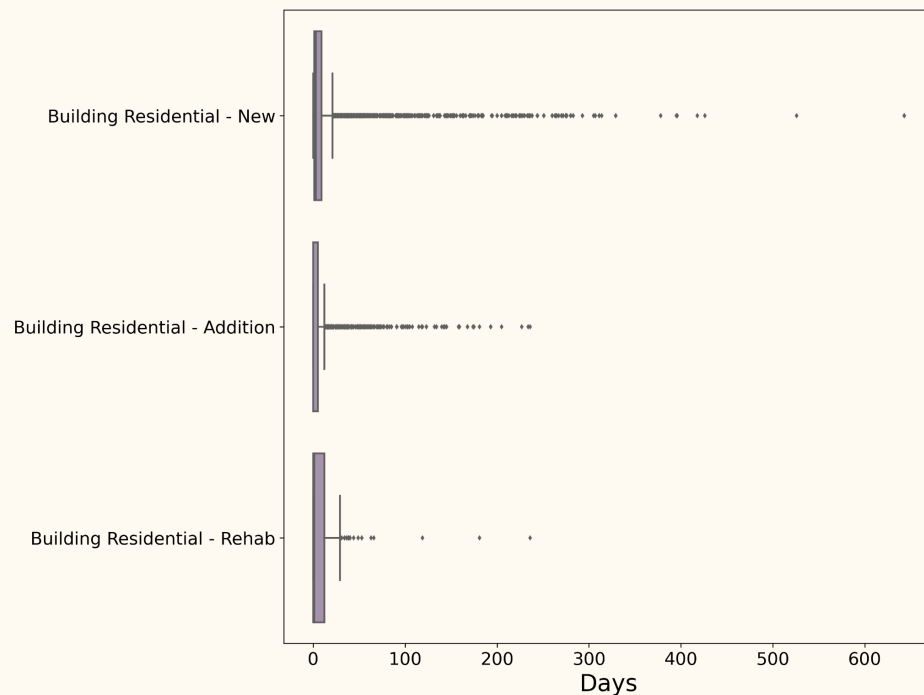Distribution of Elapsed Time: Codes (Residential)

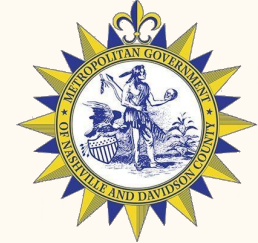| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Residential - New	BZA Hearing on a BLDG Permit (Avg 182 days)	Zoning Street Tree Requirement Review (Avg 0 days)	16 days	41 days
Building Residential - Addition	BZA Hearing on a BLDG Permit (Avg 102 days)	Noise Mitigation Bldg App Review (Avg 0 days)	9 days	29 days
Building Residential - Rehab	BZA Hearing (Avg 67 days)	Zoning Review Days (Avg 1 day)	5 days	18 days

Fire Marshal (Residential)

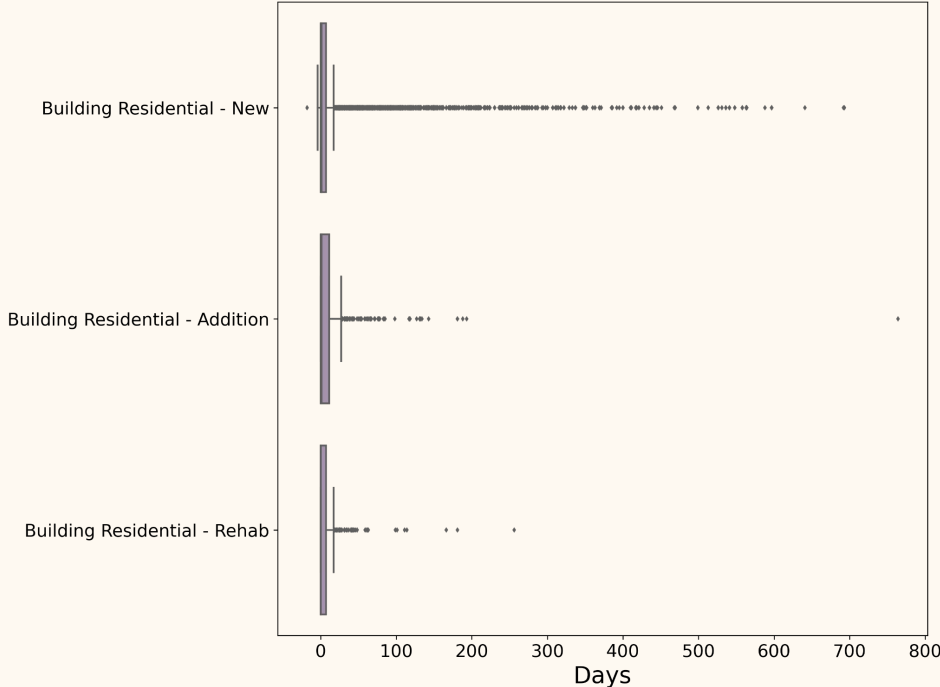Distribution of Elapsed Time: Fire Marshal (Residential)

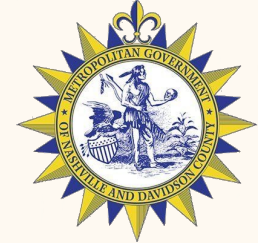| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Residential - New	Fire Alarm Requirement (Avg 48 days)	Fire Alarm Safety Review on CASR APP (Avg 0 days)	12 days	32 days
Building Residential - Addition	Fire Sprinkler Requirement on Res Bldg App (Avg 127 days)	Fire Sprinkler Requirement (Avg 7 days)	8 days	21 days
Building Residential - Rehab	Fire Sprinkler Requirement (Avg 16 days)	Fire Life Safety Review on Bldg App (Avg 8 days)	9 days	21 days

Public Works (Residential)

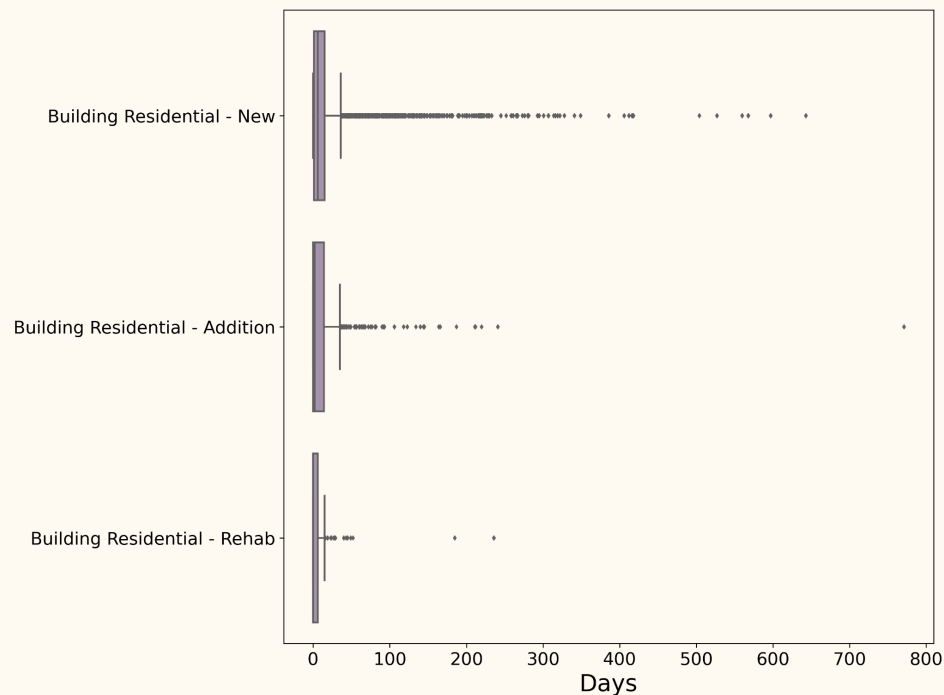Distribution of Elapsed Time: Public Works (Residential)

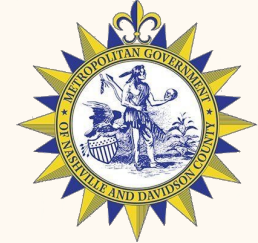| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Residential - New	Right of Way Review for Bldg App (Avg 80 days)	Address Review on Bldg App (Avg 2 days)	12 days	38 days
Building Residential - Addition	Sidewalk Payment in Lieu Decision (Avg 27 days)	Sidewalk Capital Project Coordination Review (Avg 0 days)	12 days	39 days
Building Residential - Rehab	Sidewalk Review for Bldg App (Avg 61 days)	Address Review on Bldg App (Avg 4 days)	8 days	21 days

Water Sewer (Residential)

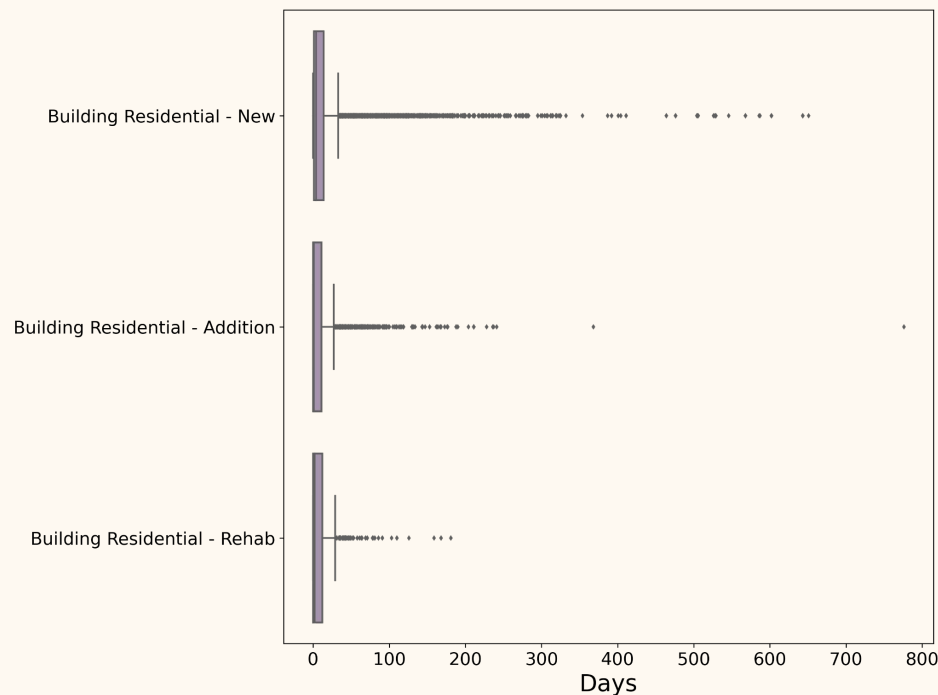Distribution of Elapsed Time: Water Sewer (Residential)

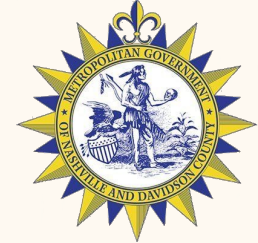| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Residential - New	Grease Control Review on Bldg App (Avg 20 days)	Sewer Variance Approval for Bldg (Avg 16 days)	16 days	37 days
Building Residential - Addition	Sewer Variance Approval for Bldg (Avg 46 days)	Sewer Availability Review for Bldg (Avg 13 days)	14 days	42 days
Building Residential - Rehab	Cross Connect Review for Bldg App (Avg 26 days)	Water Availability Review for Bldg (Avg 8 days)	11 days	36 days

Storm Water (Residential)

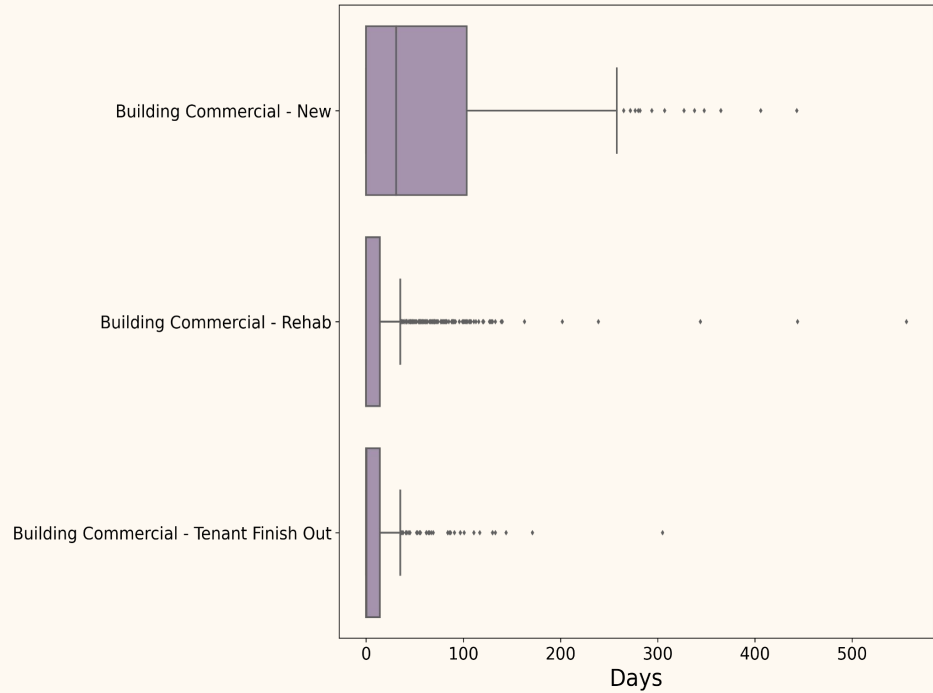Distribution of Elapsed Time: Storm Water (Residential)

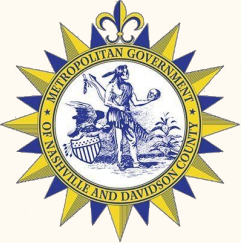| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Residential - New	SWGR Permit Issued (Avg 651 days) [1 occurrence]	Flood Plain Review on Bldg App (Avg 14 days)	16 days	40 days
Building Residential - Addition	Grading Plan Review for Bldg App (Avg 11 days)	Flood Plain Review on Bldg App (Avg 10 days)	11 days	26 days
Building Residential - Rehab	Grading Plan Review for Bldg App (Avg 11 days)	Stormwater Review (Avg 0 days)	10 days	19 days

Planning (Commercial)

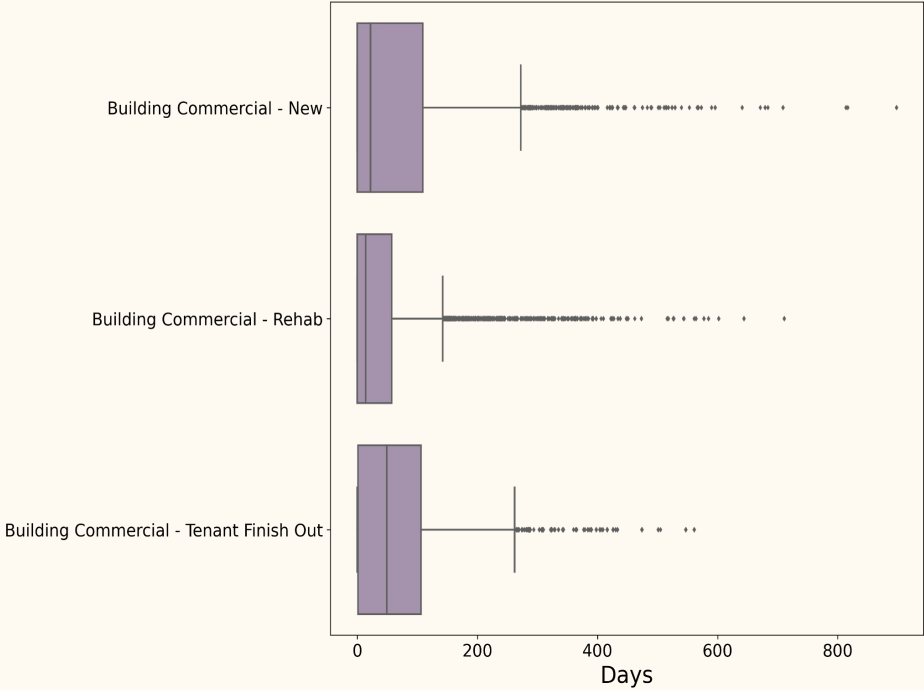Distribution of Elapsed Time: Planning (Commercial)

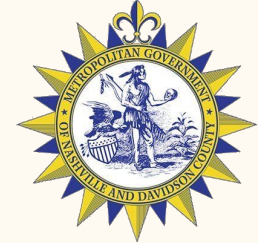| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Commercial - New	Review - Planning Div of Transport (Avg 239 days)	Subdivision Review f Bldg App (Avg 36 days)	70 days	93 days
Building Commercial - Rehab	Planning Subdivision Review (Avg 35 days)	Review - Stormwater - (Avg 0 days)	15 days	36 days
Building Commercial - Tenant Finish Out	Subdivision Review of Bldg App (31 days)	Planning Zoning Review (Avg 17 days)	17 days	37 days

Codes (Commercial)

Distribution of Elapsed Time: Codes (Commercial)

Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Commercial - New	Resubmitted Bldg Plan Received (Avg 298 days)	Building Plans Received (Avg 9 days)	72 days	105 days
Building Commercial - Rehab	BZA Hearing on Bldg Permit (Avg 174 days)	Building Plans Received (Avg 6 days)	39 days	62 days
Building Commercial - Tenant Finish Out	Noise Mitigation Bldg App Review (Avg 111 days)	Zoning Street Tree Requirement Review (Avg 0 days)	72 days	86 days

Fire Marshal (Commercial)

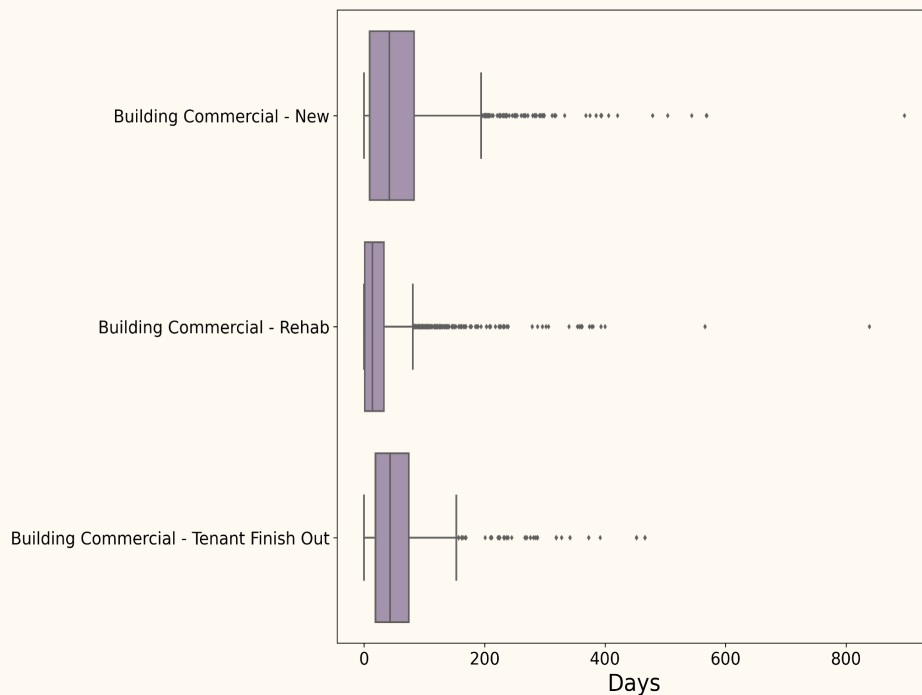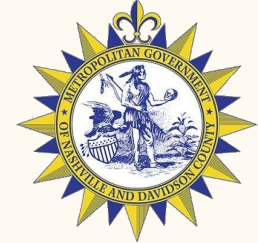Distribution of Elapsed Time: Fire Marshal (Commercial)

Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Commercial - New	Fire Review State on Bldg App (Avg 72 days)	Fire Life Safety Review on CASR APP (Avg 6 days)	65 days	80 days
Building Commercial - Rehab	Fire Review State on Bldg App (Avg 61 days)	Fire Sprinkler Requirement (Avg 23 days)	24 days	39 days
Building Commercial - Tenant Finish Out	Fire Alarm Requirement (Avg 66 days)	Fire Sprinkler Requirement on Res Bldg App (Avg 11 days)	58 days	66 days

Public Works (Commercial)

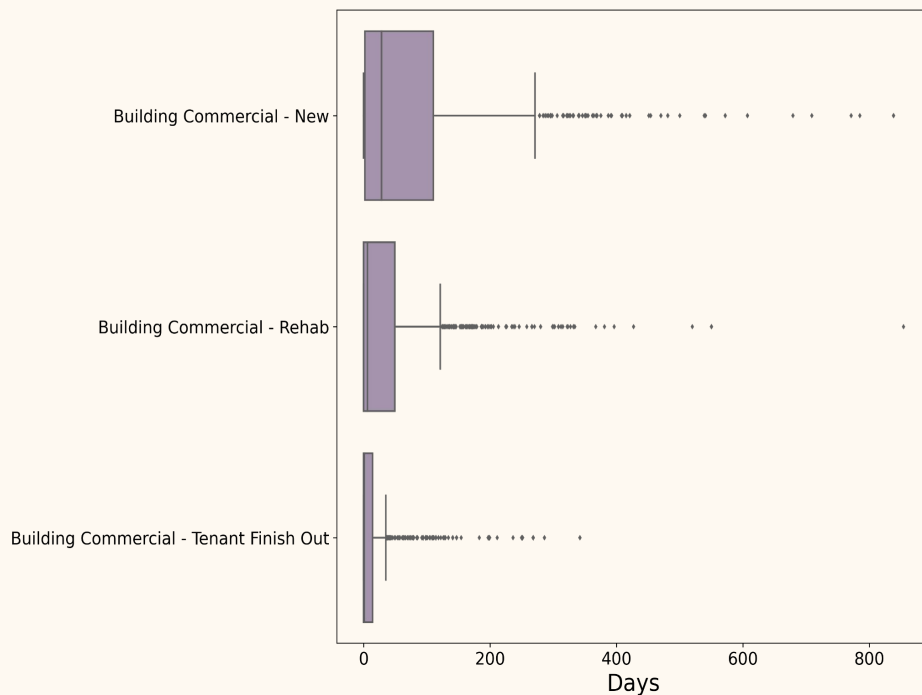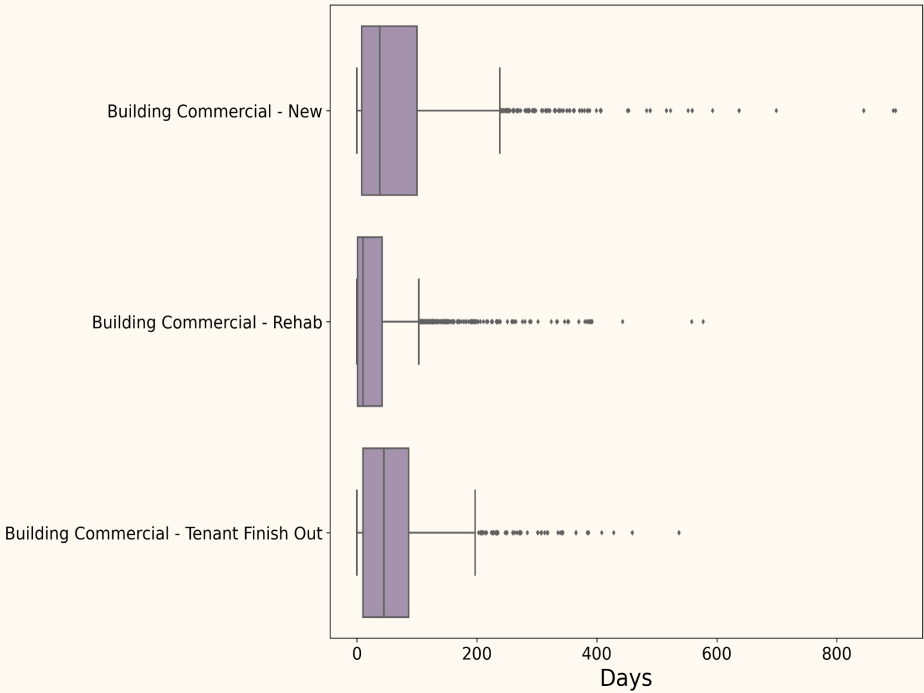Distribution of Elapsed Time: Public Works (Commercial)

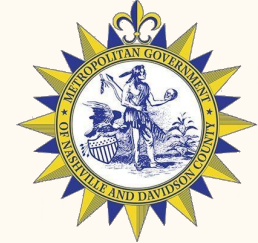| Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Commercial - New	Sidewalk Payment in Lieu Decision (Avg 236 days)	Address Review on Bldg App (Avg 31 days)	75 days	103 days
Building Commercial - Rehab	Street Tree Review for Bldg App (Avg 270 days)	Address Review on Bldg App (Avg 19 days)	38 days	68 days
Building Commercial - Tenant Finish Out	Right of Way Review for Bldg App (Avg 67 days)	Ramps and Curbs Cuts Review for Bldg App (Avg 21 days)	25 days	56 days

Water Sewer (Commercial)

Distribution of Elapsed Time: Water Sewer (Commercial)

Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Commercial - New	Grease Control Review on Bldg App (Avg 105 days)	Water Availability Review for Bldg (Avg 70 days)	72 days	92 days
Building Commercial - Rehab	Grease Control Review on Bldg App (Avg 51 days)	Cross Connect Review for Bldg (Avg 23 days)	30 days	48 days
Building Commercial - Tenant Finish Out	Sewer Variance Approval for Bldg App (Avg 81 days)	Water Availability Review for Bldg (Avg 60 days)	63 days	54 days

Storm Water (Commercial)

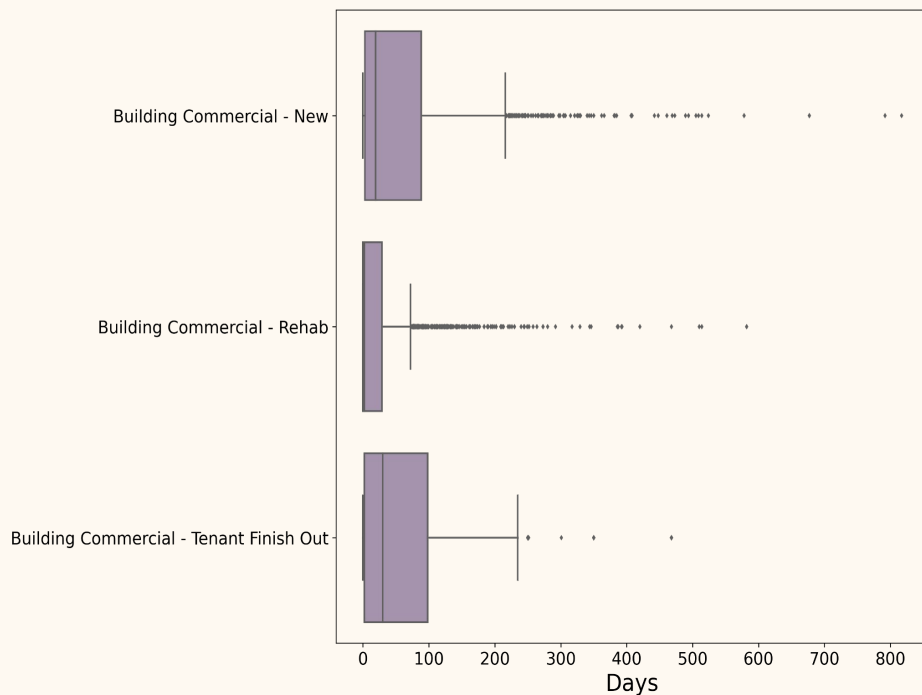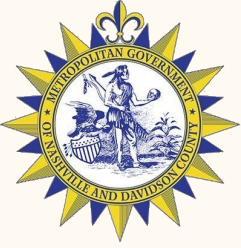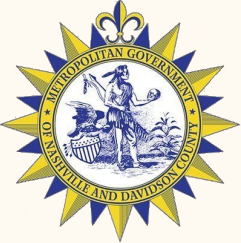Distribution of Elapsed Time: Storm Water (Commercial)

Permit type	Task that takes the longest time to complete	Task that takes the shortest time to complete	Average time among all tasks	Standard deviation among all tasks
Building Commercial - New	Grading Plan Review for Bldg App (Avg 66 days)	Flood Plain Review on Bldg App (Avg 54 days)	63 days	96 days
Building Commercial - Rehab	Urban Forestry Review on SWGR (Avg 38 days)	Flood Plain Review on Bldg App (Avg 23 days)	23 days	46 days
Building Commercial - Tenant Finish Out	Grading Plan Review for Bldg App (Avg 71 days)	Stormwater LID Review (Avg 0 days)	60 days	87 days

Tableau Dashboard

https://public.tableau.com/app/profile/rachel.woeltje/viz/MetroCodesTimelineAnalysis/Dashboard1?publish=yes

Deliverable File

Average Days per Phase by Case Type (averagetimes.csv)

CASE_TYPE_DESC	Application Phase	Inspection Phase	Total
Building Residential - Tenant Finish Out	193	518	711
Building Residential - Shell	147	592	739
Building Commercial - Shell	138	481	619
Building Commercial - New	123	407	530

Days from Initiation to Task Completed by Case Type & Department (allpivot.csv)

CASE_TYPE	Case Description	DEPARTMENT	MEAN	MEDIAN	AMIN	AMAX	STD	VAR
CACN	Building Commercial - New	Fire Marshal(FR)	65	42	0	897	80	6,347
CACN	Building Commercial - New	Planning(PL)	69	31	0	443	93	8,702
CACN	Building Commercial - New	Public Works(PW)	75	28	0	838	103	10,579
CACN	Building Commercial - New	Storm Water (SW)	62	19	0	817	96	9,223
CACN	Building Commercial - New	Water Sewer(WS)	72	38	0	898	92	8,471
CACN	Building Commercial - New	Codes(CA)	72	22	0	898	105	10,960
CACN	Building Commercial - New	All	71	30	0	898	97	9,506
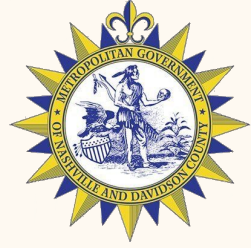
Further Analysis

- Check for patterns with the rejected tasks to see how it altered the timeline.
- Knowing the construction jobs timeline so that departments know when their task needs to be complete. **(This will allow a more accurate timeline for the departments in the inspection phase).**
- Establishing a contractor ID to compare the average time frame by contractor to complete a job.

Thank You & Questions