

CITY BUDGET

TEAM F

TEAM

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JASON KWAN

ALEX BAPTISTA

GOALS OF THE PROJECT

- Showcase how Boston city budget is distributed across Cabinets, Departments and Geography
- Portray how it has changed over time
- Evaluate city's financial management
- Providing valuable insights that can help the stakeholders make decisions
- Suggest ideas which can help distribute budget in a way which empowers and helps more boston residents

MOTIVATION FOR THE PROJECT

Project has the potential to impact the lives of millions of Boston residents

It will help bring transparency and bring accountability to the budgeting process promoting informed governance practices

Data driven approach can highlight areas of focus and increase efficiency in use of public funds

Can help engage citizens in the budgeting process

DATA WORKED ON

OPERATING BUDGET (2021-24)

CAPITAL BUDGET (2024-28)

REVENUE (2021-24)

DIVISION OF WORK

SCRUM REPORT - 4

Work done by team members till Deliverable2

Gauravdeep Bindra::

1. Created wordcloud charts for Operating Budget for fields Cabinets, Expense Category, Dept, Program
2. Created bar charts for Total Operating Budget yearly comparison, Capital Budget 1st vs 2-5 Split, Capital vs Operating Budget, Boston Population, Revenue Yearly comparison, Revenue vs Expenditure, Data Cleaning Process
3. Created histograms for all years for Operating Budget distribution by Cabinets
4. Created heatmap for Operating budget binning comparison by Dept
5. Provided analysis for the charts prepared
6. Fixed code for Jason's piechart for Operating budget distribution by Cabinets
7. Created the presentation for Deliverable 1. Link : https://docs.google.com/presentation/d/1eGWIJheHG4YECQlr4rTKWAqceGr_milZqBYyfqS1Y/edit#slide=id.g29668c02c64_0_309
8. Performed data exploration for all 3 datasets and cleaning for the Operating Budget dataset

Naima Abrar

1. Performed data cleaning for Capital Budget dataset
2. Prepared stacked bar chart for Capital Budget distribution by department
3. Created project distribution by status piechart
4. Created project allocation by Neighborhood histogram
5. Provided analysis of the charts prepared

Haokun Wu

1. Created Revenue category comparison histograms across financial years - with and without Property Tax
2. Created Cabinet comparison across fiscal years histograms - with and without Finance
3. Provided analysis of the charts prepared

Jason Kwan

1. Created piecharts for Operating Budget distribution by Cabinet for all 4 years

Maria Sofia Mercado Arevalo

1. Performed data cleaning for Revenue dataset

Alex Bapista

1. Created bar charts for Capital Budget distribution : by department, by neighborhood - with and without citywide
2. Provided analysis for the charts prepared

SCRUM REPORT - 5

Had a discussion with the team and the following tasks have been allotted in line with the next steps that we had highlighted in our Deliverable-1 presentation.

Maria Sofia Mercado Arevalo

Working on representing Neighborhood wise Capital Budget on Boston Map.

Alex Bapista

Exploring data of various Extension projects

Jason Kwan

Working on Operating budget graphs focussed on highlighting division by Department

Naima Abrar

Working on Capital budget graphs

Haokun Wu

Working on modularising and cleaning the code we have written till now.

Gauravdeep Bindra

Working on Presentation for Checkpoint A

DATASETS










OPERATING DATA - RAW

	Cabinet	Dept	Program	Expense Category	FY21 Actual Expense	FY22 Actual Expense	FY23 Appropriation	FY24 Adopted
count	900	900	900	900	900	900	900	900
unique	21	82	220	7	710	755	698	738
top	Finance Cabinet	Boston Public Schools	Film & Special Events	Personnel Services	#Missing	#Missing	#Missing	#Missing
freq	115	90	6	201	176	141	115	88

CAPITAL BUDGET

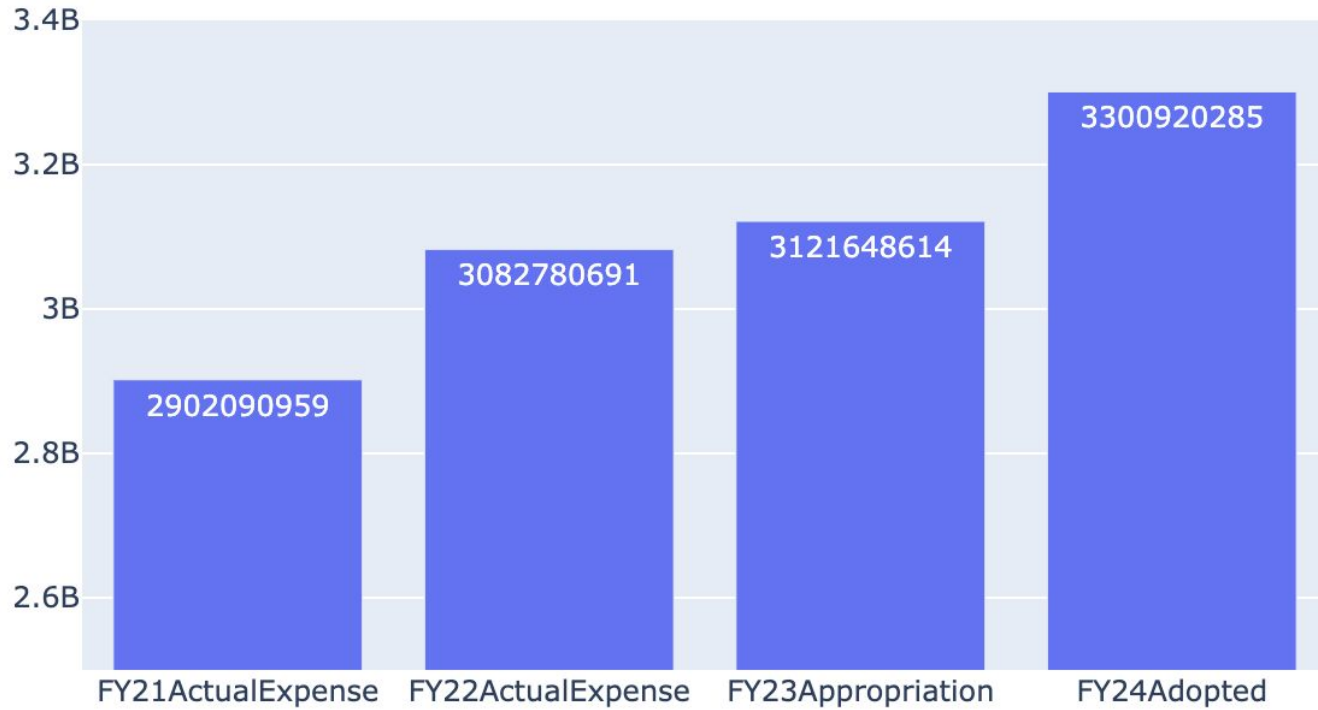
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       'Project_Status', 'Neighborhood', 'Authorization_Existing',  
       'Authorization_FY', 'Authorization_Future', ' Grant_Existing ',  
       ' Grant_FY ', ' Grant_Future ', 'GO_Expended', 'Capital_Year_0',  
       ' CapitalYear_1 ', 'Capital_Year_25', 'Grant_Expended', 'Grant_Year_0',  
       ' Grant_Year_1 ', 'GrantYear_25', 'External_Funds',  
       'Total_Project_Budget'],  
      dtype='object')
```

REVENUE

_id 	Revenue Category 	Account 	Cabinet 	Department 	FY21 Actual 	FY22 Actual 	FY23 Appropriation 	FY24 Adopted 
1	Property Tax Levy	Real Estate Taxes	Finance	Assessing Department	2,490,082,613	2,630,469,593	2,784,133,324	2,913,736,657
2	Property Tax Levy	Personal Property Tax	Finance	Assessing Department	189,939,113	196,499,737	209,010,762	214,236,031
3	Property Tax Levy	Property Tax Overlay	Finance	Assessing Department	-3,735,387	-33,174,590	-29,845,007	-30,000,000

RESULTS AND VISUALIZATIONS

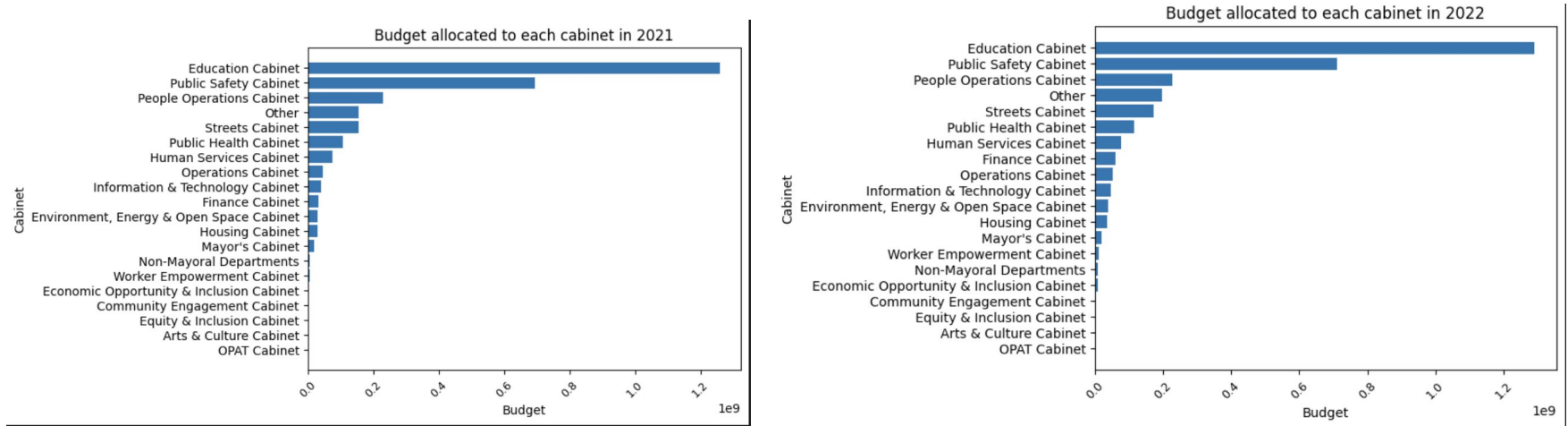
TOTAL YEARLY OPERATING BUDGET 2021-24



7.5%

INCREMENT IN OPERATING BUDGET FROM 2021 TO 2023

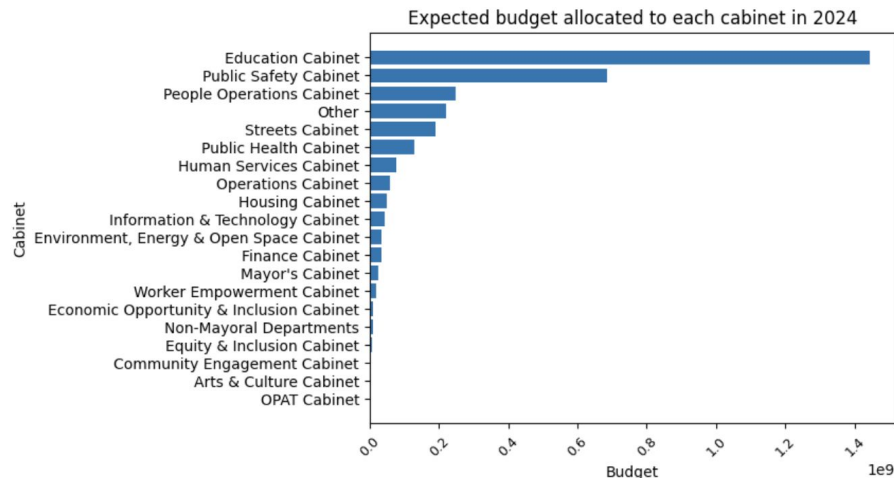
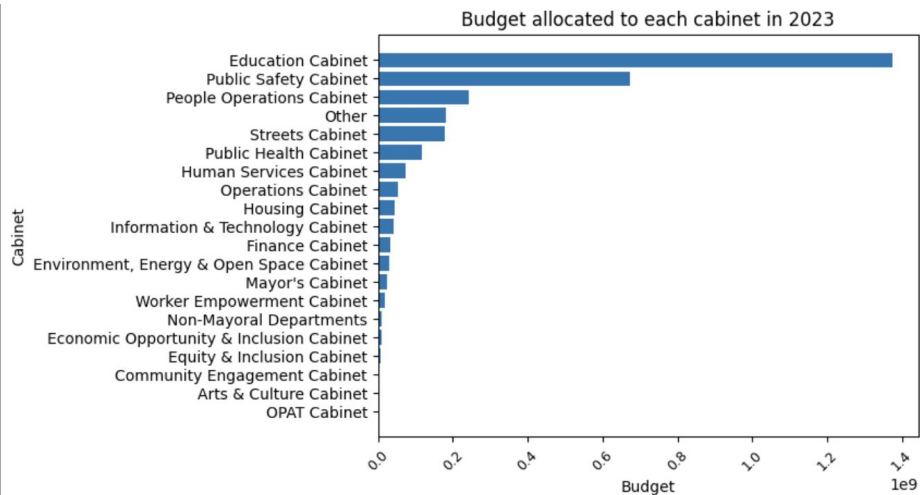
OPERATING BUDGET – DISTRIBUTION BY CABINET



2021 vs 2022

Only Non-Mayoral and Worker Empowerment switch positions. Otherwise the order is same and relative percentages are also similar

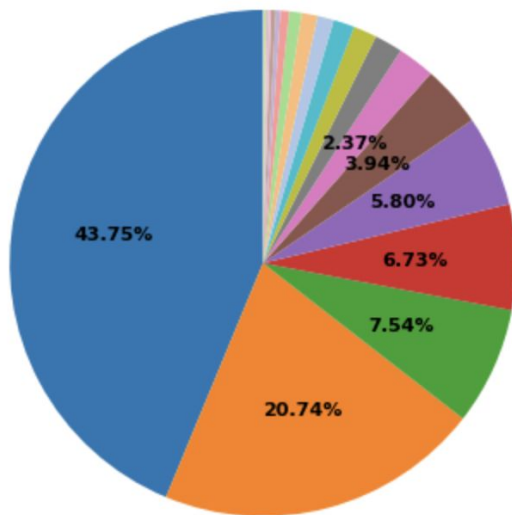
2023 vs 2024



Couple of relative order switches

PERCENTAGE BREAKDOWN

Expected Expenses by Cabinet for 2024

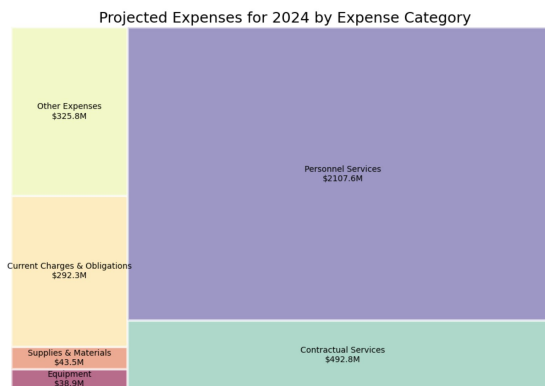
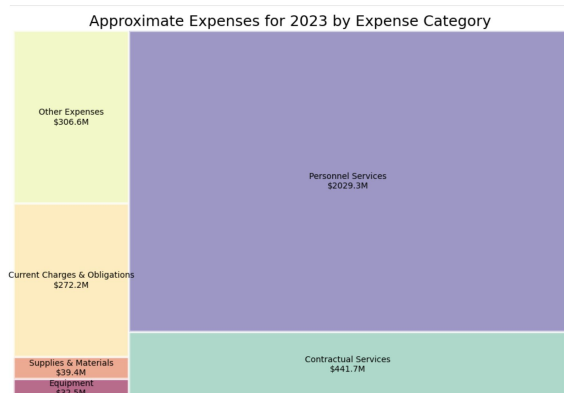
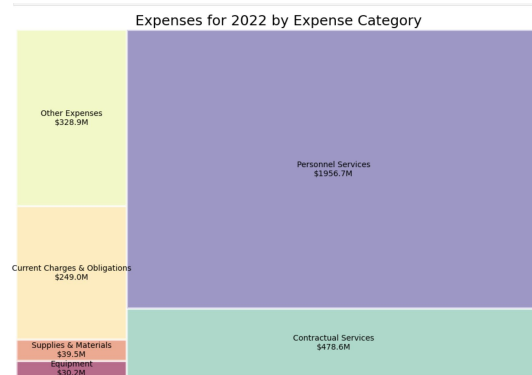
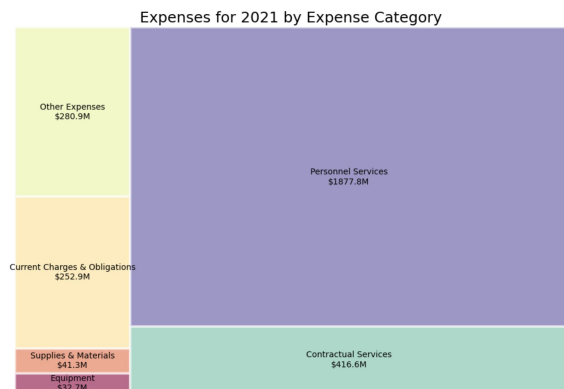


Total Expenses: \$3,300,920,285.00

Cabinets

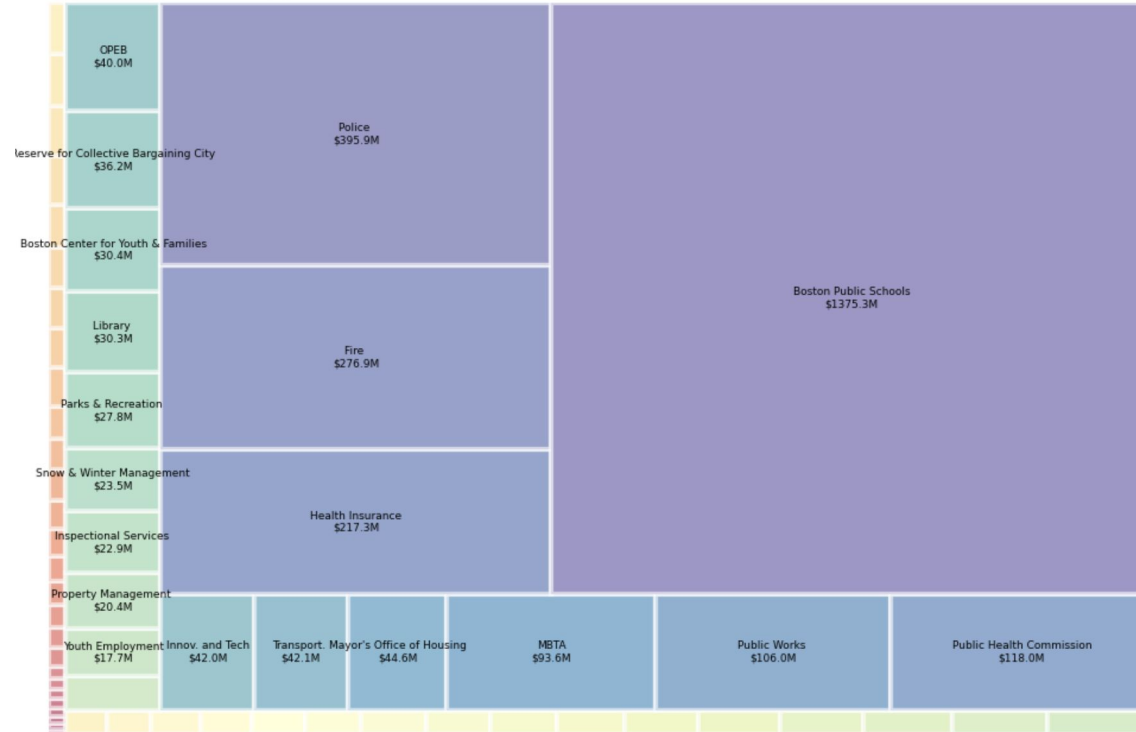
- Education Cabinet
- Public Safety Cabinet
- People Operations Cabinet
- Other
- Streets Cabinet
- Public Health Cabinet
- Human Services Cabinet
- Operations Cabinet
- Housing Cabinet
- Information & Technology Cabinet
- Environment, Energy & Open Space Cabinet
- Finance Cabinet
- Mayor's Cabinet
- Worker Empowerment Cabinet
- Economic Opportunity & Inclusion Cabinet
- Non-Mayoral Departments
- Equity & Inclusion Cabinet
- Community Engagement Cabinet
- Arts & Culture Cabinet
- OPAT Cabinet

DISTRIBUTION BY EXPENSE CATEGORY (2021-24)

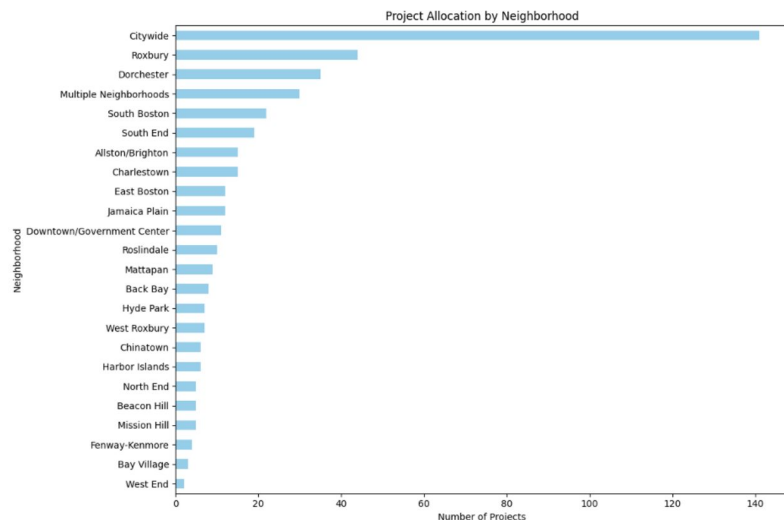


DISTRIBUTION BY DEPARTMENTS

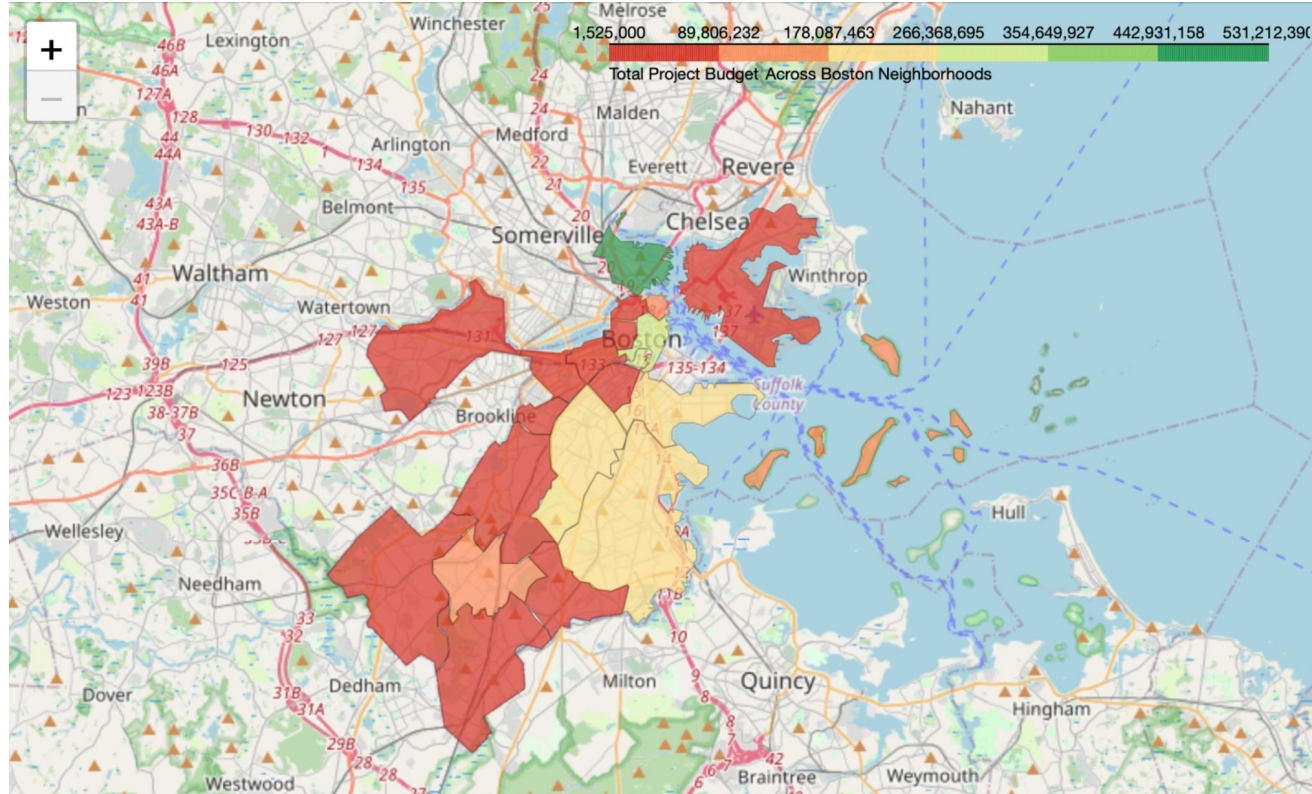
Approximate Expenses for 2023 by Department



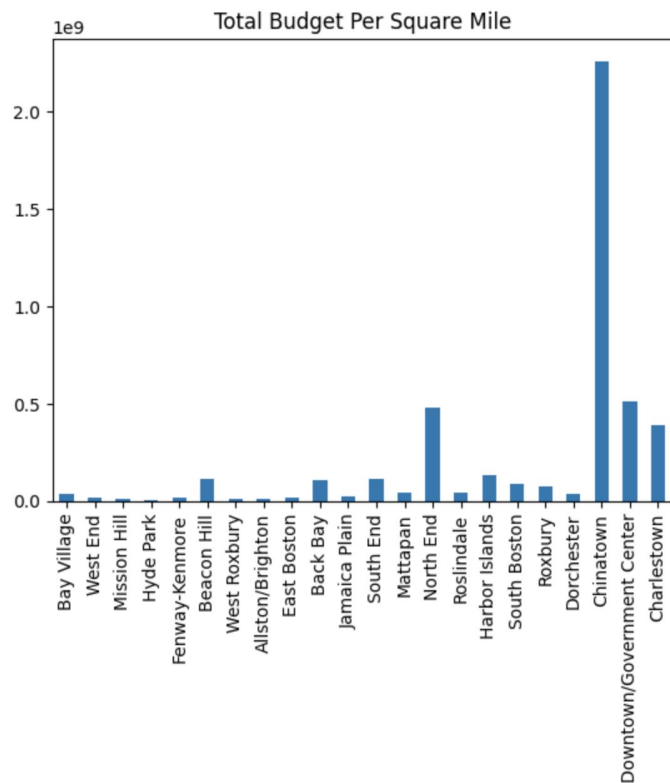
CAPITAL BUDGET - NEIGHBORHOODS



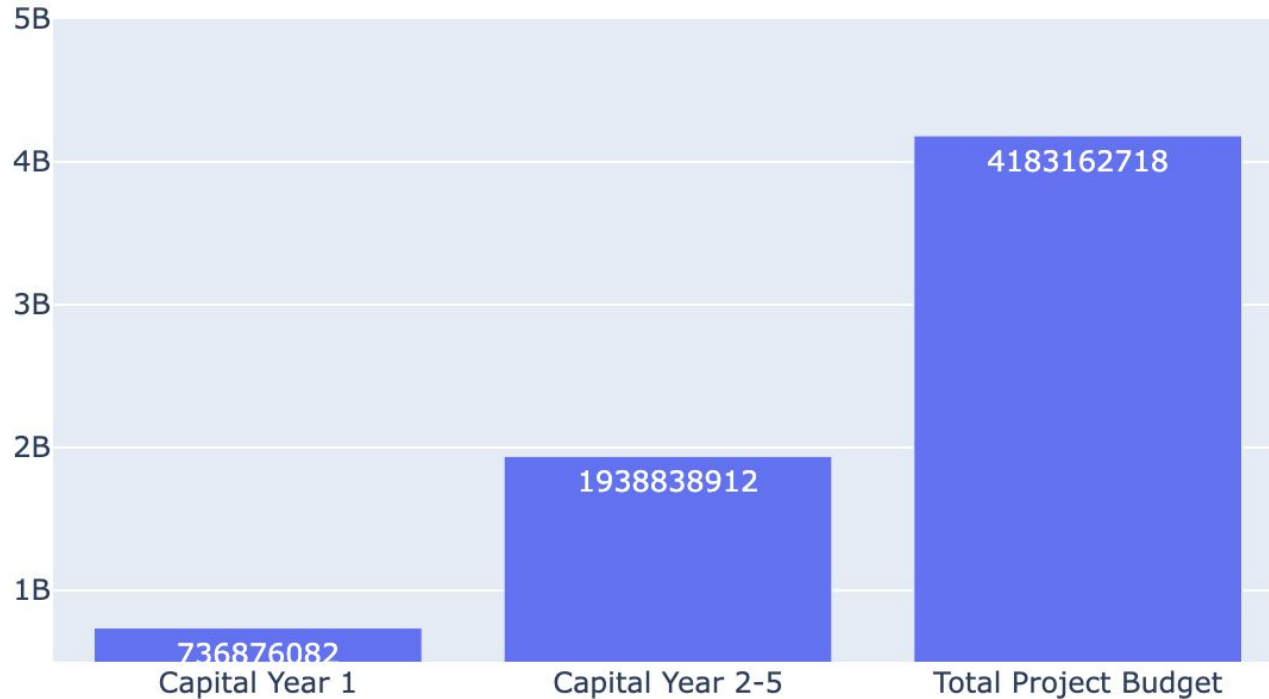
MAP REPRESENTATION OF CAPITAL BUDGET BY NEIGHBORHOOD



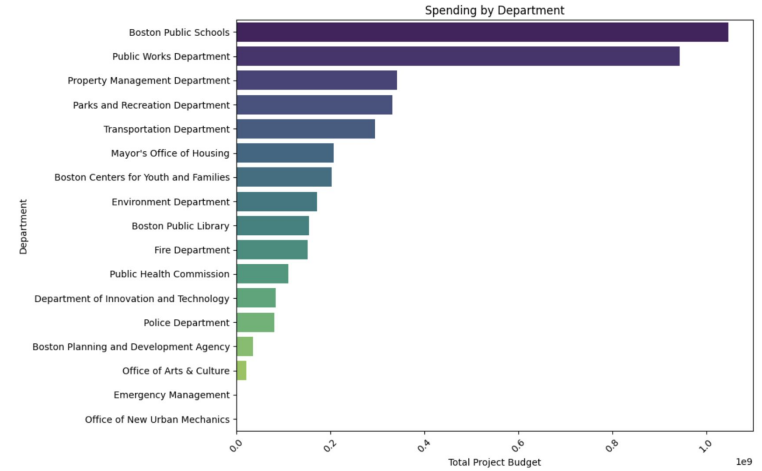
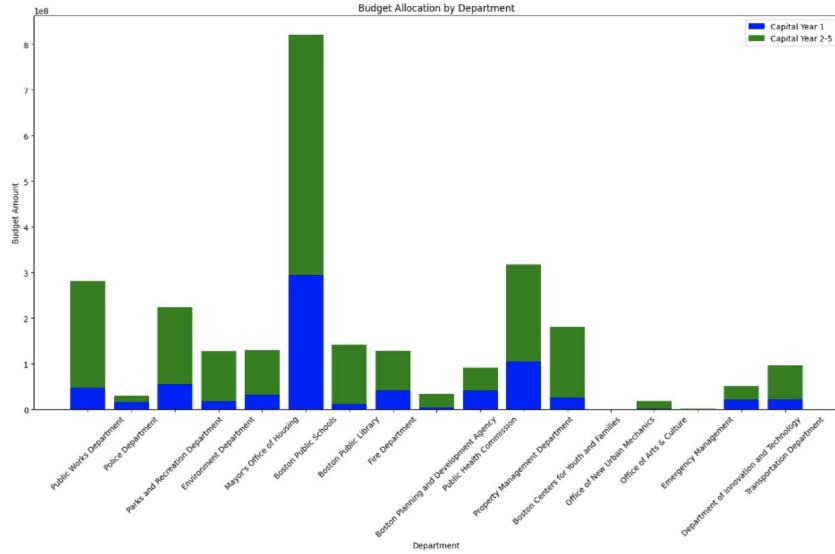
NEIGHBORHOODS CAPITAL BUDGET PER SQUARE MILE



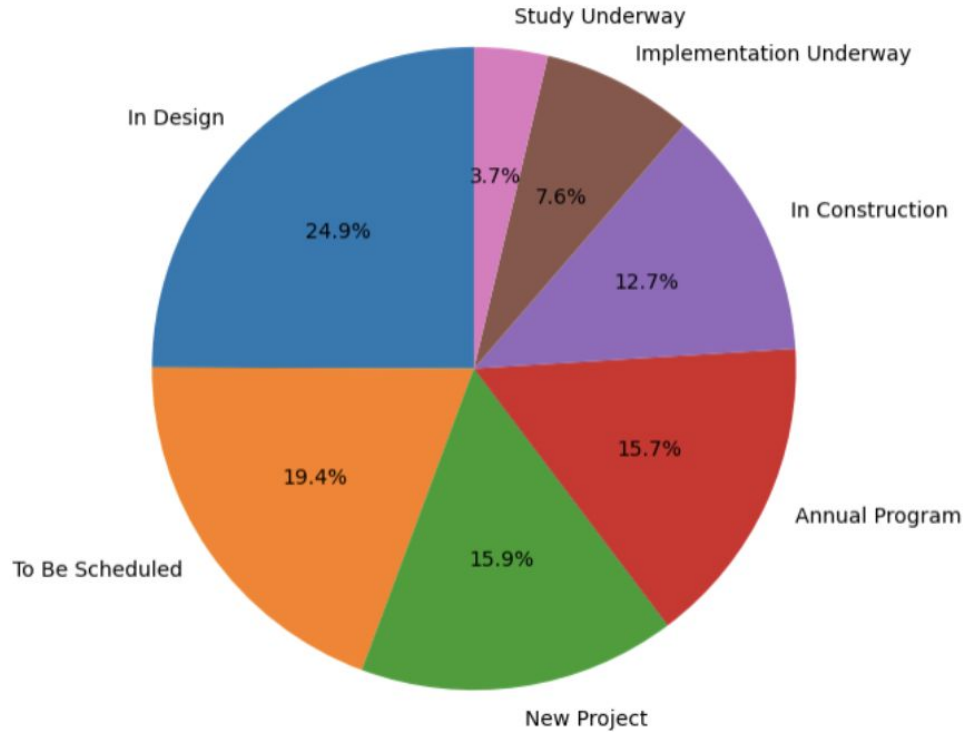
CAPITAL BUDGET SPLIT 1ST VS 2-5 YEARS VS TOTAL



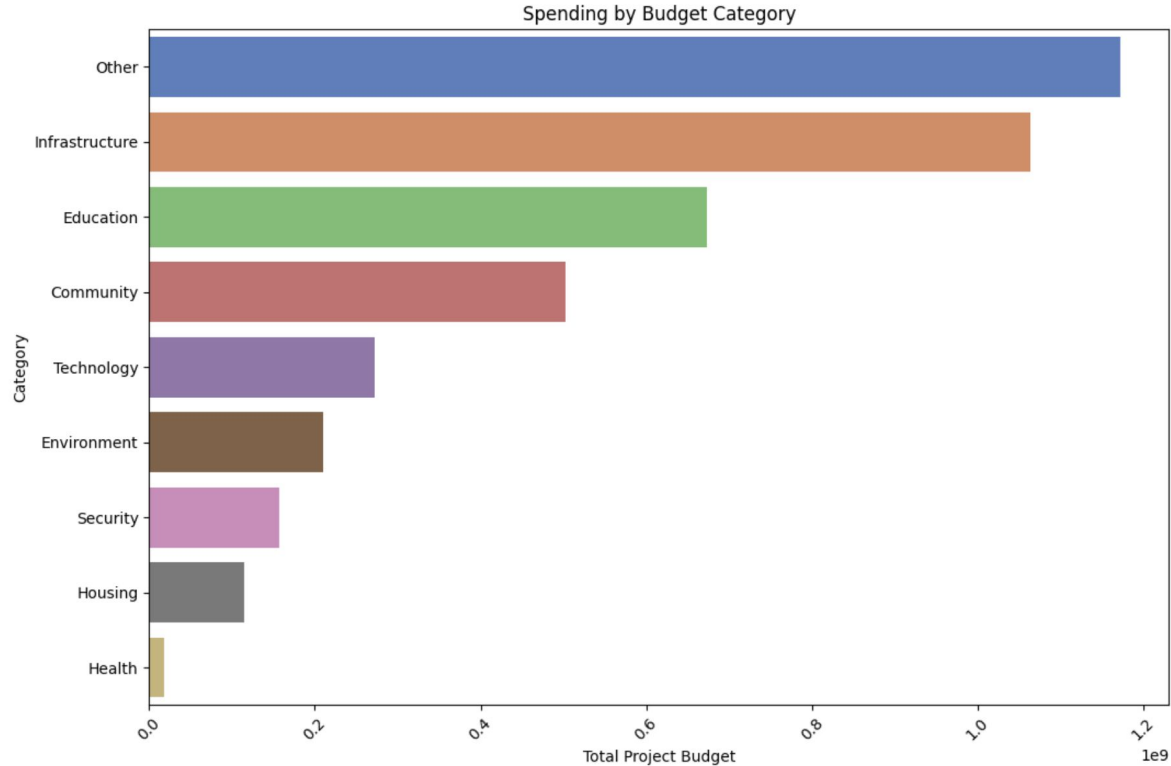
BY DEPT



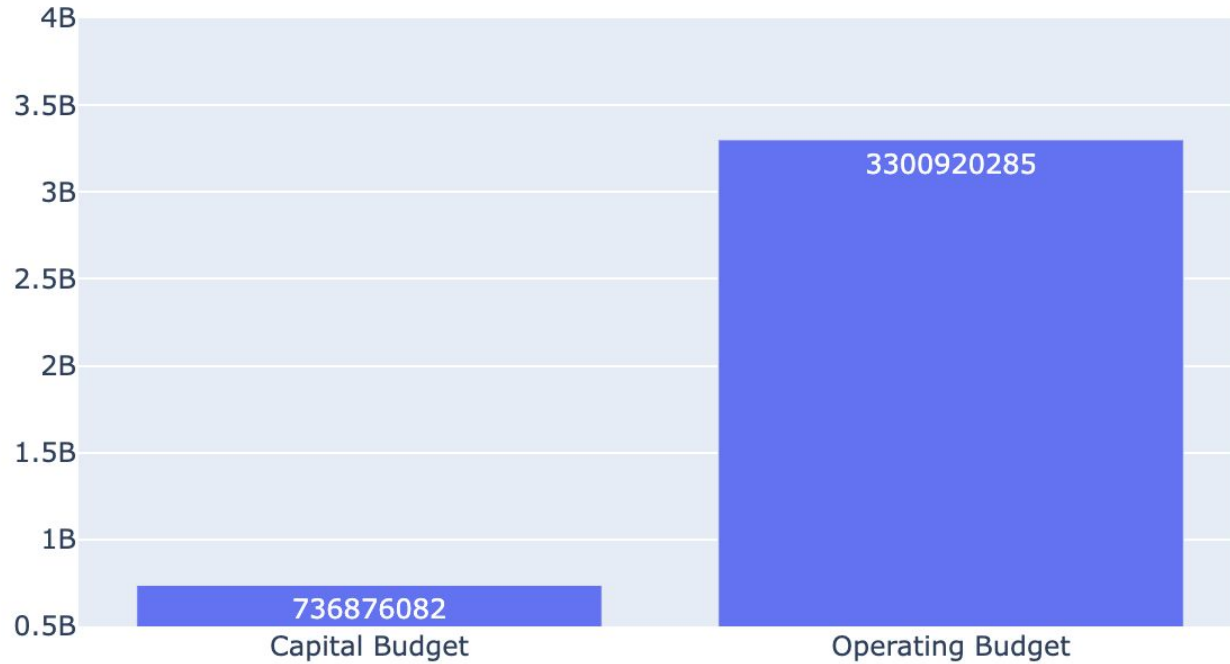
PROJECT STATUS DISTRIBUTION



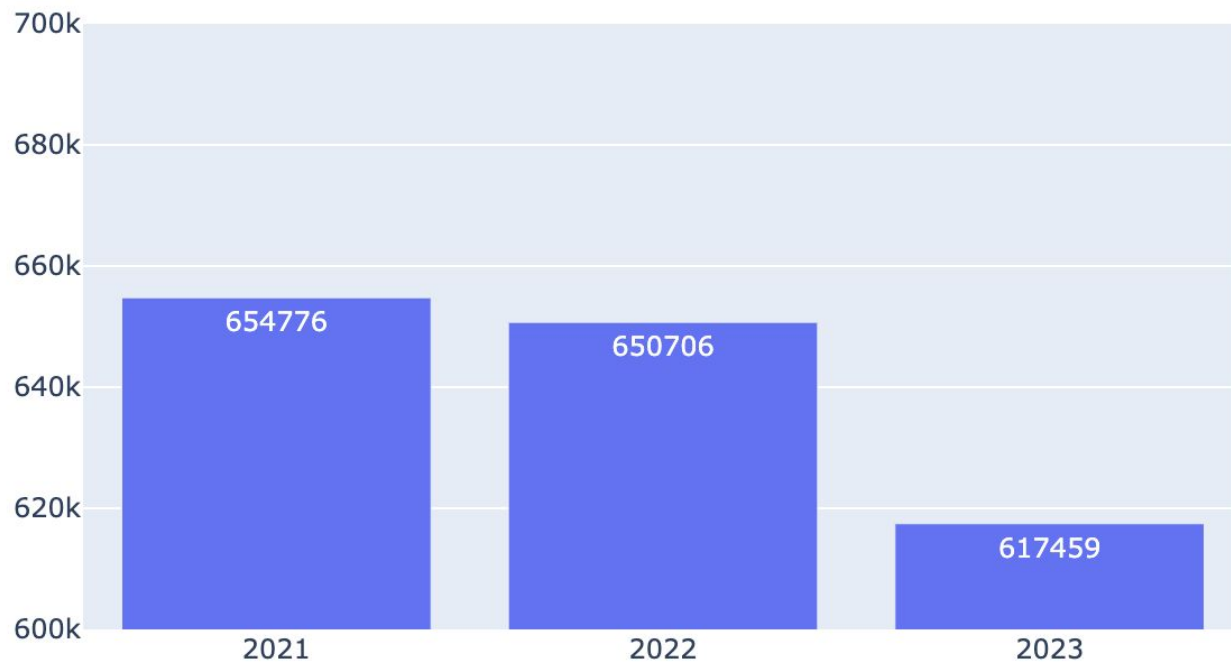
CAPITAL BUDGET - SPENDING BY BUDGET CATEGORY



2024 CAPITAL VS OPERATING BUDGET



BOSTON POPULATION



6540

BOSTON CITY BUDGET PER CAPITA

CHALLENGES FACED

DISCREPANCY -1

	Department	Project_Name	Scope_Of_Work	PM_Department
0	Boston Centers for Youth and Families	BCYF Security and Technology Upgrades	Improvements to technology infrastructure and ...	Boston Centers for Youth and Families
1	Boston Centers for Youth and Families	BCYF Tobin Community Center Retaining Wall	Repair or replace the retaining wall adjacent ...	Public Facilities Department
2	Boston Centers for Youth and Families	BCYF North End Community Center	Develop a design for a new North End Community...	Public Facilities Department
3	Boston Centers for Youth and Families	Pool Repairs	Renovate and upgrade locker rooms and pools in...	Boston Centers for Youth and Families
4	Boston Centers for Youth and Families	Youth Budget Round 4	Engage youth across the City to create a capit...	Youth Engagement and Employment

Department and 'PM_Department' have different values. Need help from the clients in understanding differences b/w them

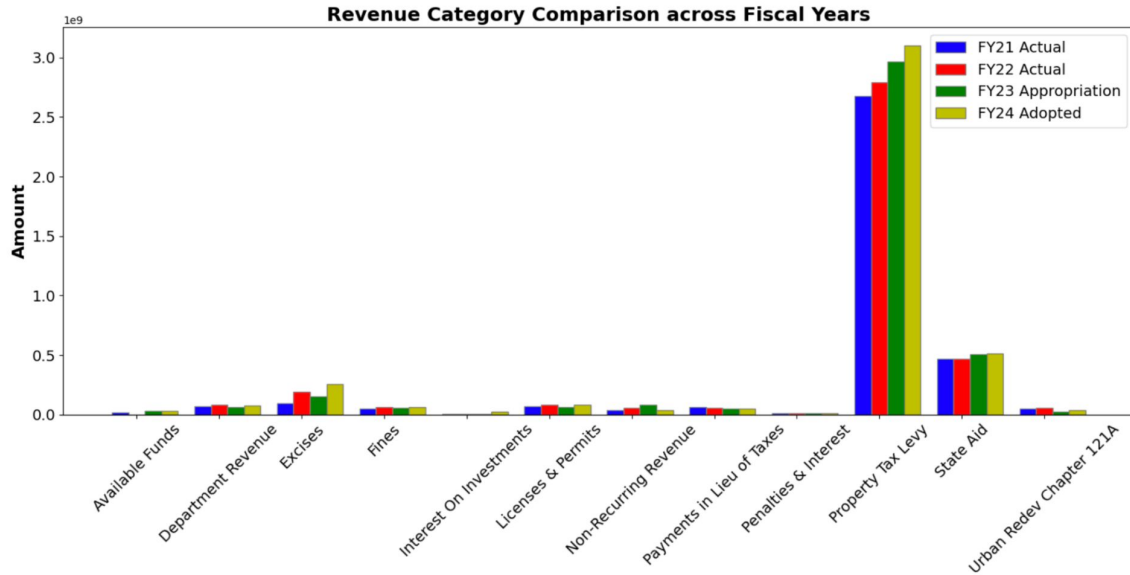
DISCREPANCY - 2

```
c.columns
✓ 0.0s
Index(['Department', 'Project_Name', 'Scope_Of_Work', 'PM_Department',
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      'Grant_FY ', 'Grant_Future ', 'GO_Expended', 'Capital_Year_0',
      'CapitalYear_1 ', 'Capital_Year_25', 'Grant_Expended', 'Grant_Year_0',
      'Grant_Year_1 ', 'GrantYear_25', 'External_Funds',
      'Total_Project_Budget'],
      dtype='object')
```

We dont understand the use of a lot of columns and many columns also have a lot of 0's

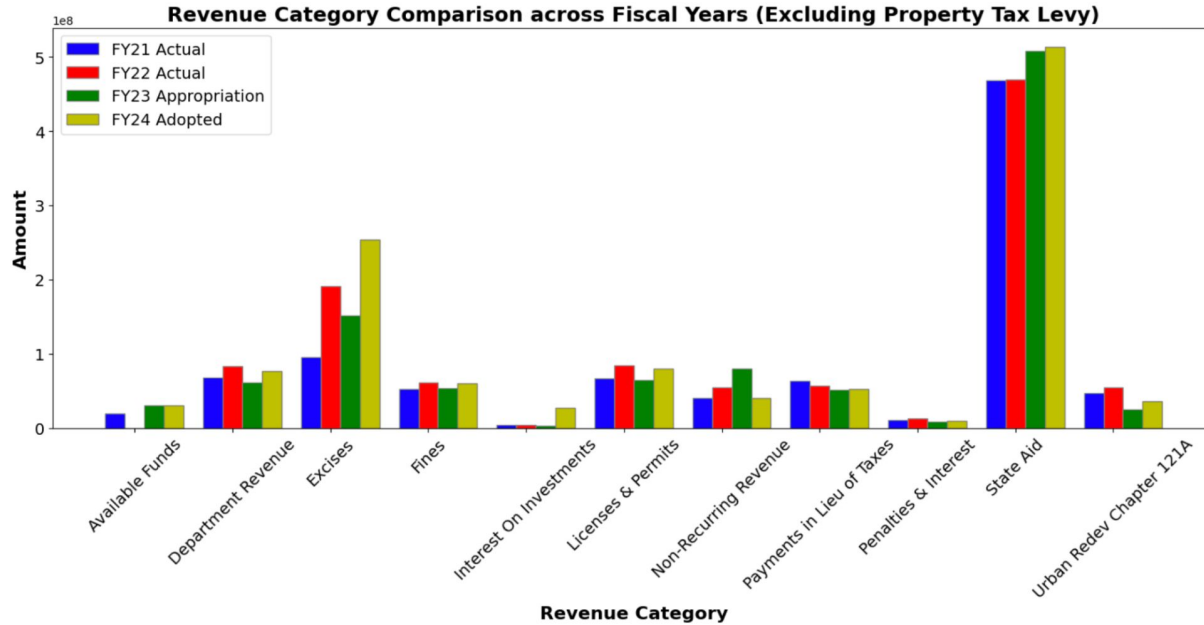
EXTENSION PROJECTS

REVENUE CATEGORY COMPARISON (ACROSS FISCAL YEARS)



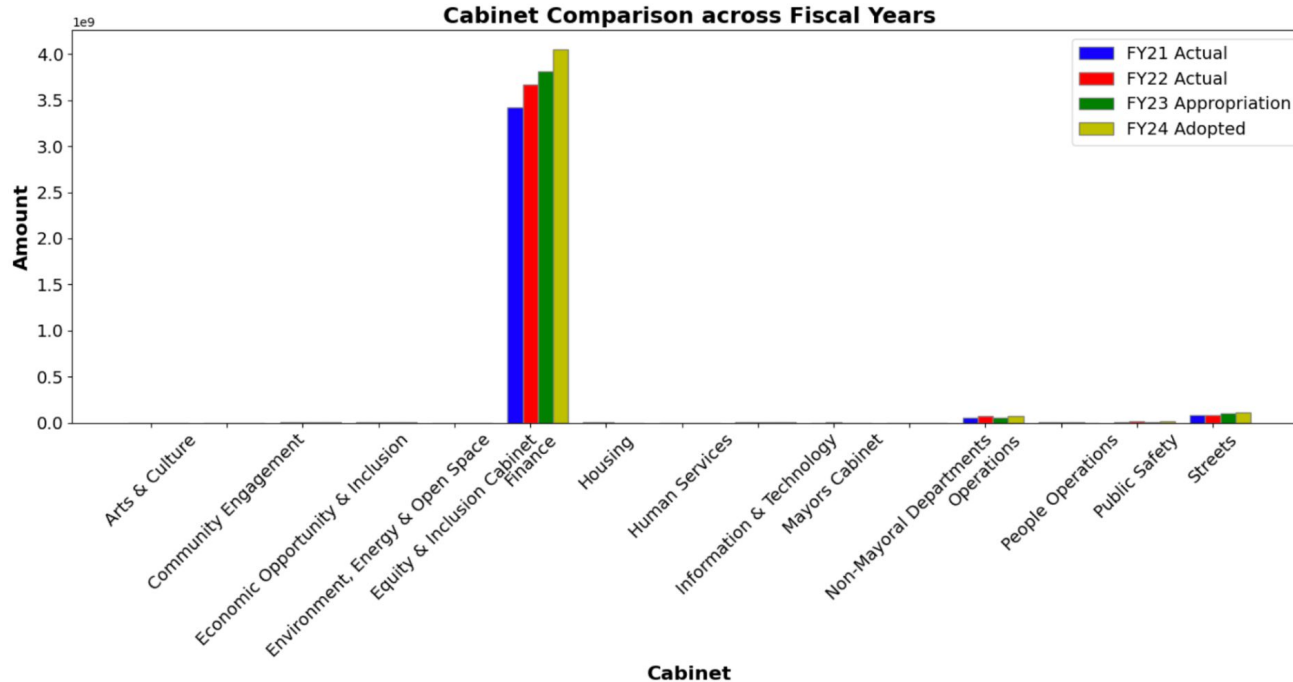
The "Property Tax Levy" stands out significantly, indicating its dominant role in revenue generation

EXCLUDING PROPERTY TAX



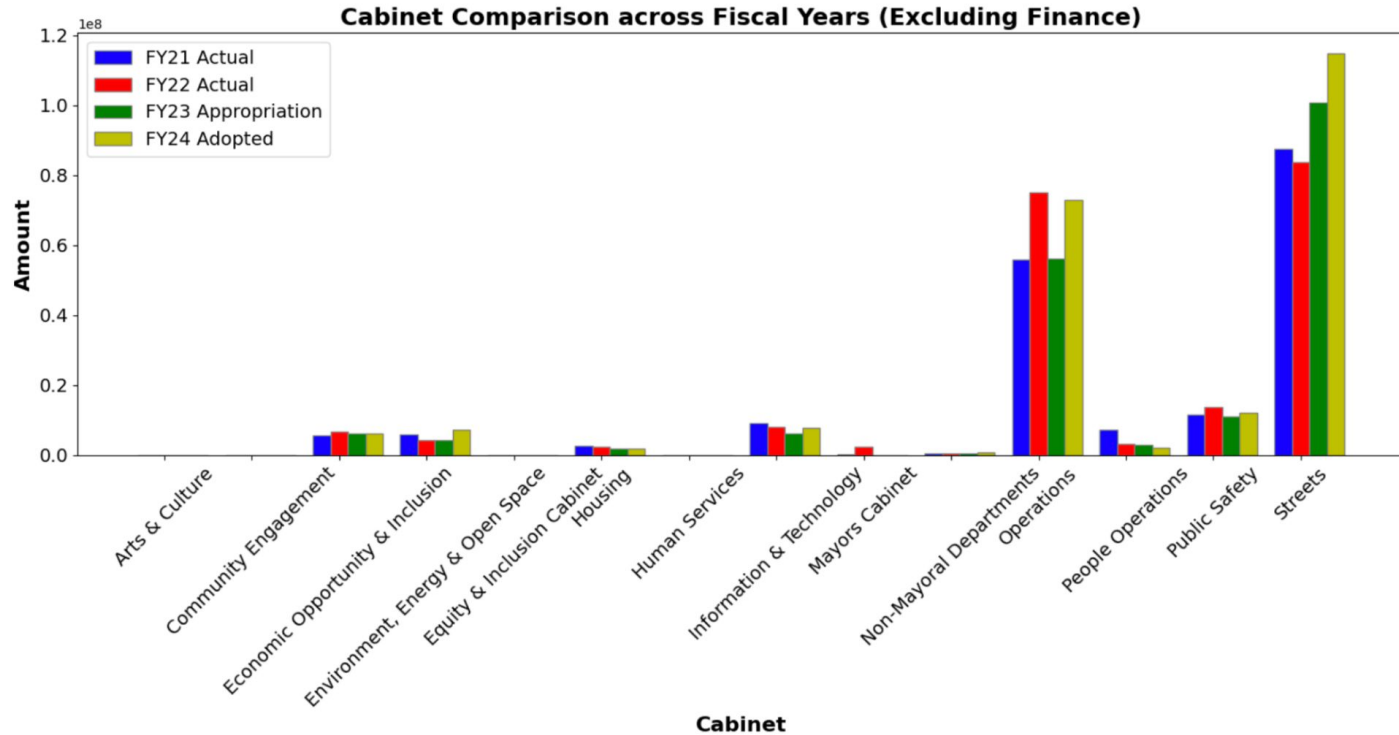
"Excises," which saw a substantial increase in the "FY24 Adopted". The majority of other revenue categories exhibit consistent trends across the years with slight fluctuations

CABINET COMPARISON (ACROSS FISCAL YEARS)

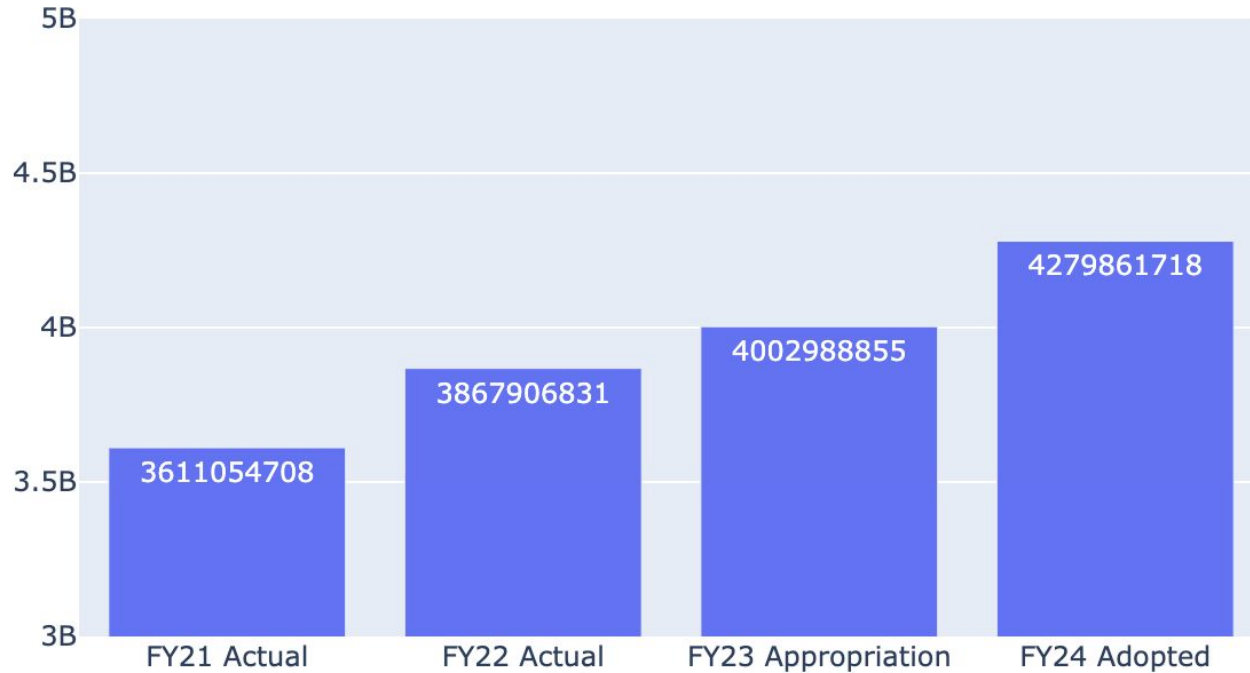


Similar trend seen as was in Property Tax. Also, its clear that Property Tax category comes under 'Finance' Cabinet

EXCLUDING FINANCE



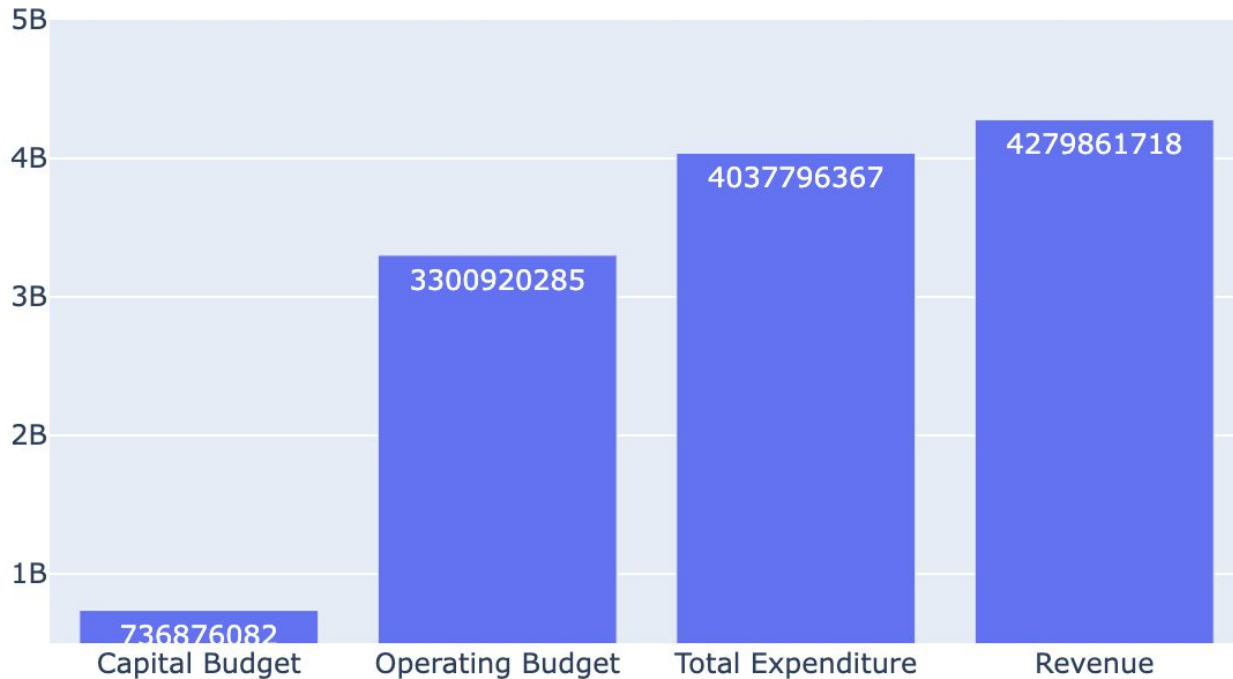
REVENUE COMPARISON (OVER YEARS)



10.85%

Revenue increment from 2021 to 2023

2024 PROJECTED - REVENUE VS EXPENDITURE

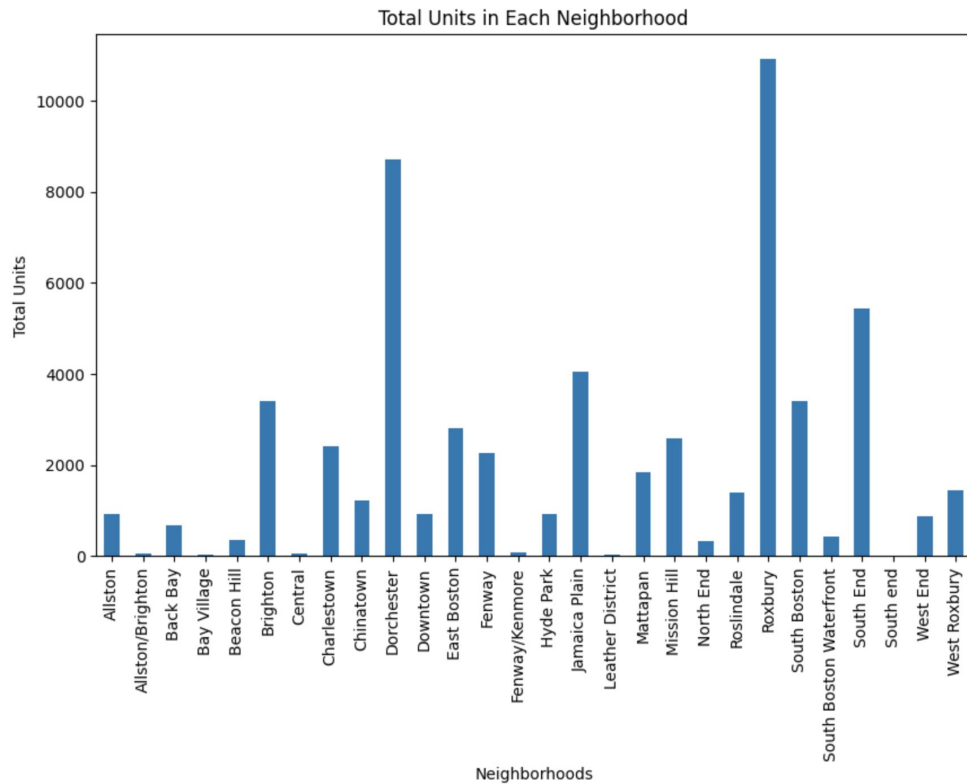


Therefore, Boston City can afford the planned Capital Budget and Operating Budget for 2024

6931.4

PROJECTED BOSTON REVENUE PER CAPITA – 2024

SOCIO ECONOMIC DATA



PLANNED NEXT STEPS

Explore bubble graphs for displaying budget distribution by Department/Program

Explore correlation between capital expenditure and revenue generation

Map departments that come under various cabinets

Gather data for more extension projects and start working on them

Come up with a fair metric to rate the budget and therefore propose an ideal budget distribution

THANK YOU!