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# MID-SEMESTER REPORT: REMODELLING AND UNIT LOSS IN BOSTON TEAM - A



## FOR TODAY

- **Review how housing is changing amongst different communities**
- **Where are housing remodels and renovations happening?**
- **How many housing units are lost to remodels on average, each year?**

# REVIEW OF PREVIOUS FINDINGS



- **Found Unit changes by Community:** significant **increase** in units in areas like **South Boston, Central Boston** and **Dorchester**. Concerning **decrease** in **Mattapan** (due to possible zip codes transfer between Mattapan and Hyde Park).
- **Initial Observation for Permit Trends:** clear upward trends in prioritizing safety improvements. **Roxbury, Dorchester, South Boston, East Boston** being areas with significant renovation changes.
- **Patterns in Land Use:** decreasing trend in **multi-family(R4)** units with simultaneous **increasing single-family(R1)** units



WHERE ARE HOUSING REMODELS AND RENOVATIONS  
HAPPENING?



# DATA CLEANING



- Extract data related to “issued\_date”, “zip”, and “worktype”
  - **Drop** any rows that “zip”, “worktype”, “issued\_date” is **missing**
  - Convert “issued\_date” to date time format and **extract “year”**
  - Convert “zip” column to 5-digit format, **match and assign** zip codes to corresponding **community**
  - Consolidate “worktype” column into **broader categories**, store in new column “worktype\_category” for further analysis

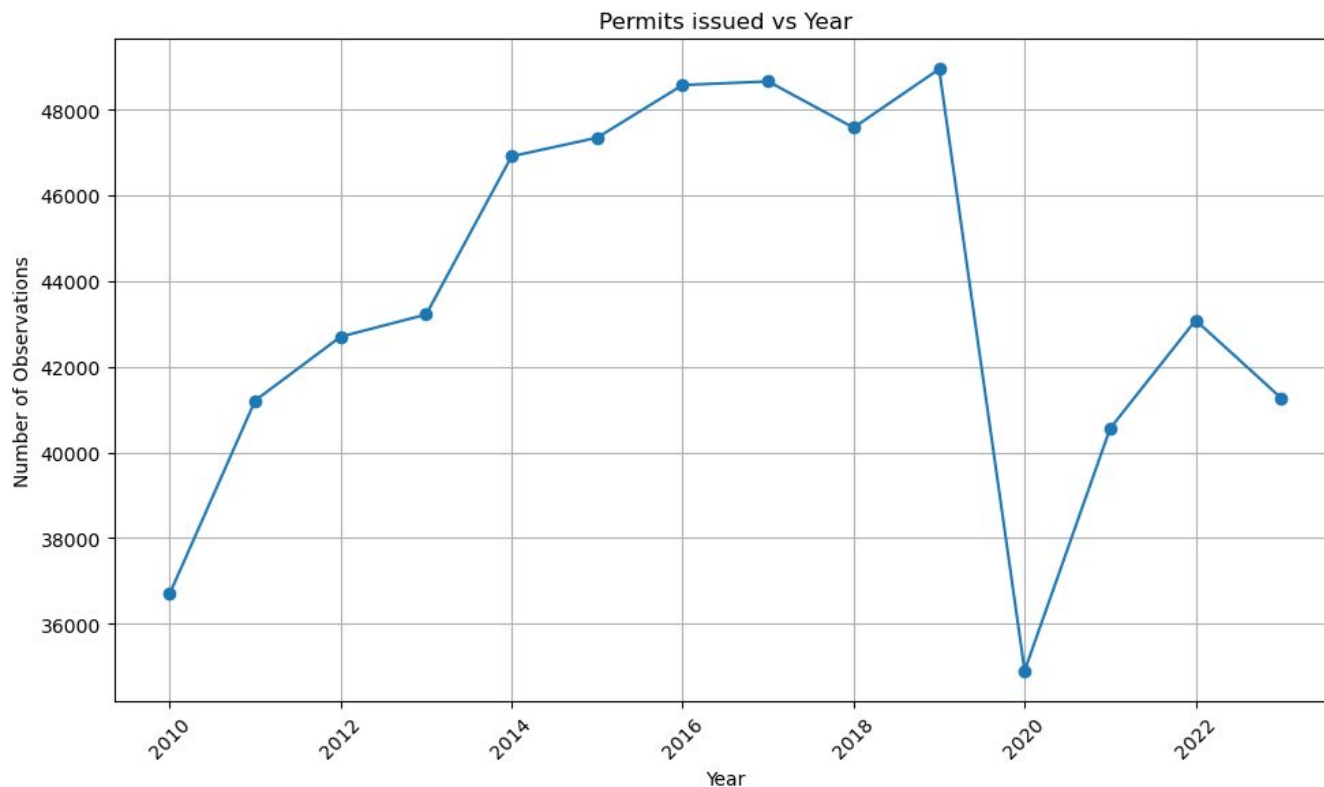
# Renovations from 'worktype'

After recategorizing the 'worktype' field in the dataset, we branched the following work types under an umbrella term 'renovation' :

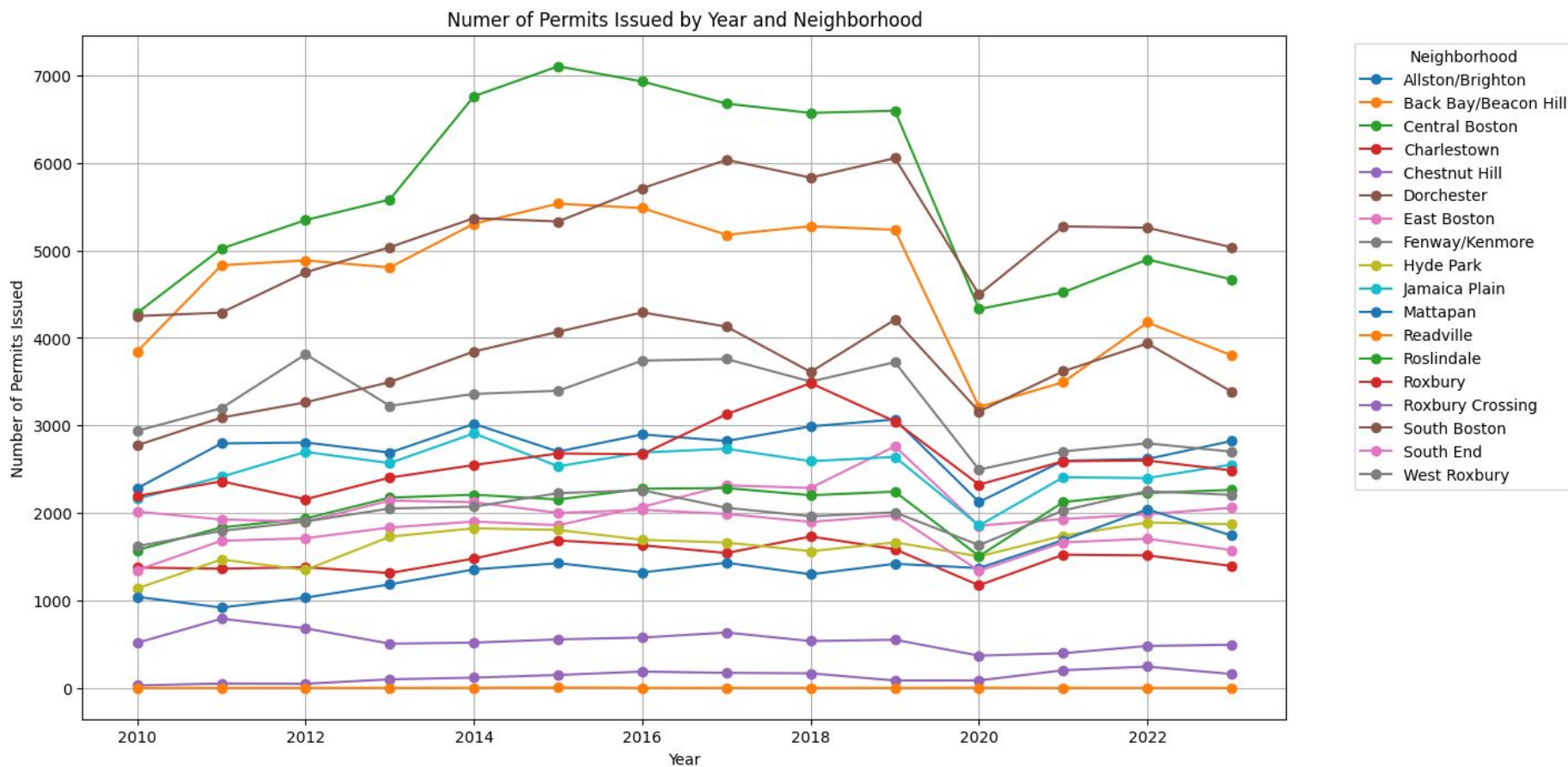
1. Interior/Exterior Work
2. Renovations - Exterior
3. Renovations - Interior NSC
4. Insulation
5. Siding
6. Installation of Decorative Mat
7. Installation of Floor Covering
8. Installation of InteriorFinish
9. Installation/Evaluation of Mat

This recategorized worktype field has been used for the following graphs and analysis on renovations happening around boston over the years

# Permits Issued VS. Year



- **Excluding 2006-2009, and 2024:**
  - **2019** has the **maximum** permits which is: **48867 permits**
  - **2020** has the **minimum** permits which is: **34837 permits**
- **Percentage Change:**
  - **2019-2020** has the **minimum** percentage growth which is: **-28.71%**
  - **2020-2021** has the **maximum** percentage growth which is: **16.29%**



Number of  
permits  
(yearly) for  
each  
community

Top 3 communities with the **most** permits issued:

- Central Boston
- Dorchester
- Back Bay/Beacon Hill

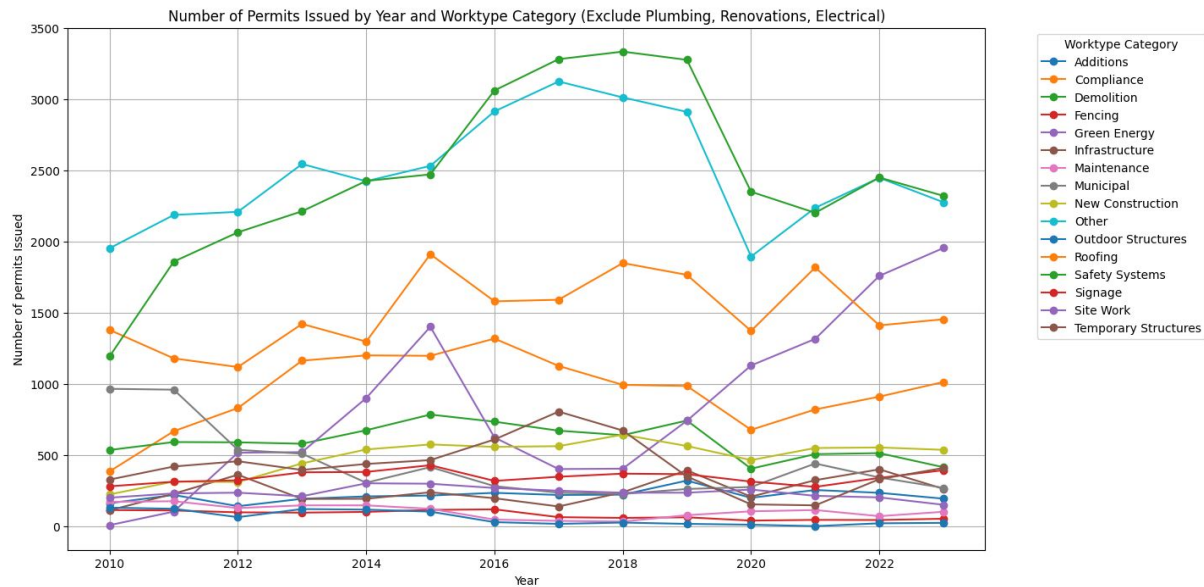
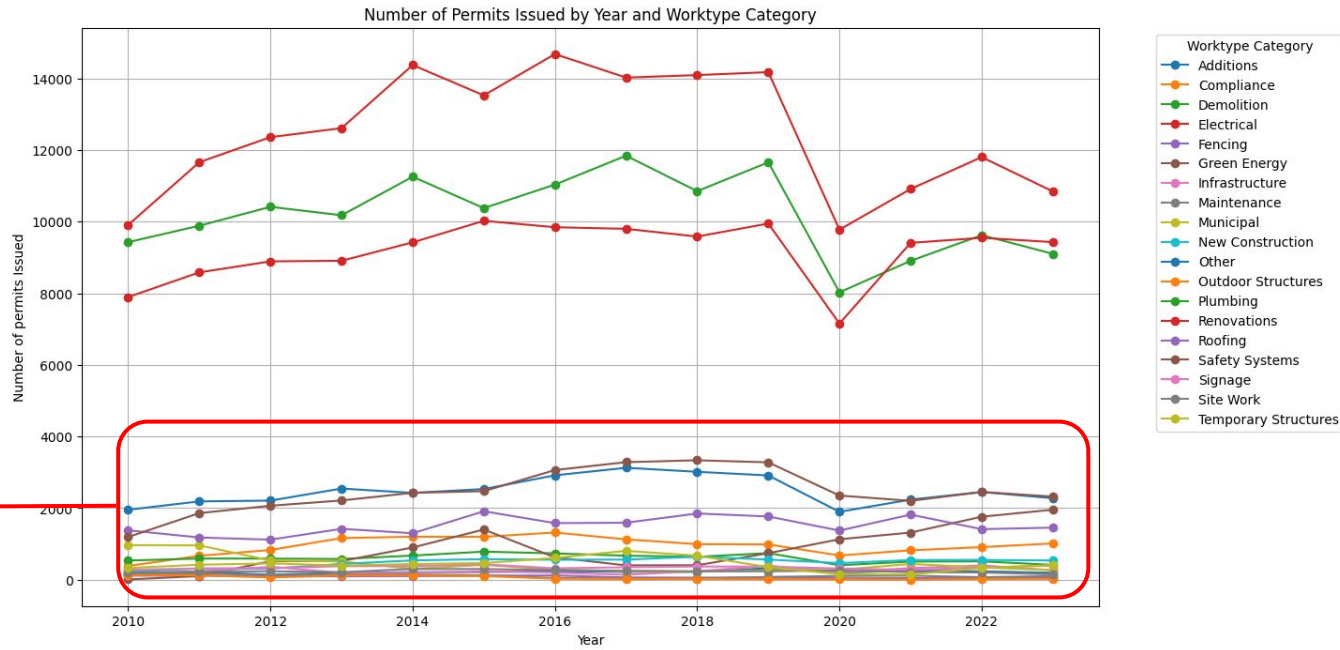
Communities with the **least** permits issued:

- Readville
- Newton (No Data Found)
- Dedham (No Data Found)



## Noticeable Findings

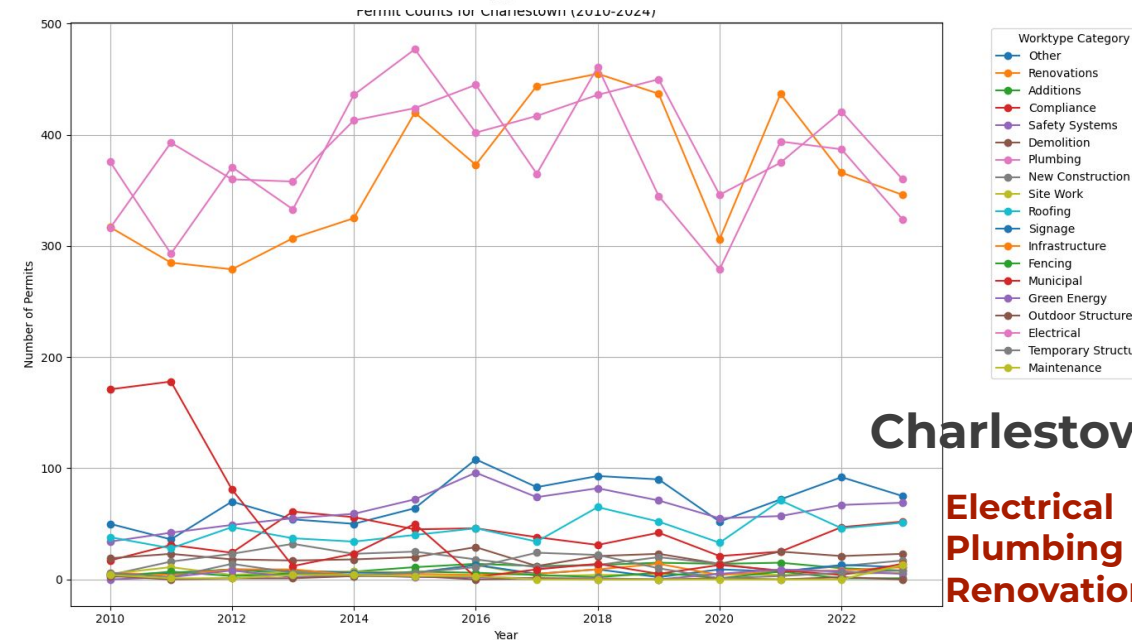
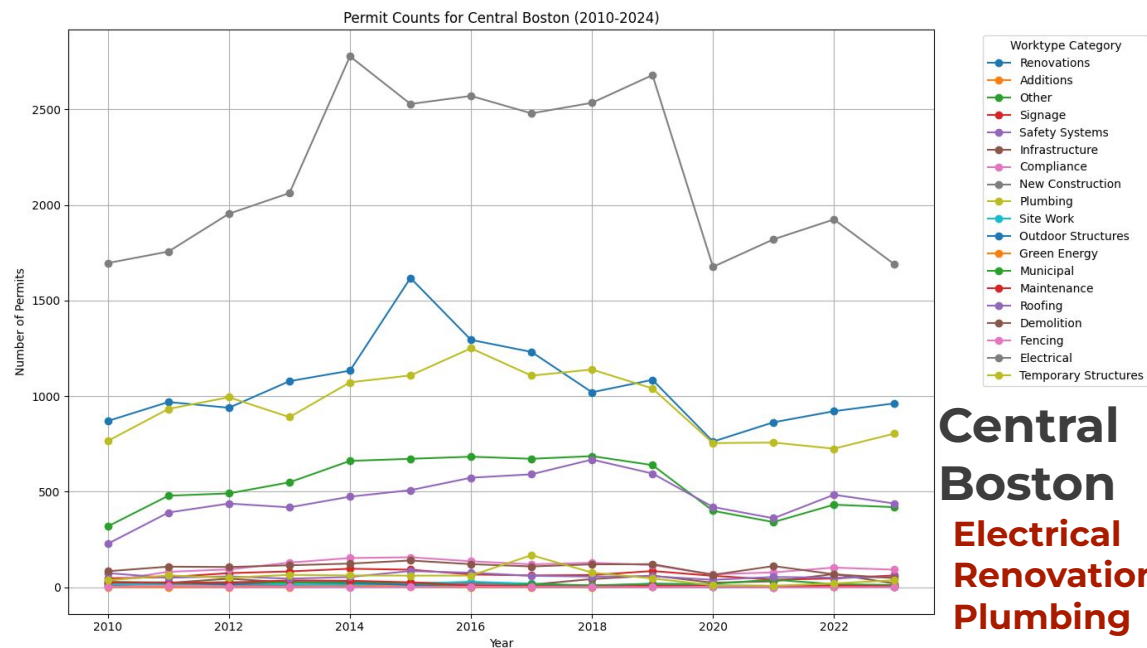
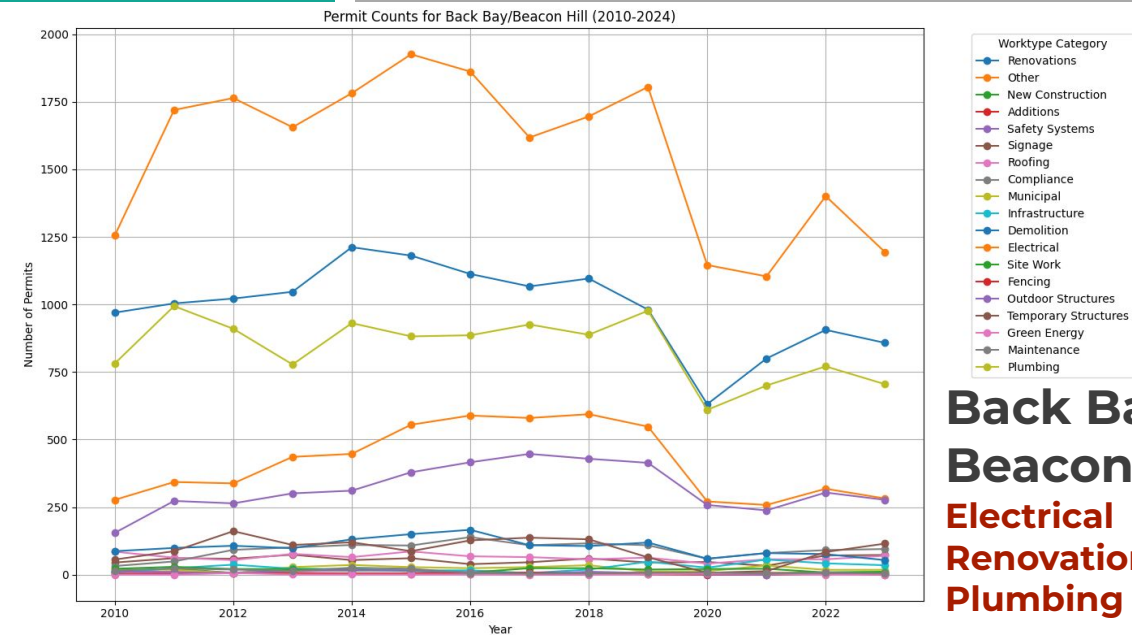
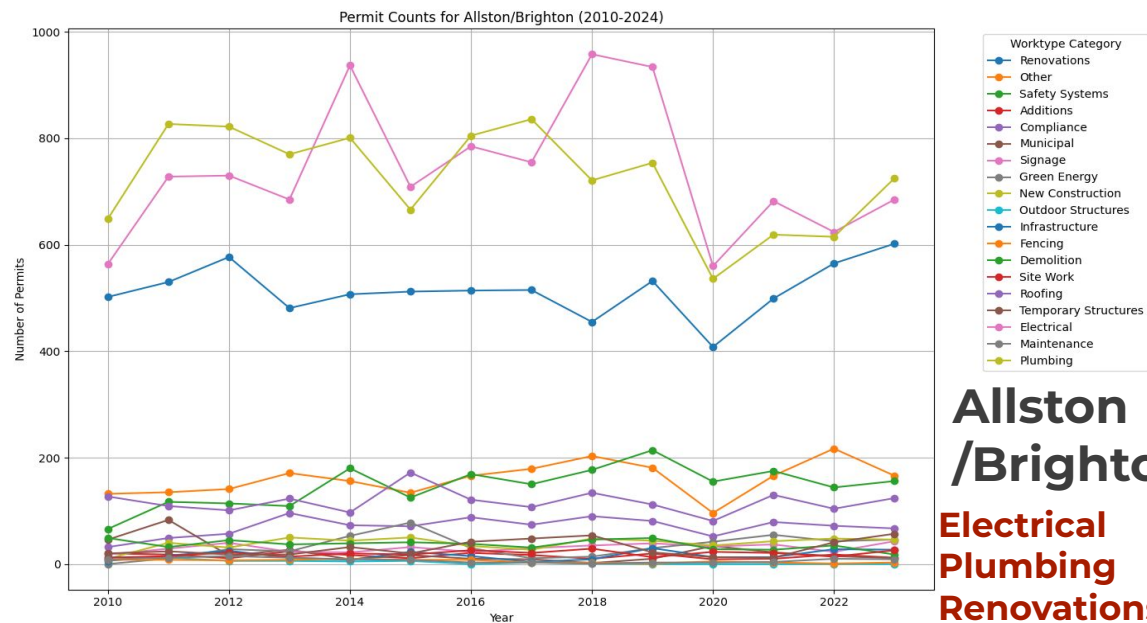
- From **2010-2018**, **Central Boston** is always on the **top 1 position** with **most** permits
- Starting from **2019**, **Dorchester** becomes the **top 1** community with the **most** permits
- Other than **2021**, **Central Boston**, **Dorchester**, and **Back Bay/Beacon Hill** are always the **top 3** communities with the **most** permits
  - **2021**: sudden increase in **South Boston (3620 permits)**, suppressing Back Bay/Beacon Hill area

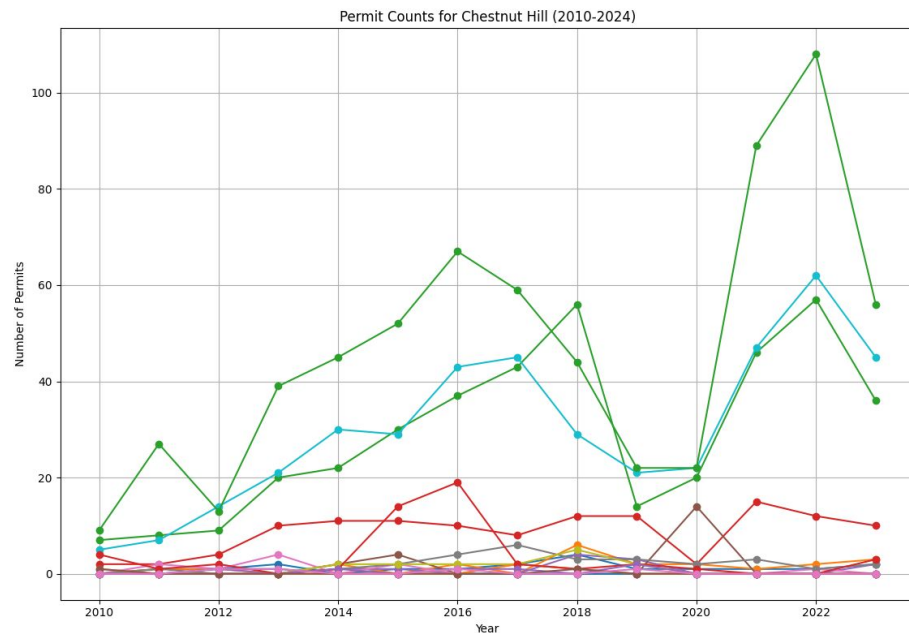


Number of permits (yearly) for each worktype category

# Noticeable Findings

- **Top 3 Worktype Categories (2010-2023):**
  - **Electrical:** 174,688 total, 12,478 permits/year
  - **Plumbing:** 142,532 total, 10,181 permits/year
  - **Renovations:** 128,415 total, 9173 permits/year
- **2021, 2023** are the only two years where “**Renovations**” suppress “**Plumbing**” to be the second highest in number
- **Worktype categories with fewest permits (2010-2023)**
  - **Outdoor Structures** (2012, 2015-2023)
  - **Fencing** (2013-2014)
  - **Green Energy** (2010-2011)



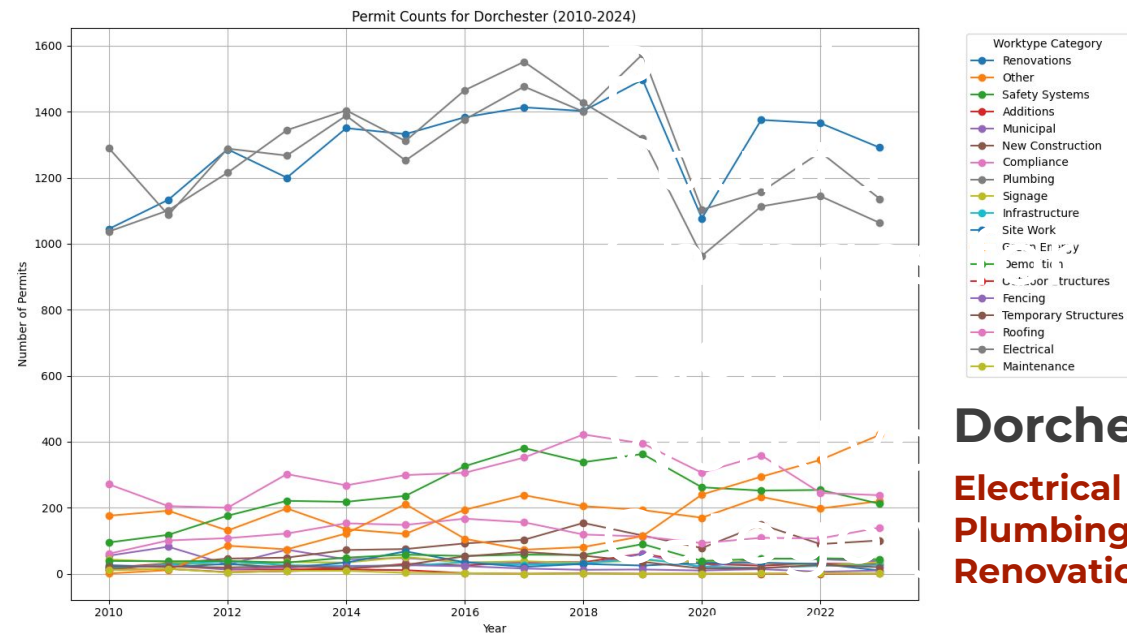


**Chestnut Hill**

**Plumbing**

**Renovations**

**Electrical**

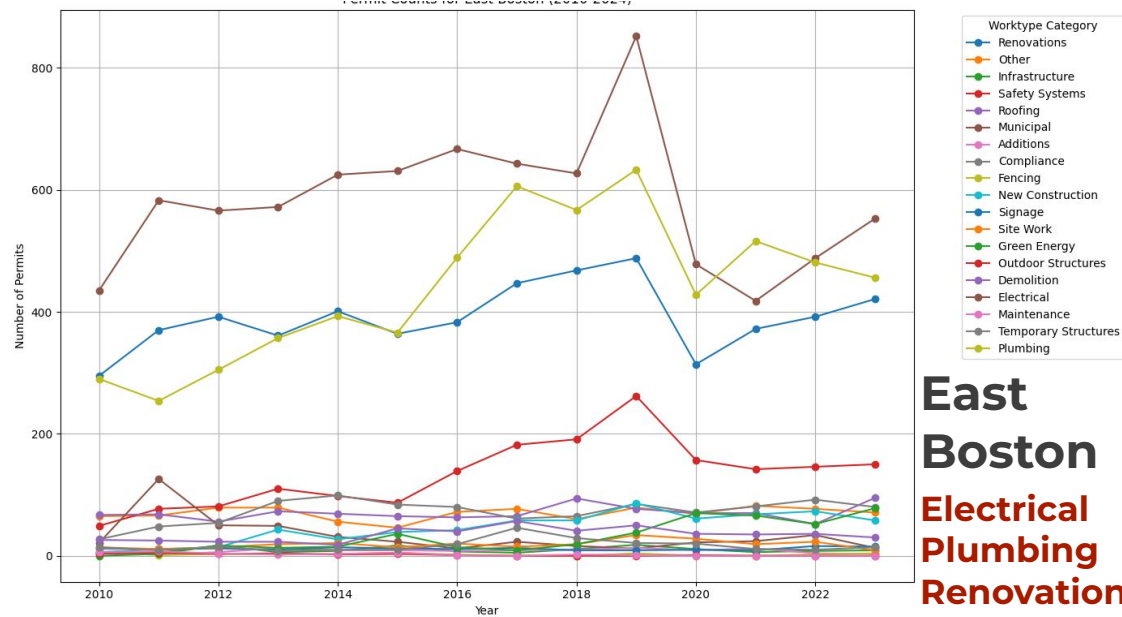


**Dorchester**

**Electrical**

**Plumbing**

**Renovations**

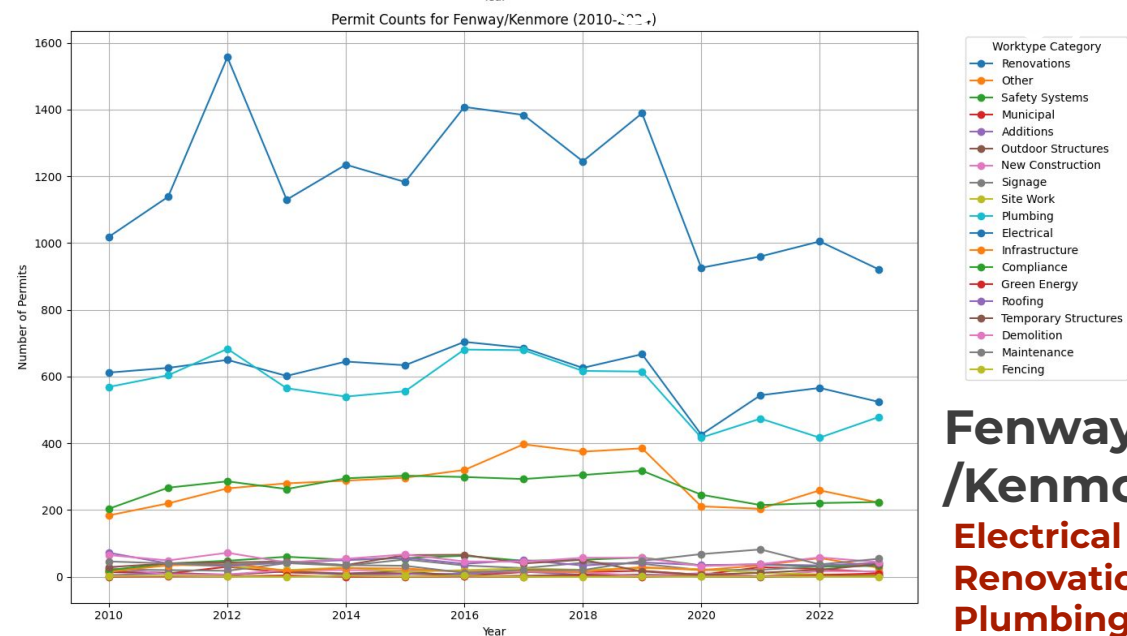


**East Boston**

**Electrical**

**Plumbing**

**Renovations**



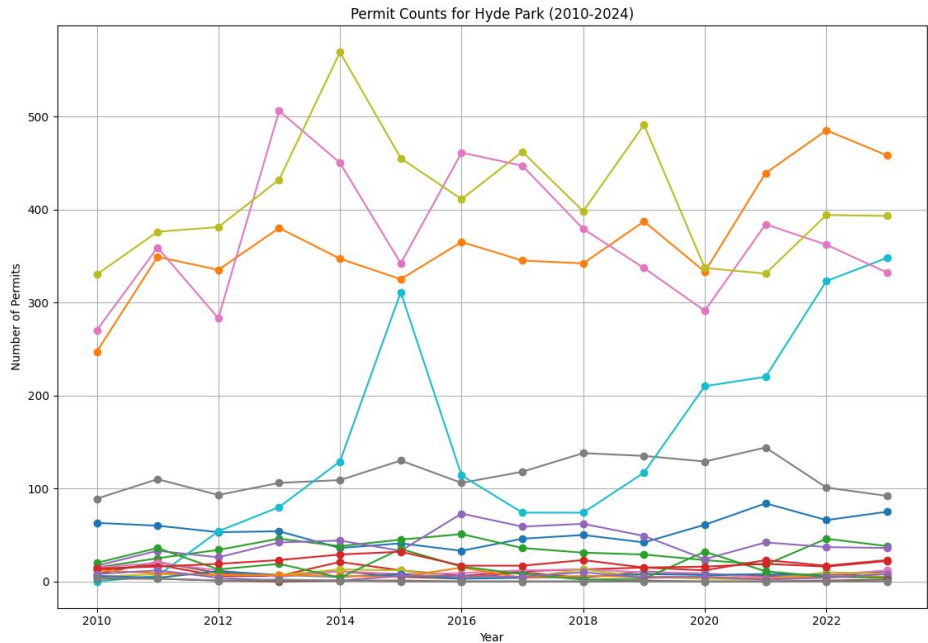
**Fenway /Kenmore**

**Electrical**

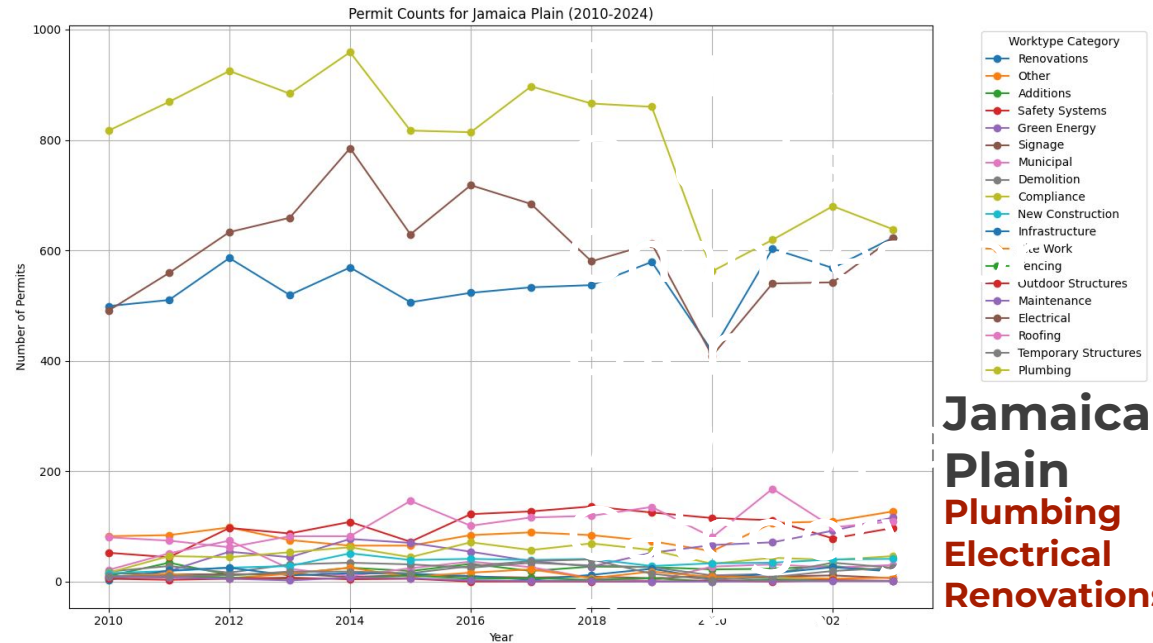
**Renovations**

**Plumbing**

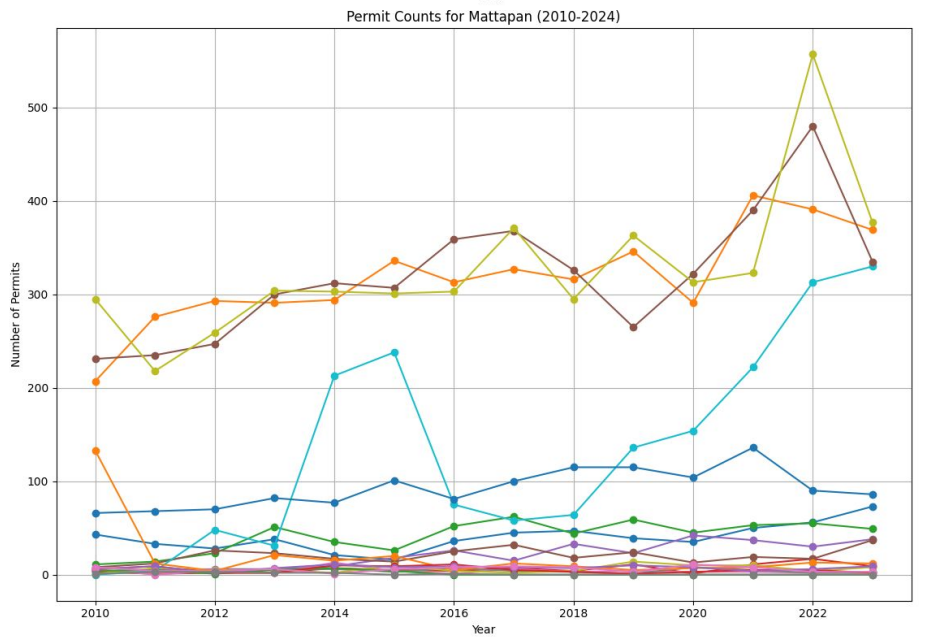




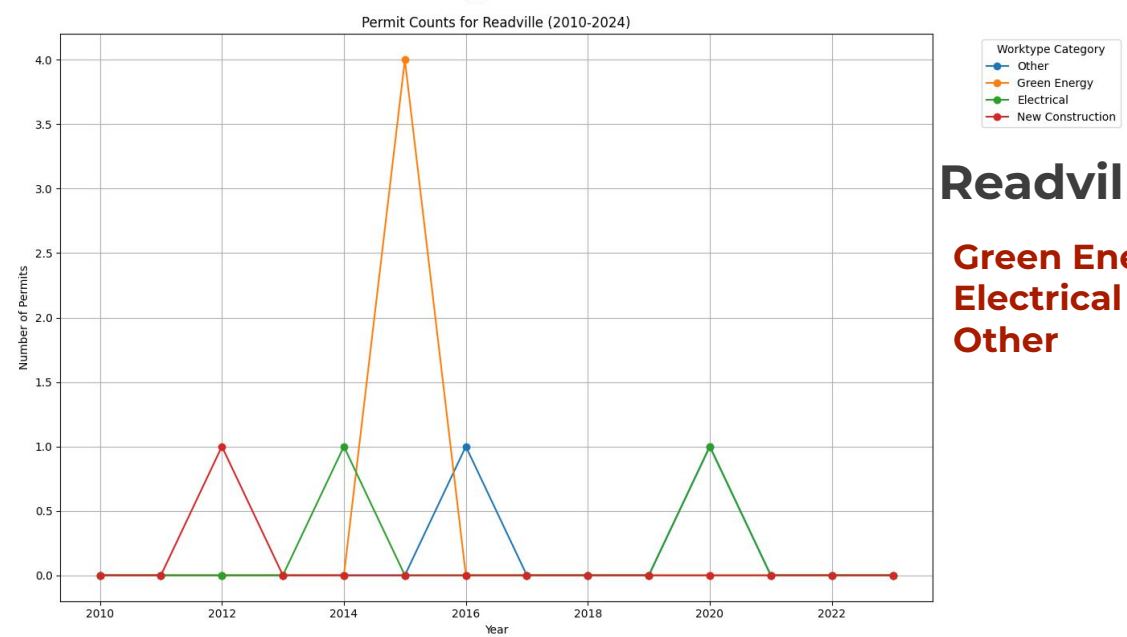
**Hyde Park**  
**Plumbing**  
**Renovations**  
**Electrical**



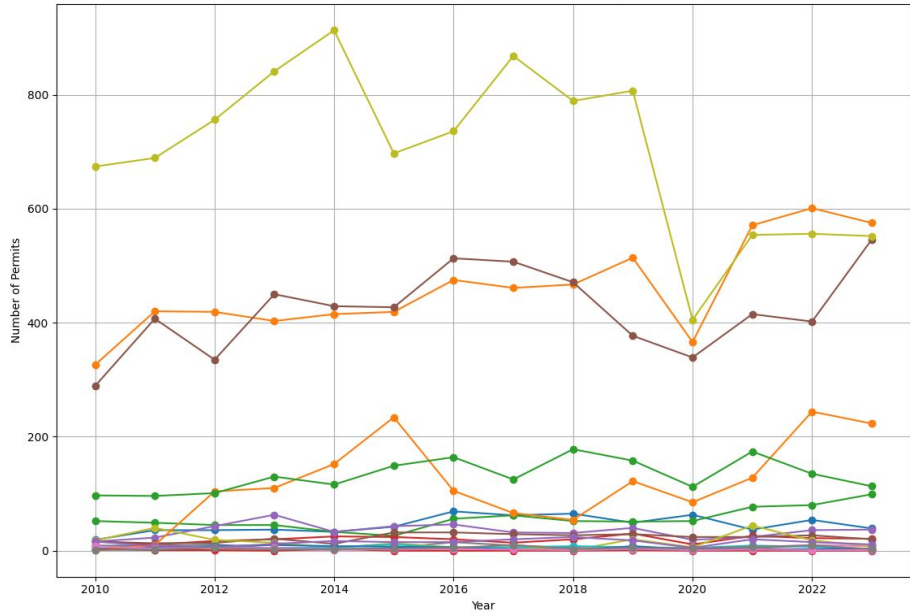
**Jamaica Plain**  
**Plumbing**  
**Electrical**  
**Renovations**



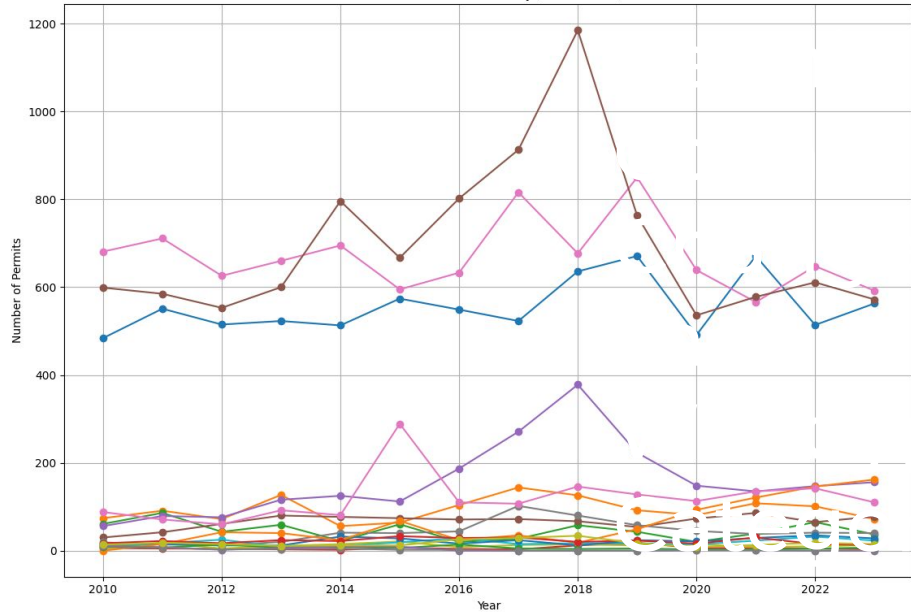
**Mattapan**  
**Plumbing**  
**Electrical**  
**Renovations**



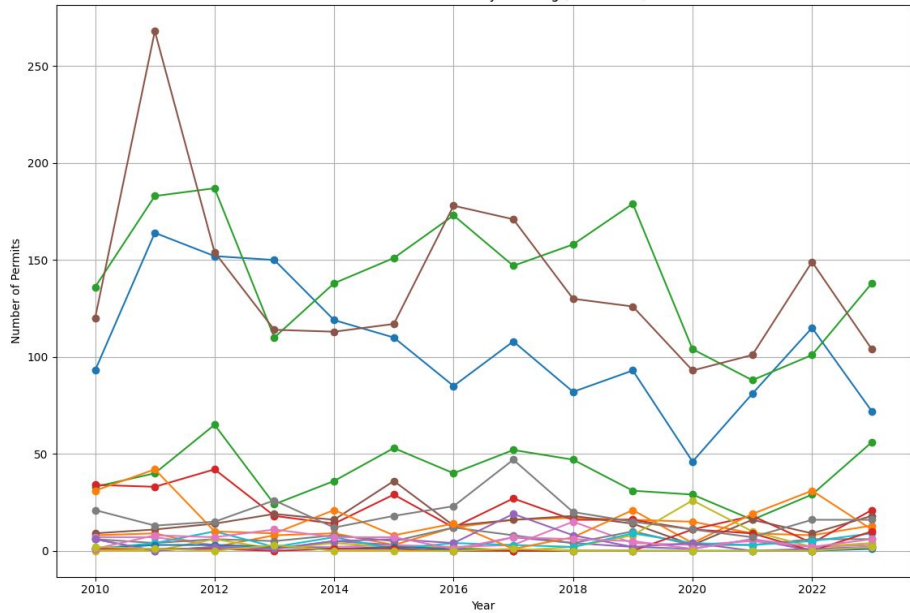
**Readville**  
**Green Energy**  
**Electrical**  
**Other**



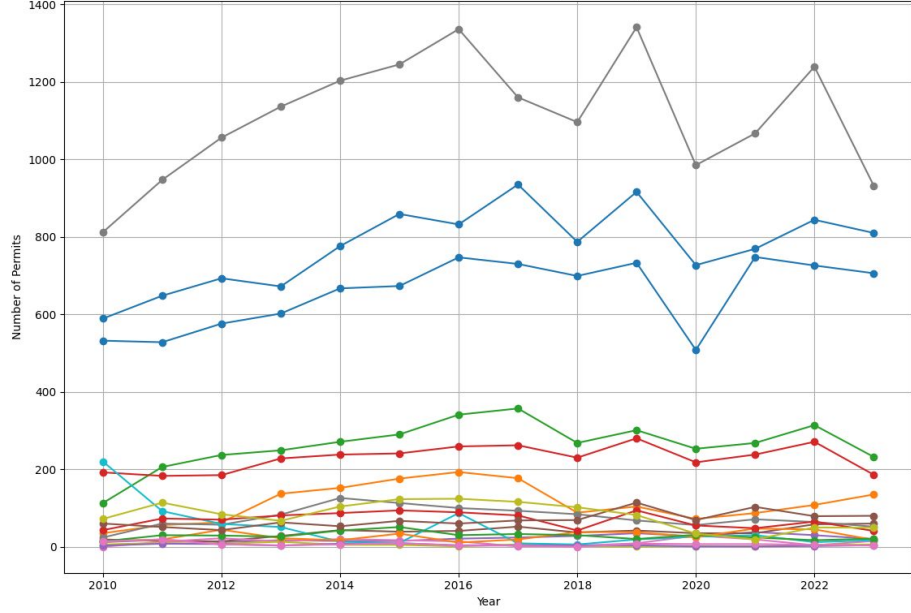
**Roslindale**  
**Plumbing**  
**Electrical**  
**Renovations**



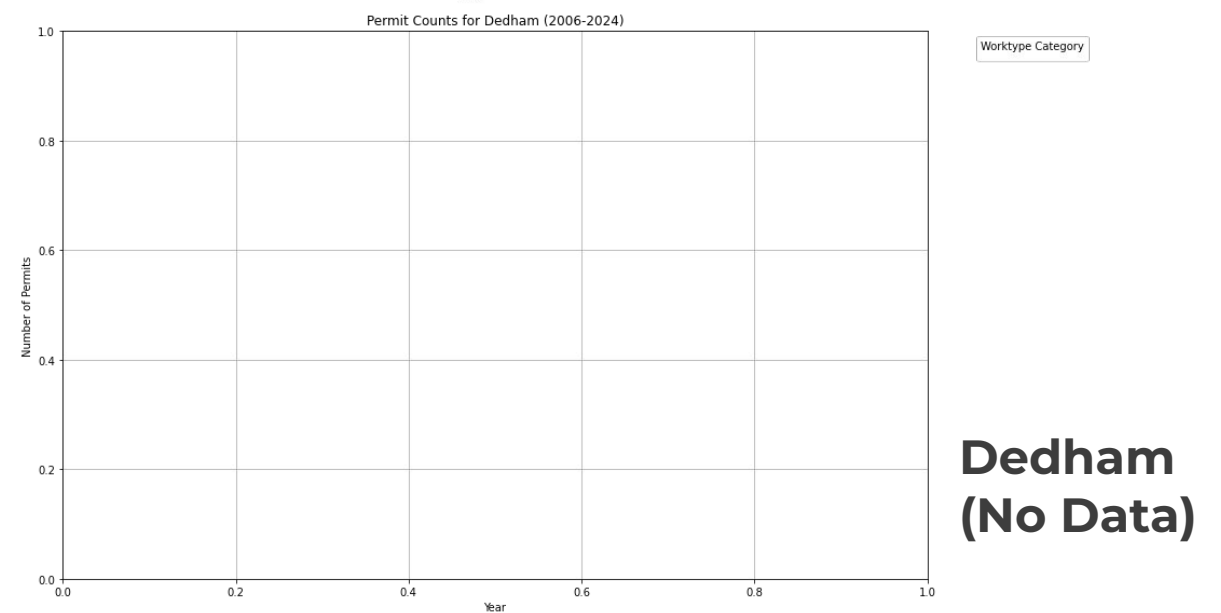
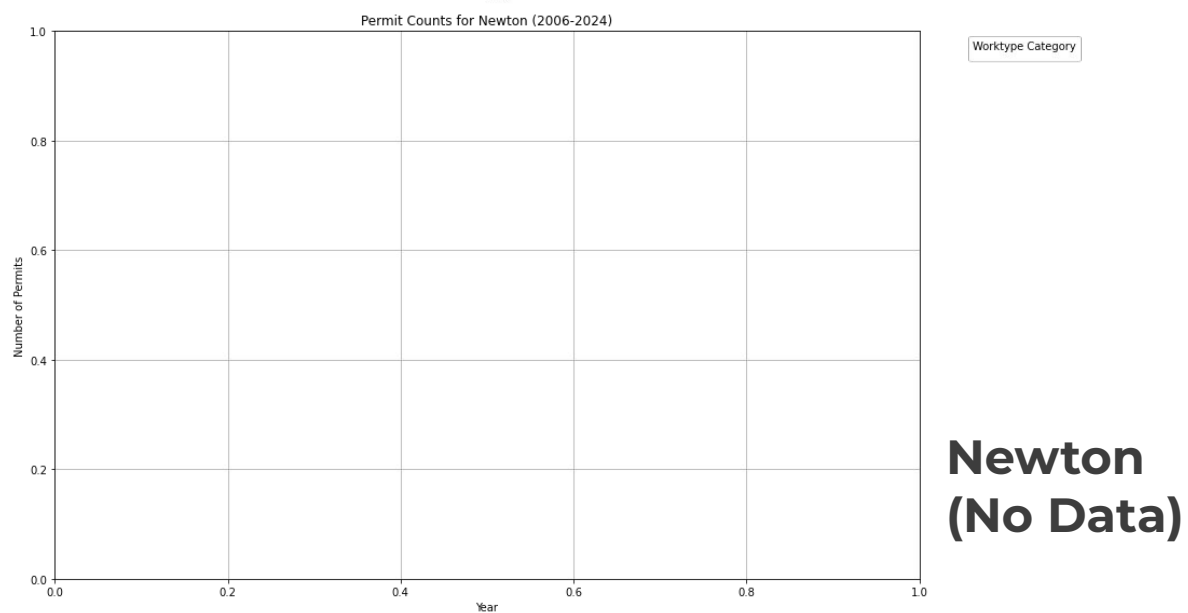
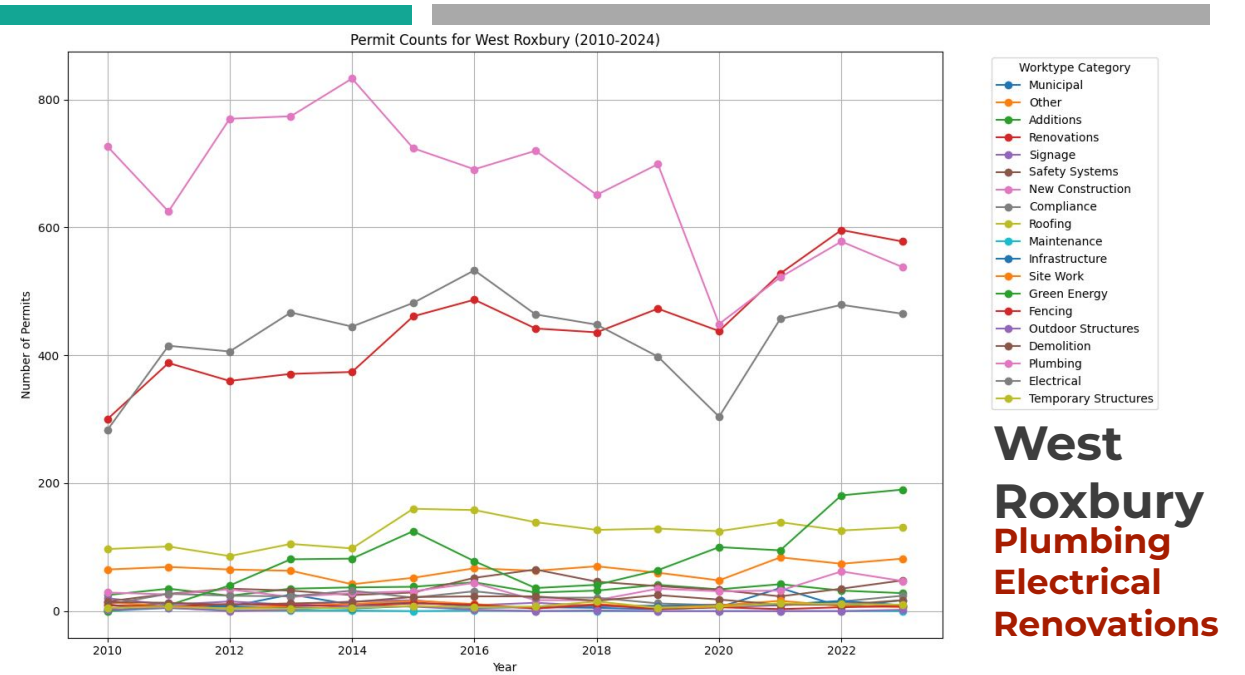
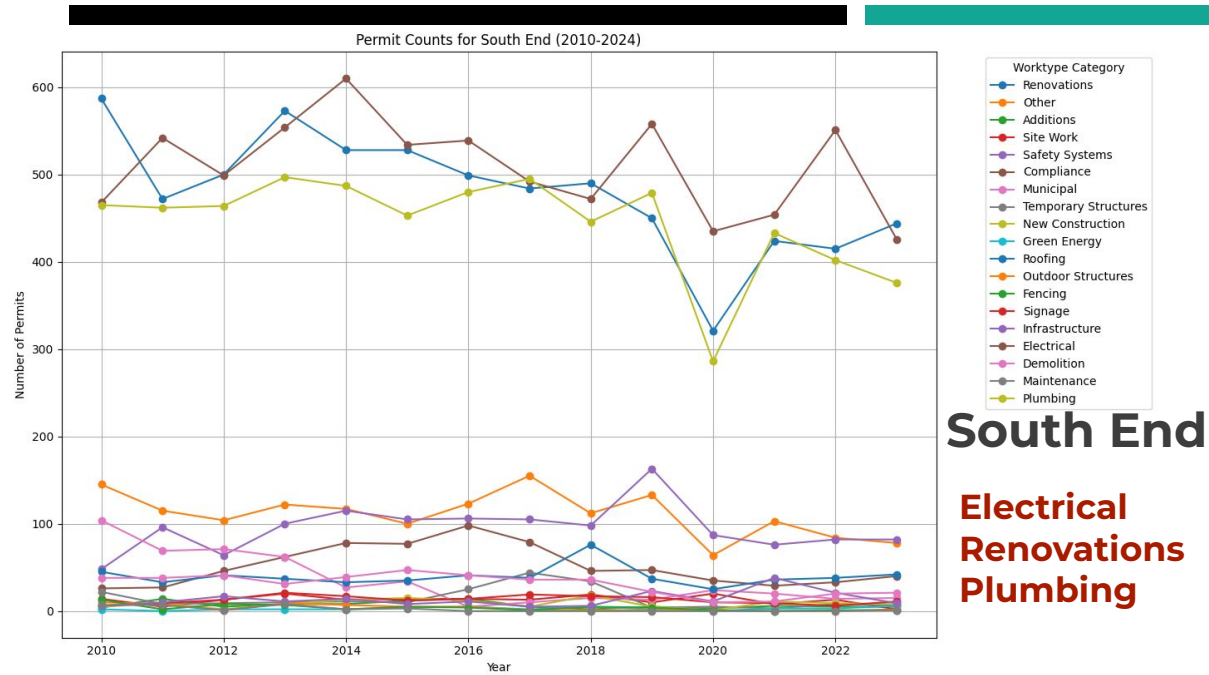
**Roxbury**  
**Electrical**  
**Plumbing**  
**Renovations**



**Roxbury Crossing**  
**Plumbing**  
**Electrical**  
**Renovations**



**South Boston**  
**Electrical**  
**Plumbing**  
**Renovations**

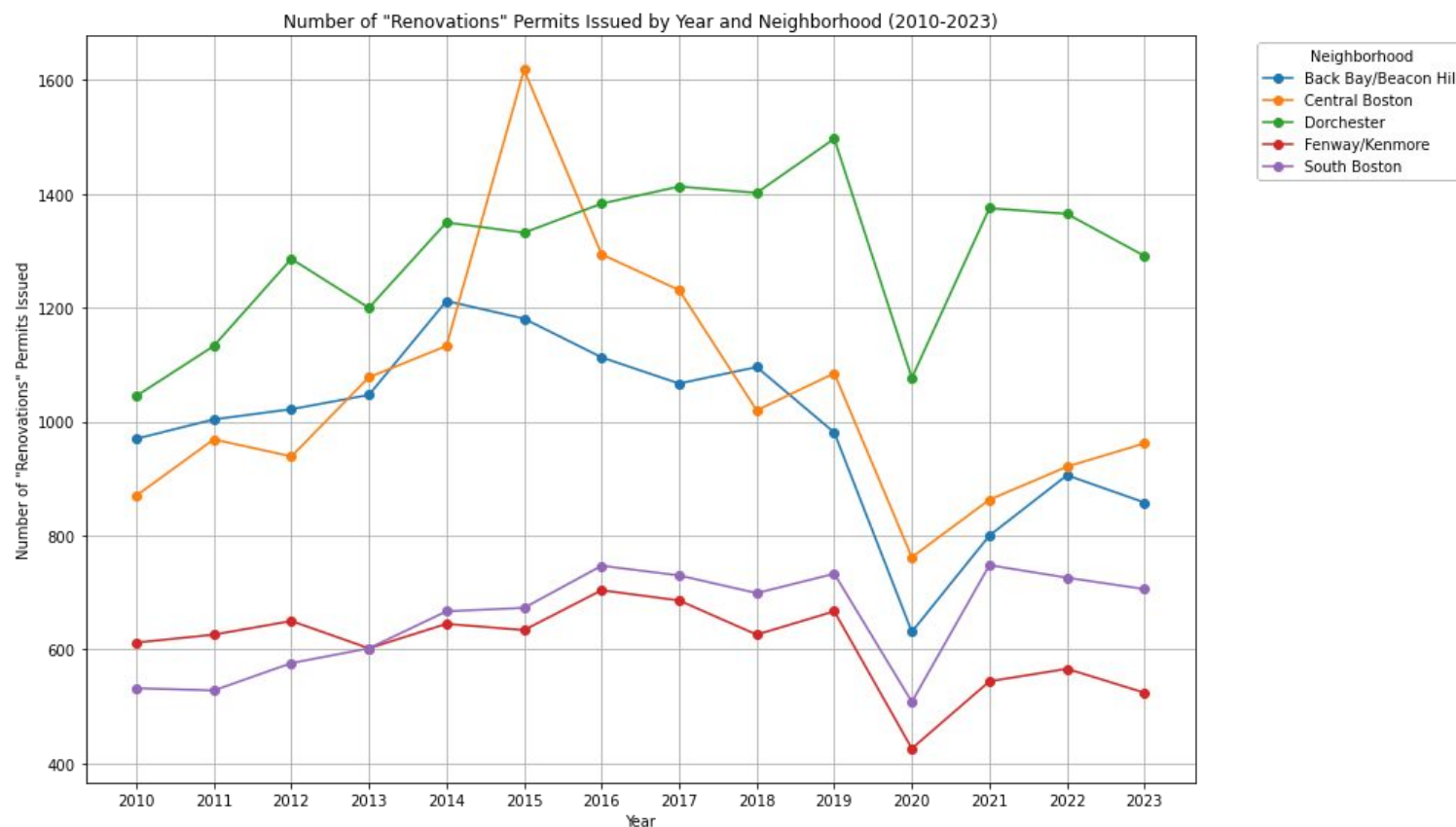




# Noticeable Findings

- **General Decrease in 2020**
  - Possible Reason: Covid Pandemic
- Other than Electrical, Plumbing, and Renovations, these categories are also popular:
  - **Safety System**
  - **Roofing**
  - **Green Energy** (typically Hyde Park, Mattpan, Roslindale, Dorchester)
  - **Other**

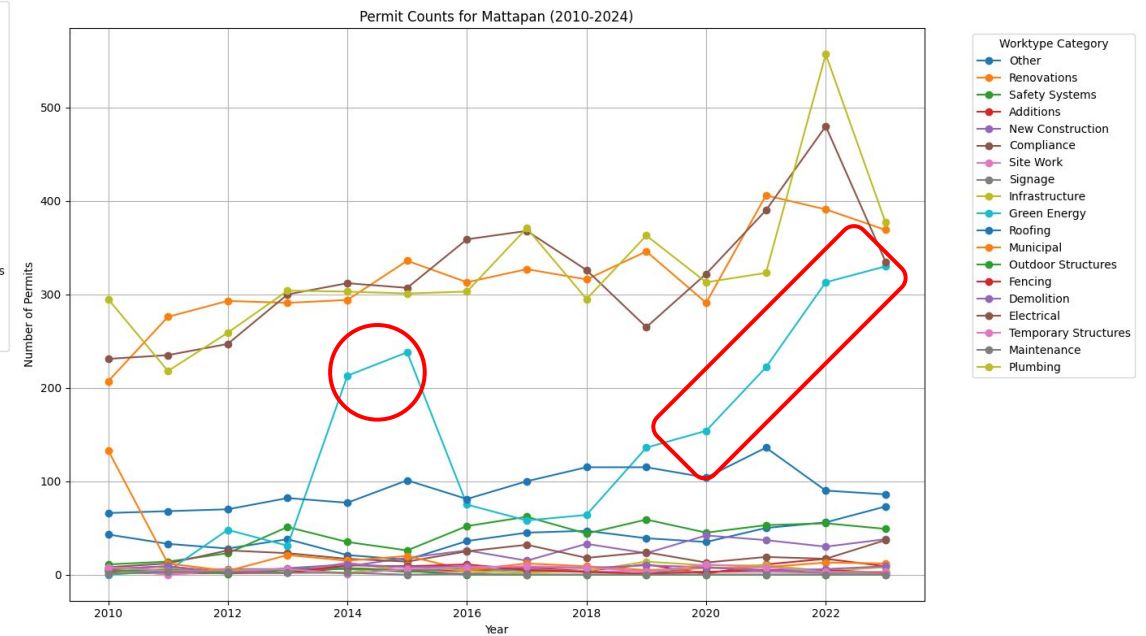
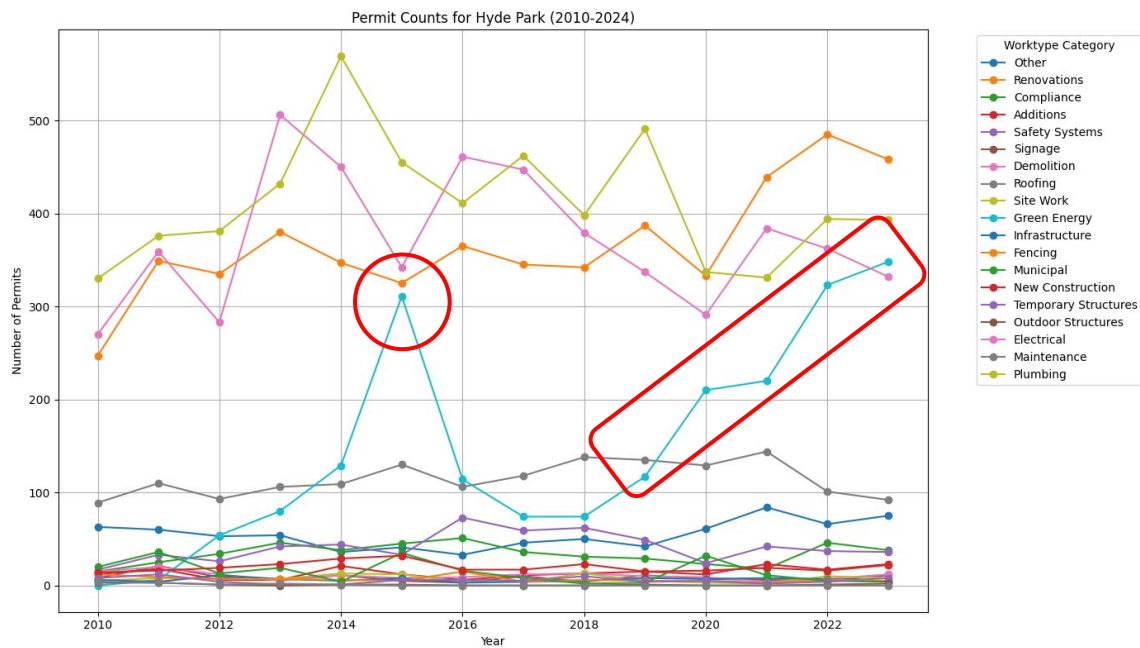
# Where renovations are happening



- Top 3 neighborhoods with most **"Renovations"** worktype category are **Dorchester, Central Boston,** and **Back Bay/Beacon Hill**

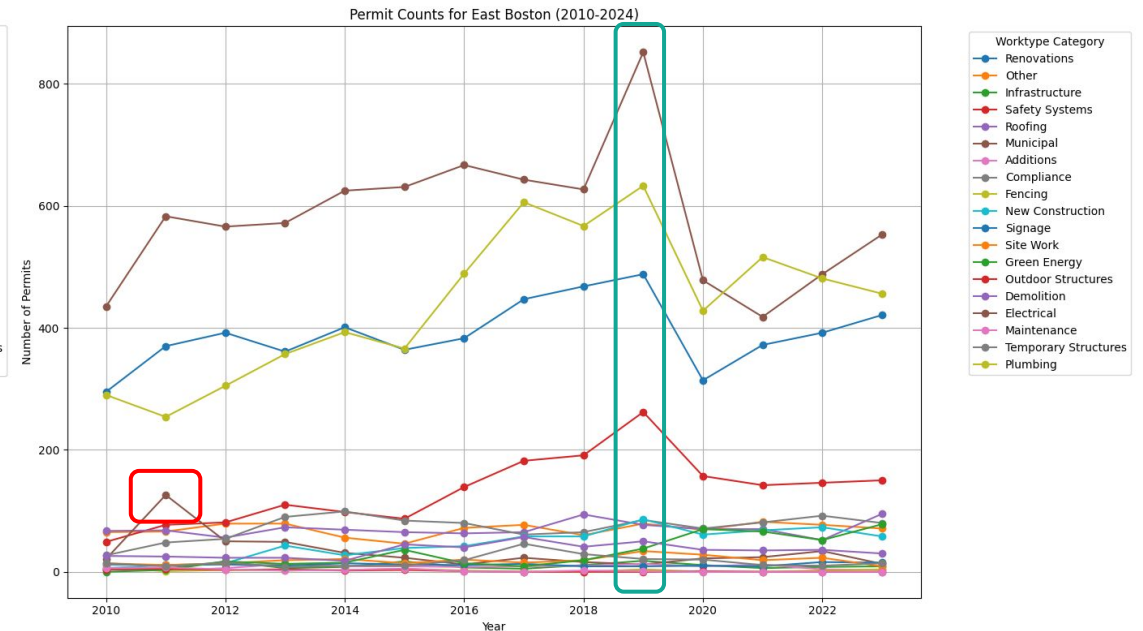
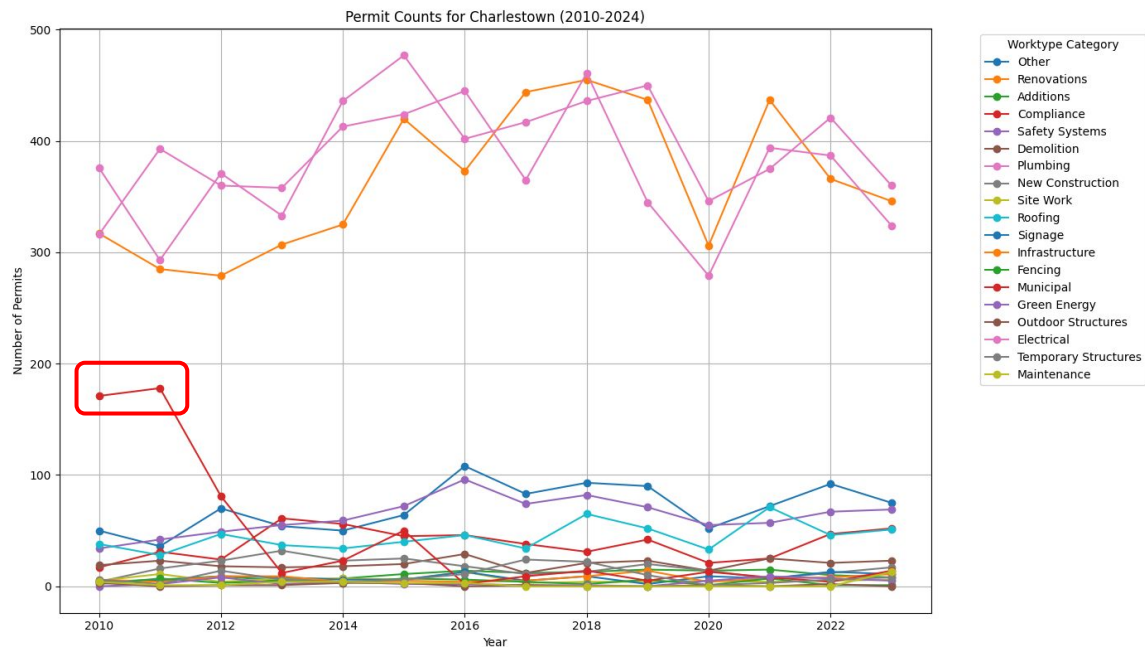
# Questions left to search

- Significant **increase** of demand for **green energy** around **2014-2015, 2019-2023** in **Hyde Park and Mattapan**



# Questions left to search

- Sudden **increase** in **Municipal** work type around **2010-2012** for **Charlestown** and **East Boston**
- Significant **increase** in working permits for multiple work types in **2019** for **East Boston**





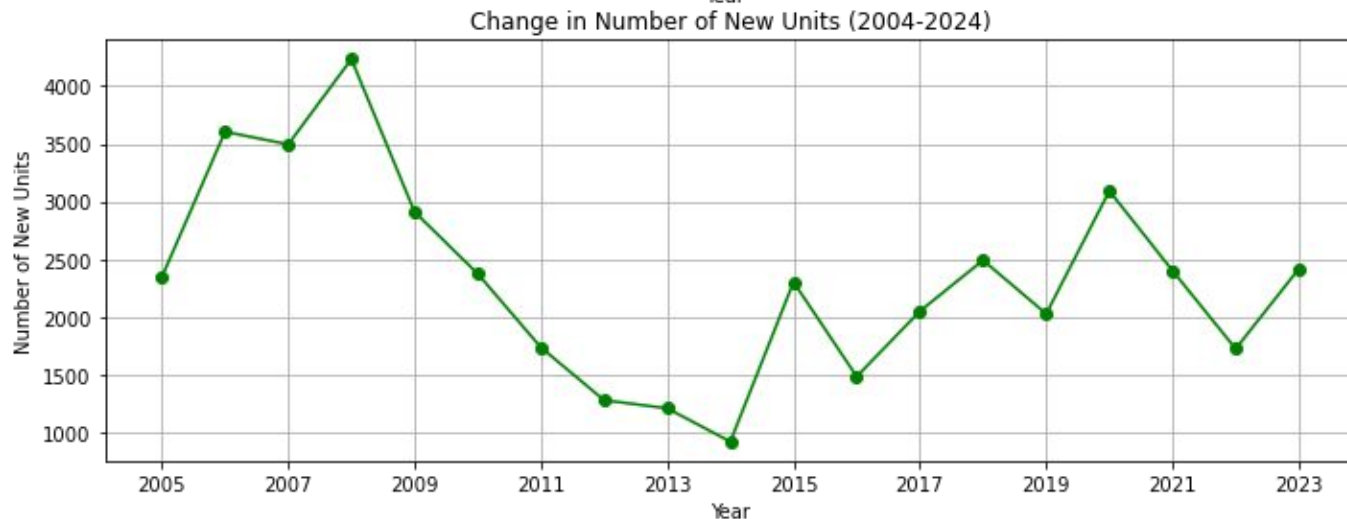
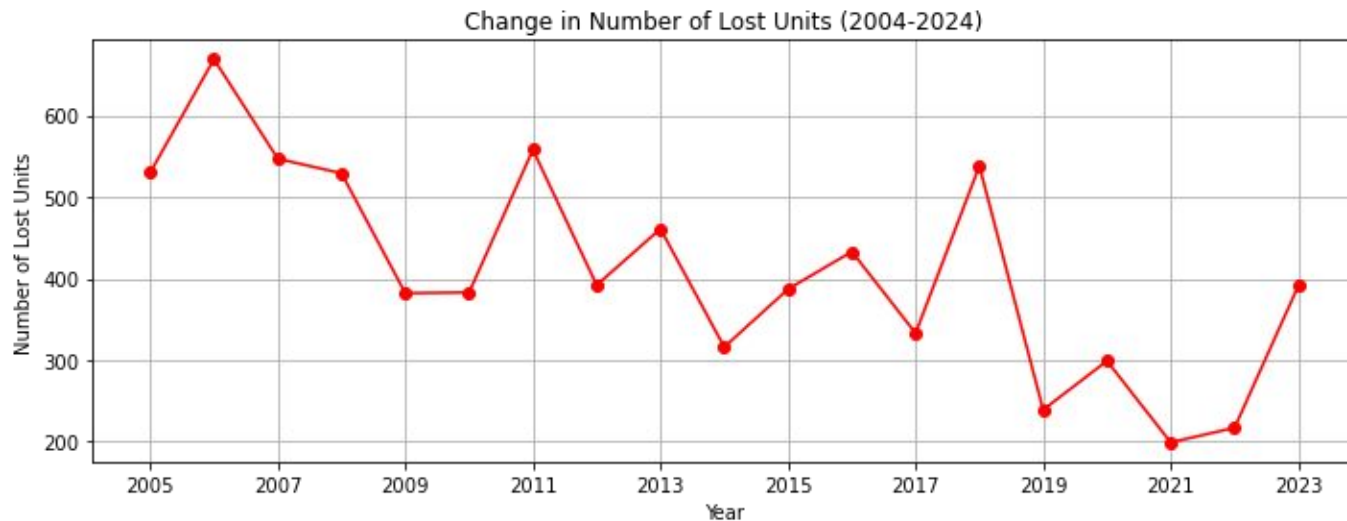
HOW MANY HOUSING UNITS ARE LOST TO REMODELS ON  
AVERAGE, EACH YEAR?



## DATA CLEANING - Q4

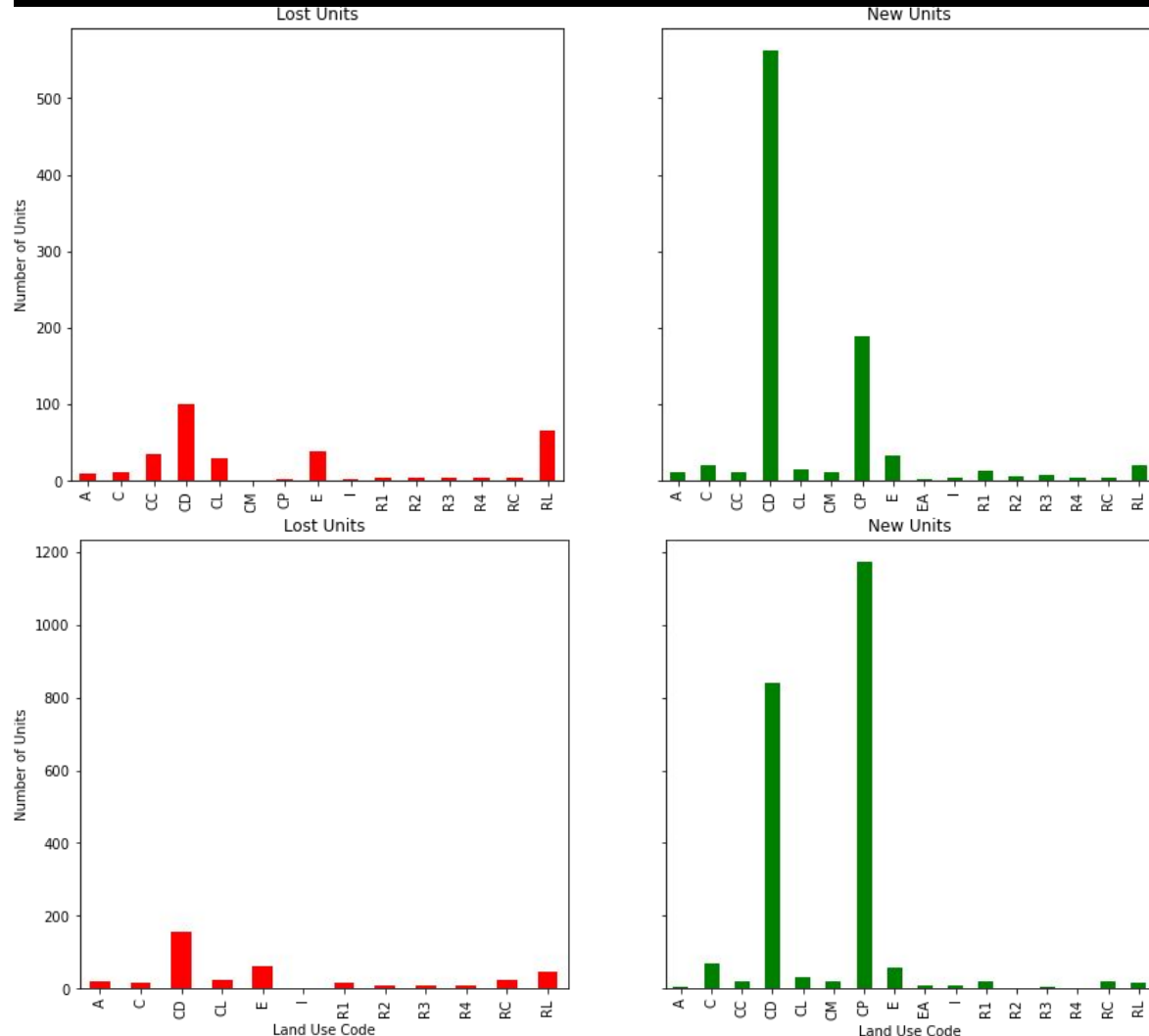
- Using feature **“PID”** (unique number for each property), **“LU”** (Land Use)
- **Renamed** all the parcel ID to **“PID”** for consistency, eliminate all special characters that appears in this column and keeping just the 10-digit number
- **Filter out** any rows with **invalid** entry for **“LU”** column

# Changes in Number of Lost/New Units (2004-2024)



- From **2005-2006**, we have the **maximum** number of **lost units** (**669 units**)
- From **2020-2021**, we have the **minimum** number of **lost units** (**199 units**)
- From **2007-2008**, we have the **maximum** number of **new units** (**4233 units**)
- From **2013-2014**, we have the **minimum** number of **new units** (**920 units**)

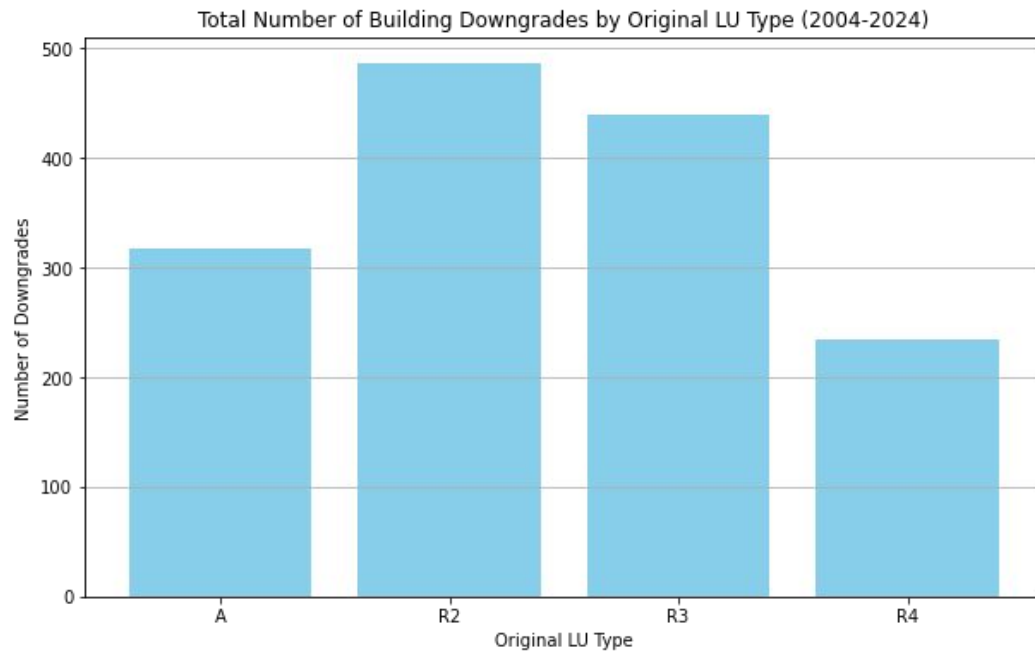
# Noticeable Findings



- Among the **new units**, the type **CD (Residential Condominium Unit)** and **CP (Condo Parking)** are the highest in number
- Among the **lost units**, the type **CD, CL (Commerical Land)**, and **E (Tax-exempt)** are the highest in number



# Focus on type A, R2, R3, R4

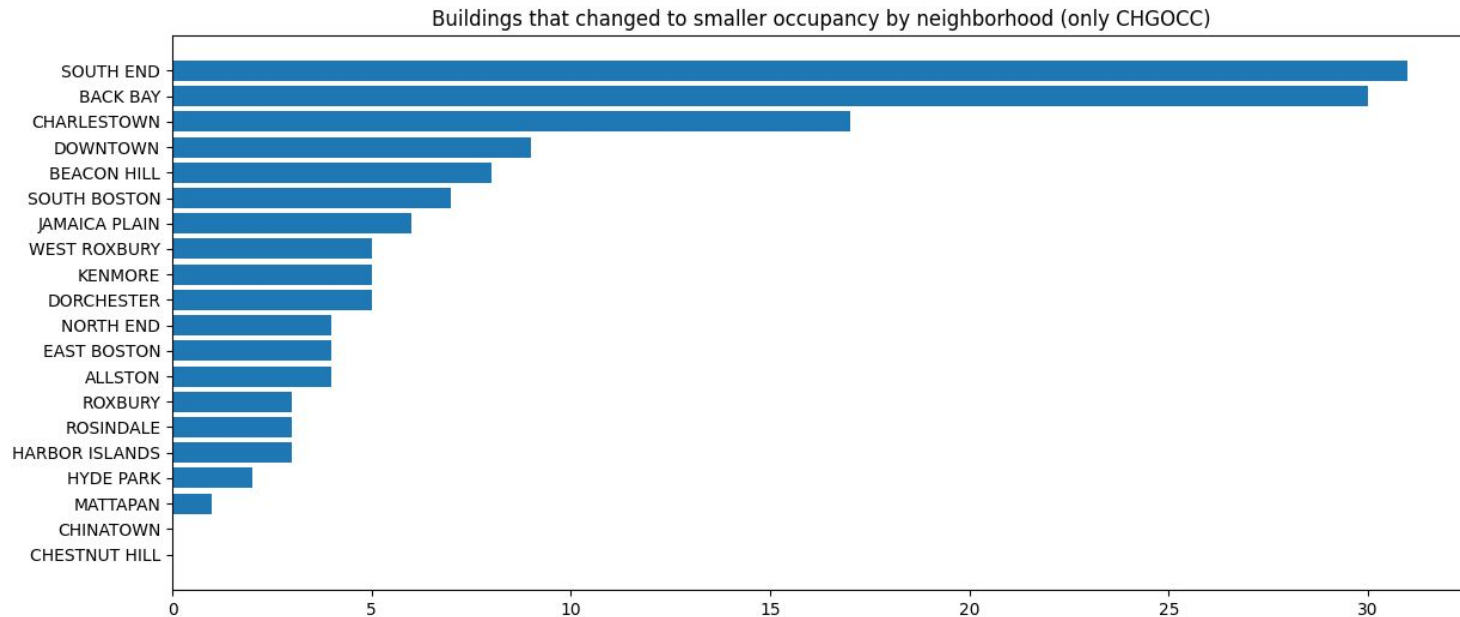


Key:

- A = Residential 7 or more u
- R2 = Residential 2-family
- R3 = Residential 3-family
- R4 = Residential 4 or more family

- Buildings that had any type of permit and changed to a **smaller** occupancy type
- There are the **most** changes from **R2**

# Buildings that changed to smaller occupancy by community



■ Unit lost happened the most in **South End**, followed by **Back Bay** and **Charlestown**

# FUTURE PLANS



## ■ Extension Questions:

- How does the rate of renovations in each neighborhood affect the change in available units from year to year? Comparing permits data to changes in available units(R1, R4)
- What contributes to the large changes in housing units in areas like Hyde Park or the South End?
- What neighborhoods have experienced the most significant reduction in available units due to the conversion of multi-unit properties into single-family residences by higher-income, and what factors contribute to this trend?

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# QUESTIONS?

