



# The Big Picture

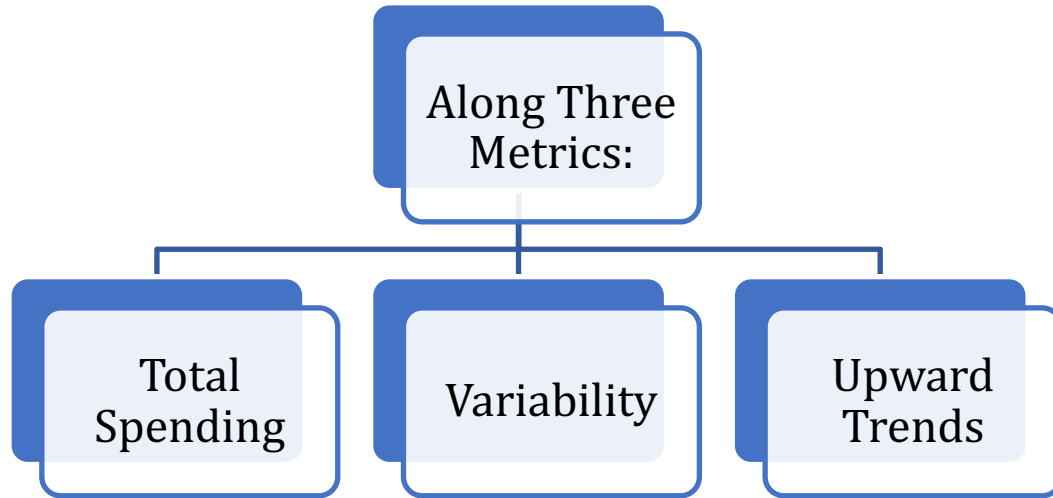
Jake Kelly and Yuankun Huang

|      | A                          | B  | C            | D                       | E                                    |
|------|----------------------------|--|--------------|-------------------------|--------------------------------------|
| 1    | Agency                     | Organization                             | Account Type | Character Code          | Object                               |
| 8629 | 45 - TRAFFIC ENGINEERING   | 45600 - TE SERVICES                      | Expense      | 54 - PURCHASED SERVICES | 54230 - FACILITY RENTAL              |
| 8630 | 63 - ECONOMIC DEVELOPMENT  | 63330 - EDD RE ACQUISITIONS DISPOSALS    | Expense      | 54 - PURCHASED SERVICES | 54210 - BUILDING IMPROV REPAIR MAIN  |
| 8631 | 50 - LIBRARY               | 50400754 - LIB FACILITIES LAKEVIEW       | Expense      | 53 - SUPPLIES           | 53130 - FURNITURE                    |
| 8632 | 62 - COMMUNITY DEVELOPMENT | 62551 - CD DIVISION 27 PRGM ADMIN        | Expense      | 54 - PURCHASED SERVICES | 54510 - RECRUITMENT                  |
| 8633 | 45 - TRAFFIC ENGINEERING   | 45600 - TE SERVICES                      | Expense      | 54 - PURCHASED SERVICES | 54510 - RECRUITMENT                  |
| 8634 | 10 - ASSESSOR              | 10140 - ASSESSOR TAX ROLL PREPARATION    | Expense      | 54 - PURCHASED SERVICES | 54510 - RECRUITMENT                  |
| 8635 | 65 - PLANNING              | 65111 - PL PRESERVATION PLANNING         | Expense      | 54 - PURCHASED SERVICES | 54510 - RECRUITMENT                  |
| 8636 | 65 - PLANNING              | 65101 - PL NEIGH PLAN PRES DESIGN ADM    | Expense      | 54 - PURCHASED SERVICES | 54210 - BUILDING IMPROV REPAIR MAIN  |
| 8637 | 50 - LIBRARY               | 50222759 - LIB COMM ENGAGE TEEN SMB      | Expense      | 53 - SUPPLIES           | 53310 - BUILDING                     |
| 8638 | 65 - PLANNING              | 65300 - PL METROPOLITAN PLANNING ORG     | Expense      | 53 - SUPPLIES           | 53250 - FOOD AND BEVERAGE            |
| 8639 | 50 - LIBRARY               | 50400751 - LIB FACILITIES CENTRAL        | Expense      | 53 - SUPPLIES           | 53130 - FURNITURE                    |
| 8640 | 16 - HUMAN RESOURCES       | 16300 - HR ORGANIZATIONAL & HEALTH DEV   | Expense      | 53 - SUPPLIES           | 53140 - HARDWARE SUPPLIES            |
| 8641 | 50 - LIBRARY               | 50221751 - LIB COMM ENGAGE YOUTH CENTRAL | Expense      | 54 - PURCHASED SERVICES | 54520 - CONFERENCES AND TRAINING     |
| 8642 | 15 - FINANCE               | 15200 - FIN BUDGET AND PROGRAM MGMT      | Expense      | 54 - PURCHASED SERVICES | 54645 - CONSULTING SERVICES          |
| 8643 | 31 - POLICE                | 31156 - PARKING                          | Expense      | 59 - TRANSFER OUT       | 59213 - TRANSFER OUT TO PARKING UTIL |
| 8644 | 20 - ADMIN                 |  |              |                         |                                      |

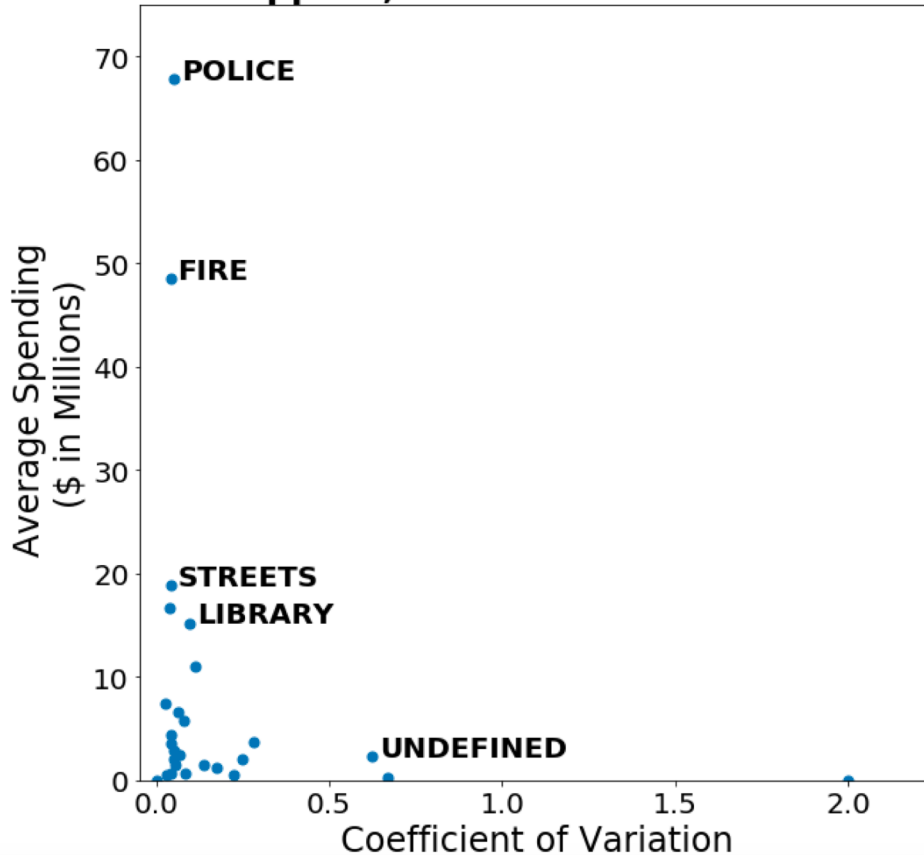
# What our Data Looks Like?

- 8500+ budget entries
- 20+ agencies (departments)
- 80+ services
- Across 4 years

# Which Agencies to Pay Attention to?



## Variation in Salaries & Benefits, Supplies, and Purchased Services



- Which agencies have a non-negligible amount of total spending or variation in spending?
- Focus on agencies with most spending and then look for variation within

$$CV (\%) = \left( \frac{\text{Standard deviation}}{\text{Mean}} \right) \times 100$$

# Inflation Adjustment Metrics

- *Expenditures in Year X*  
$$= \text{Expenditures in Year Y} \times \frac{CPI_X}{CPI_Y}$$
- Consumer Price Index (2015-2018):  
2.37%, 2.40%, 2.45%, 2.51%

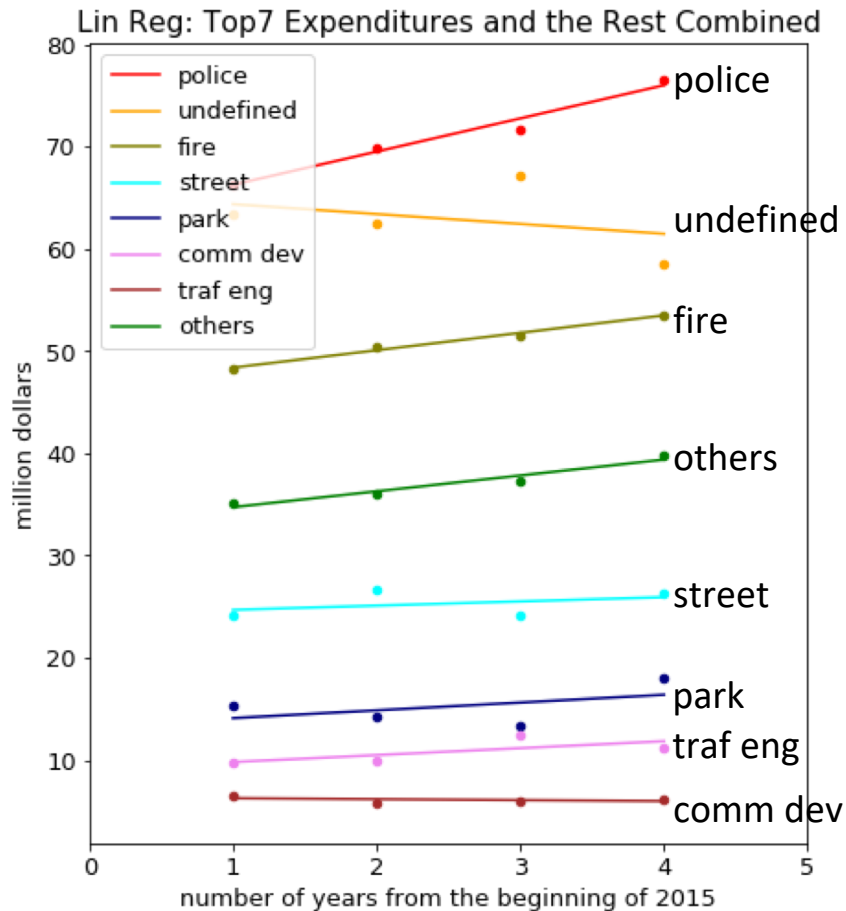
Retrieved from

<https://www.bls.gov/regions/midwest/data/consumerpriceindexhistoricalus table.pdf>

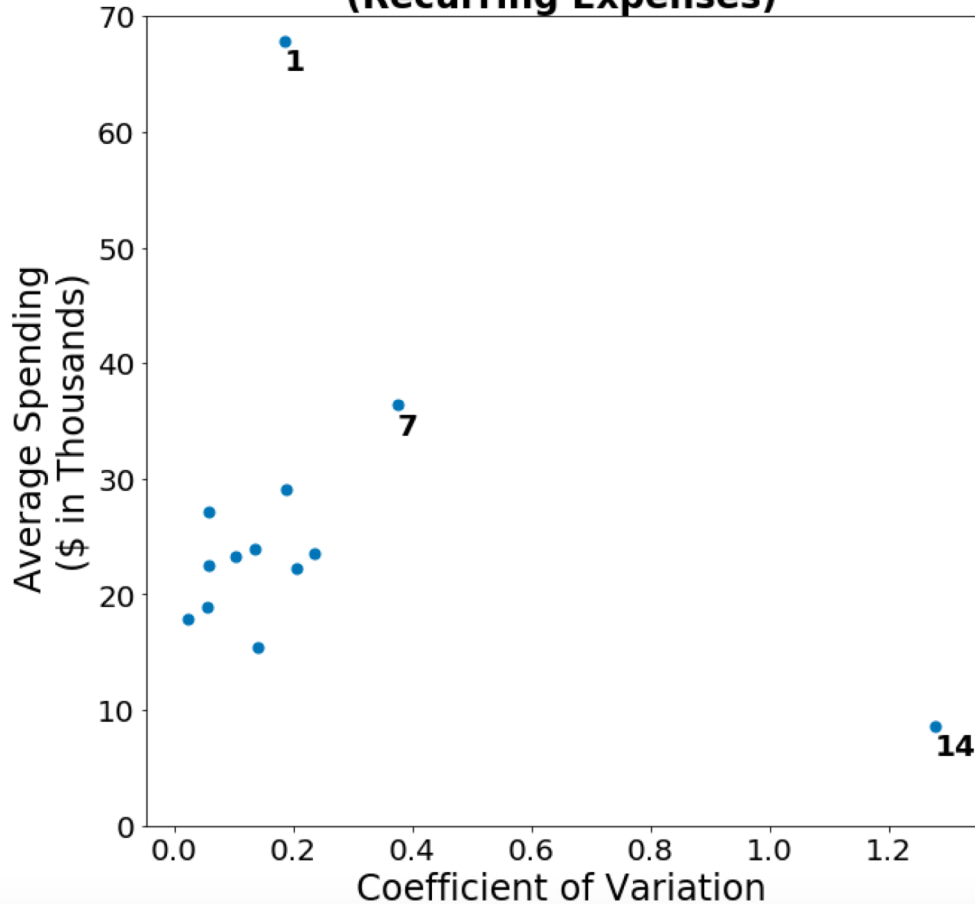


# Linear Regression Lines

Who is important?

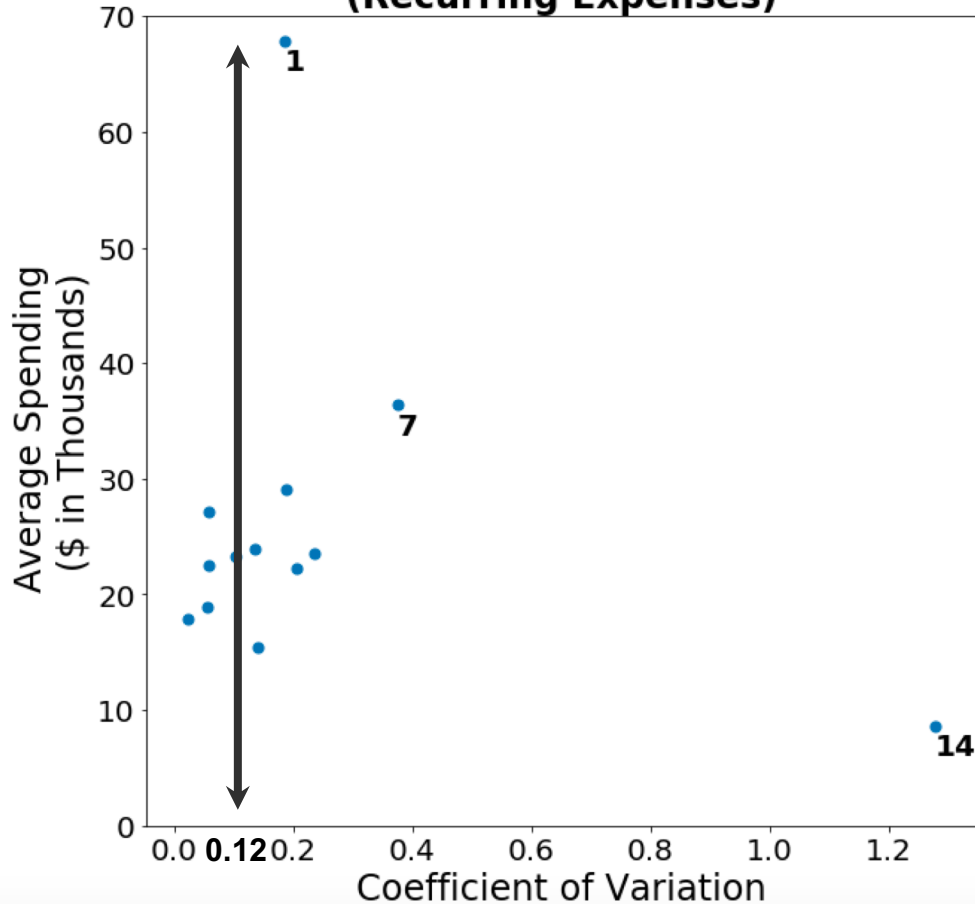


## Variation in Fire Station Spending (Recurring Expenses)



- Which stations are worth investigating further?
- Less variation = more predictive power
- Can use to more confidently predict spending

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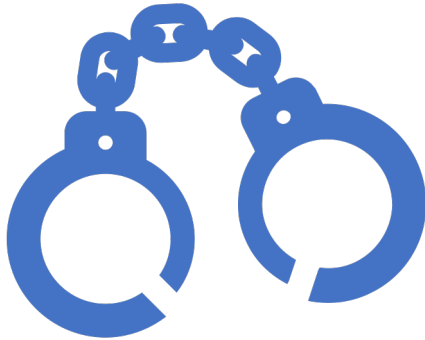


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# What happens within Police?

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Complicated at a Glance:

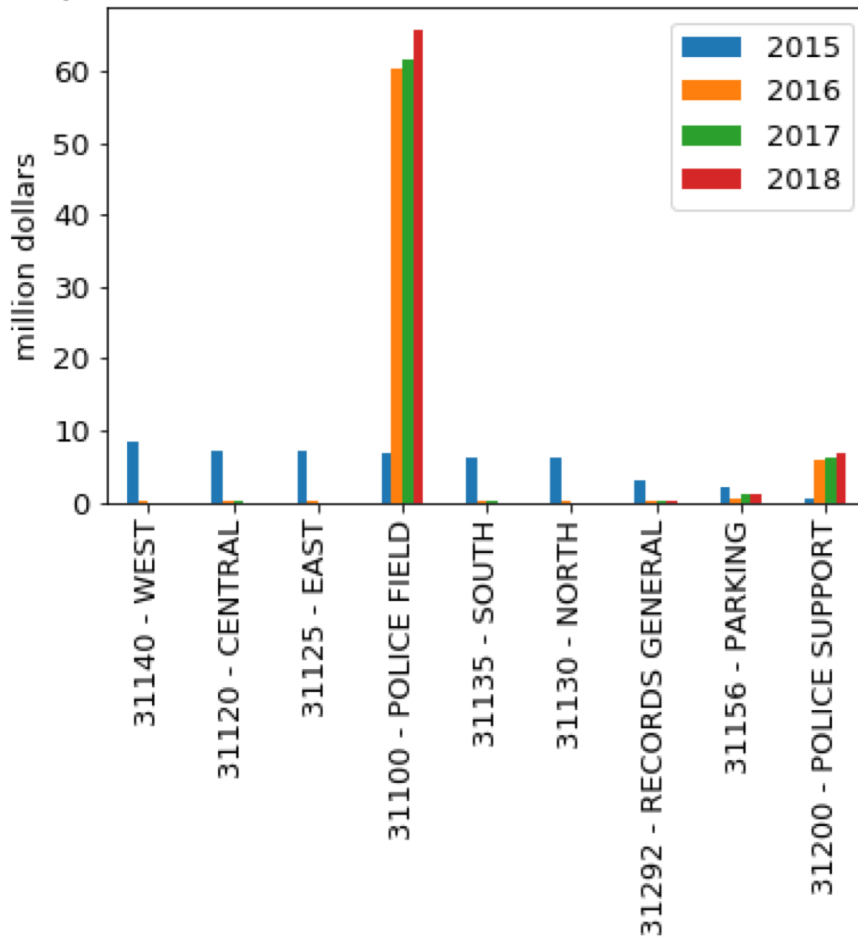
- Greatest total expenditures
- 40+ services within

Test:

- Evenly distributed?
- Skewed toward a few services?

Single  
Leading  
Expenditure  
in Police  
Field

Expenditures of Various Police Services across Years





Questions?