Introduction

Employee compensation is one of the largest financial commitments for any municipality. Understanding how salaries, overtime, and benefits evolve across different departments allows leaders to manage resources, identify inefficiencies, and improve fairness. This report analyzes payroll data from the City and County of San Francisco to uncover spending patterns, cost drivers, and structural disparities.

Problem Statement

The City of San Francisco faces challenges in ensuring fair and efficient employee compensation across departments. Pay disparities, rising overtime costs, and inconsistent benefits allocation can affect workforce satisfaction and strain public budgets.

Objectives

1. Break down total compensation into salary, benefits, and overtime components.

2. Compare compensation patterns across organization groups, departments, and job families.

3. Identify departments with high overtime reliance or unusual benefit ratios.

4. Provide data-driven insights to support staffing, budgeting, and policy changes.

Target Audience

- City administrators and finance departments
- HR and policy makers focused on pay fairness
- Citizens interested in government spending transparency

Dataset Description

Dataset Source

- 1,036,789 employee records
- Years: 2013–2025
- Real payroll data from the City of San Francisco
- Includes salary, overtime, benefits, and job details

Time Range

2013–2025

Data Dictionary

Column Name	Description	Type
Year	Reporting year	int
Organization Group	(e.g., Public Protection, Community Health)	category
Department	Department name	category
Union	Union name	category
Job Family	Job family name	category
Job	Job title	category
Salaries	Base salary paid	float
Overtime	Overtime compensation	float
Other Salaries	Add-ons, premium pays	float
Total Salary	Salaries + Other Salaries + Overtime	float
Retirement	City retirement contributions	float
Health/Dental	Health benefit value	float
Other Benefits	Misc. benefits	float
Total Benefits	Retirement + Health + Other benefits	float
Total Compensation	Total Salary + Total Benefits	float
Overtime %	Overtime ÷ Total Salary	float
Benefits %	Total Benefits ÷ Total Compensation	float
Pay-to-Benefit Ratio	Total Salary ÷ Total Benefits	float
Overtime Ratio		float

Data Handling & Preparation

- Removed leading/trailing spaces

- Converted all monetary columns to numeric
- Handled missing values
- Recalculated important metrics
- Removed duplicated employee entries
- Filtered unrealistic outliers

Analysis and Findings

Total Compensation Patterns

- Public Protection consistently has the highest total compensation.
- Public Works follow.

Overtime Patterns

- Overtime is highly concentrated in a few departments:

    - **Fire Department**

    - **Sheriff's Department**

    - **Police**

These departments show structural reliance on overtime.

Benefits Structure

- Benefits remain stable but vary widely across job families.

Recommendations

Target Overtime-Heavy Departments

- Review staffing models for Fire, Sheriff, and Health.

- Consider hiring to offset reliance on overtime.

Standardize Benefit Structures

- Adjust benefit packages for departments with unusually low benefit percentages.

Department-Level Budget Monitoring

- Public Protection should be monitored more closely because changes there strongly affect citywide totals.

Limitations and Assumptions

- Missing hours worked prevents productivity analysis.

- Overtime may be influenced by emergencies not reflected in the data.

- Job titles change over time; grouping may not be perfect.

References

- San Francisco Open Data Portal
- Project guidelines document