

# HW4

Atharv Vani

2025-02-11

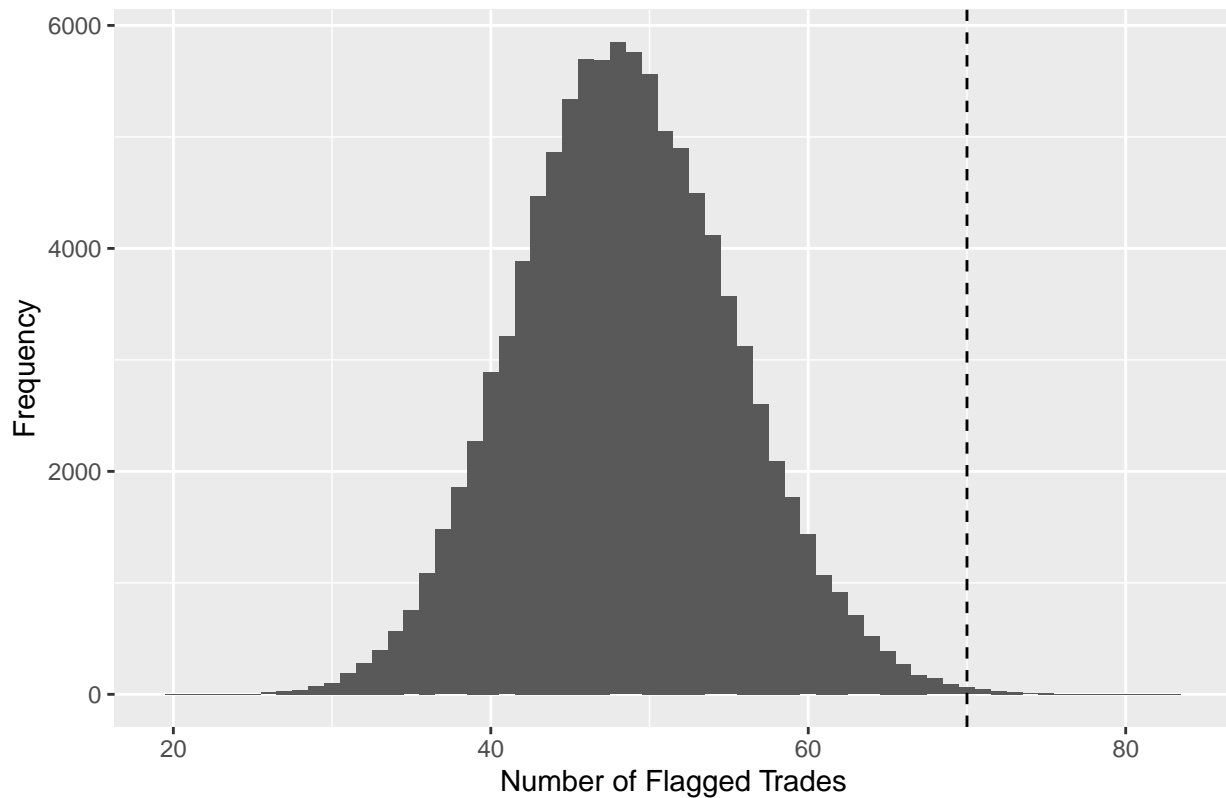
Name: Atharv Vani

UT EID: amv4278

Github Link:

## Problem 1

### Monte Carlo Distribution of Flagged Trades Under Null Hypothesis



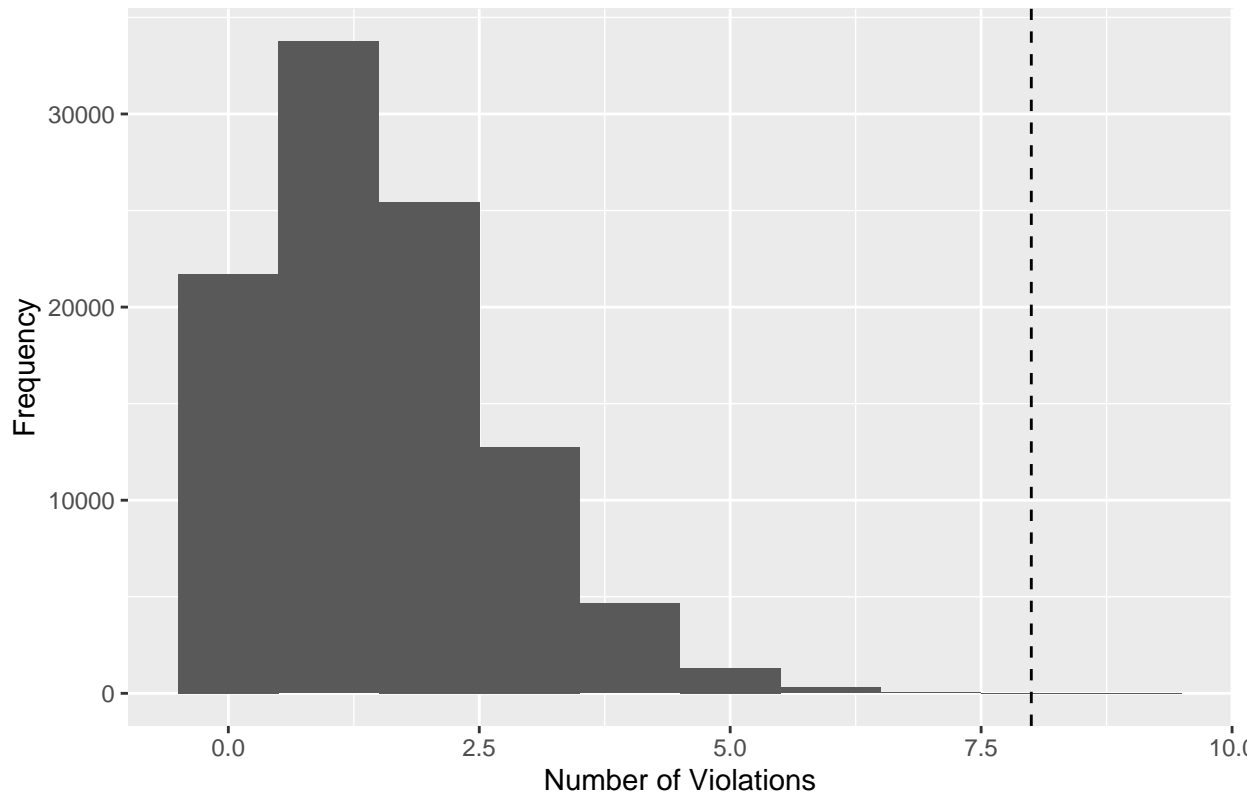
```
## [1] "P-Value: 0.0018"
```

```
## [1] "The p-value is low, suggesting that the number of flagged trades may be higher than expected under the null hypothesis."
```

Null Hypothesis: The null hypothesis being tested is that the rate of flagged trades is equal to the baseline probability of 2.4%. Test Statistic: The test statistic used is the number of flagged trades observed. A Monte Carlo simulation is used to generate the probability distribution of flagged trades under the null hypothesis. The p-value is computed to assess whether the observed number of flagged trades is significantly different from expectation.

## Problem 2

### Monte Carlo Distribution of Violations Under Null Hypothesis

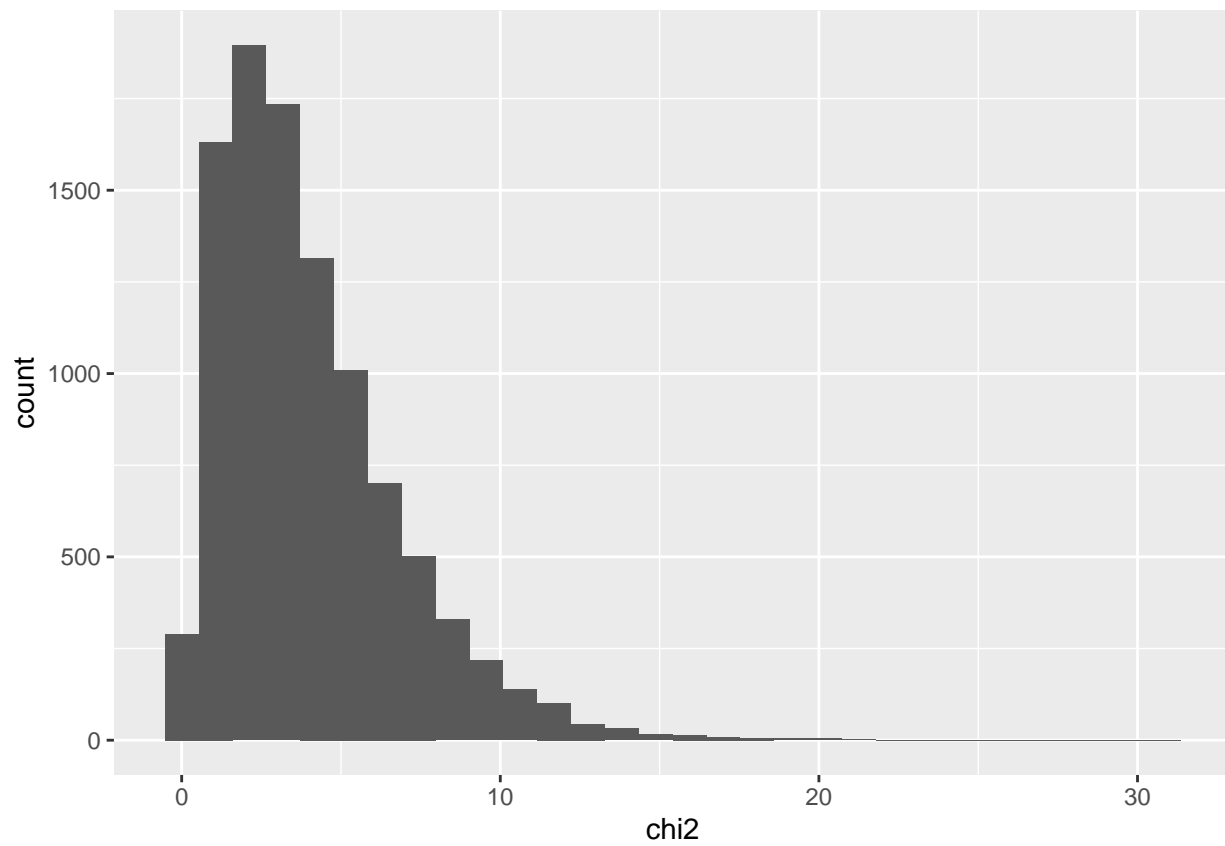


```
## [1] "P-Value: 5e-05"
```

```
## [1] "The p-value is low, suggesting that Gourmet Bites may have a higher violation rate than expected"
```

Null Hypothesis: The null hypothesis being tested is that Gourmet Bites has the same health code violation rate as the citywide average of 3%. Test Statistic: The test statistic used is the number of health code violations observed at Gourmet Bites during inspections. A Monte Carlo simulation is performed to estimate the probability distribution of this test statistic under the null hypothesis. The p-value is computed to determine whether the observed violation rate is significantly different from the expected rate.

### Problem 3



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## [1] "P-Value: 0.0125"
```

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## [1] "The p-value is low, suggesting that the jury selection process overseen by this judge significant"
```