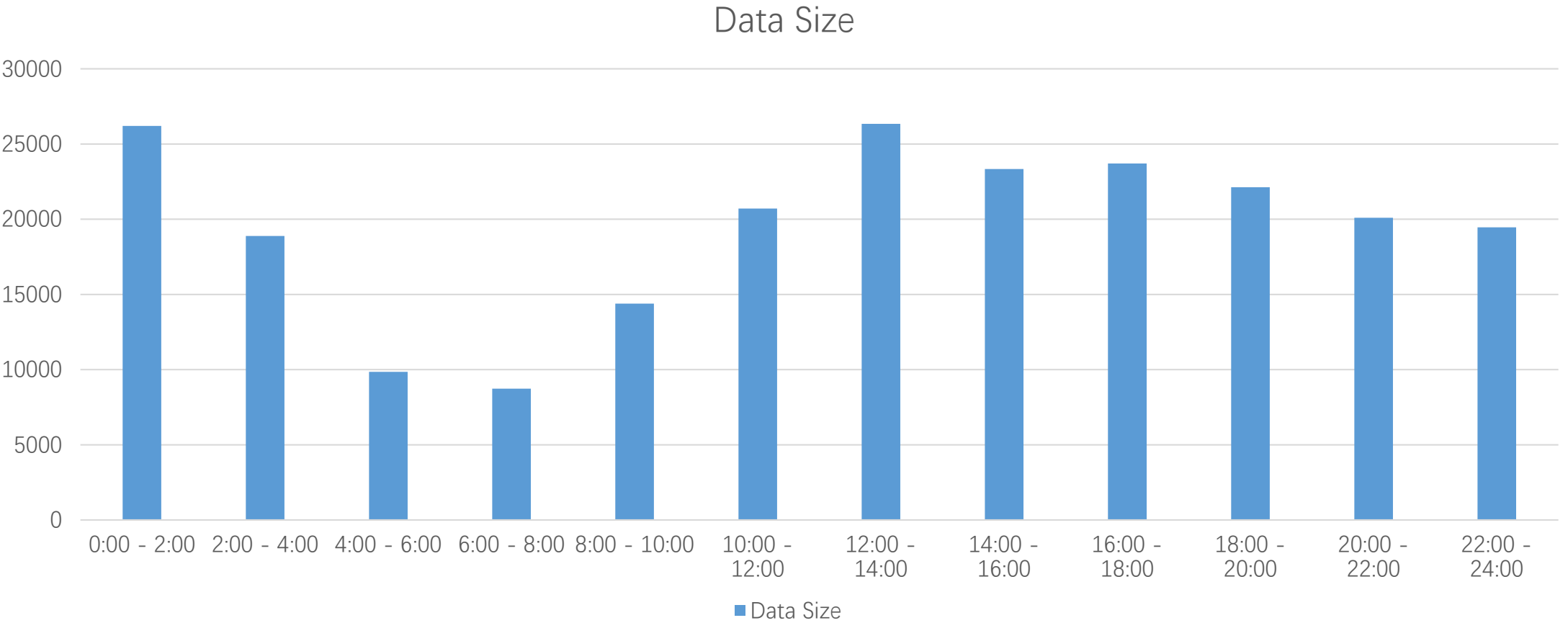


# TIME PERIOD PREDICTION *(Yunjie Zhao)*

- Algorithm: Multinomial Logistic Regression
  - Solver: L-BFGS
  - Features:
    - YEAR, MONTH, DAY, EVENT
    - CRIME\_CATEGORY, ZIP\_CODE, LONGITUDE, LATITUDE
  - Output:
    - TIME\_PERIOD

# TIME PERIOD DISTRIBUTION



# Feature Engineering

- 5-Fold Cross Validation
- Accuracy : 11.26%
- Input: Year, Month, Day, Event
  - Accuracy: 11.60%
- Input: CrimeCategory, ZipCode, Longitude, Latitude
  - Accuracy: 11.26%

# Feature Engineering

- ZIPCODE : 900012
  - Event:0(Weekdays) : 13.08%
  - Event:1(Weekends) : 13.37%
  - Event:2(Holidays) : 13.81%
- CRIME\_CATEGORY
  - 6(LARCENY THEFT): 11.61%
  - 16(NARCOTICS): 12.70%
  - 23(VEHICLE / BOATING LAWS): 12.39%
- YEAR: 2010 AND MONTH:7
  - 11.91%
- ZIPCODE : 900012 AND CRIME\_CATEGORY:6
  - 14.94%

# Others

- Reduce to 4 Classes:
  - Time from 0:00 to 6:00: 54945
  - Time from 6:00 to 12:00: 43833
  - Time from 12:00 to 18:00: 73383
  - Time from 18:00 to 24:00: 61679
  - Accuracy: 31.38%
- Use Stochastic Gradient Descent (SGD Classifier)
- Loss Function: Logistic Regression
- Accuracy: 9.5%