SOCALRUG DATA SCIENCE HACKATHON

HACKATHON FINAL PRESENTATION

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Job Market Analysis

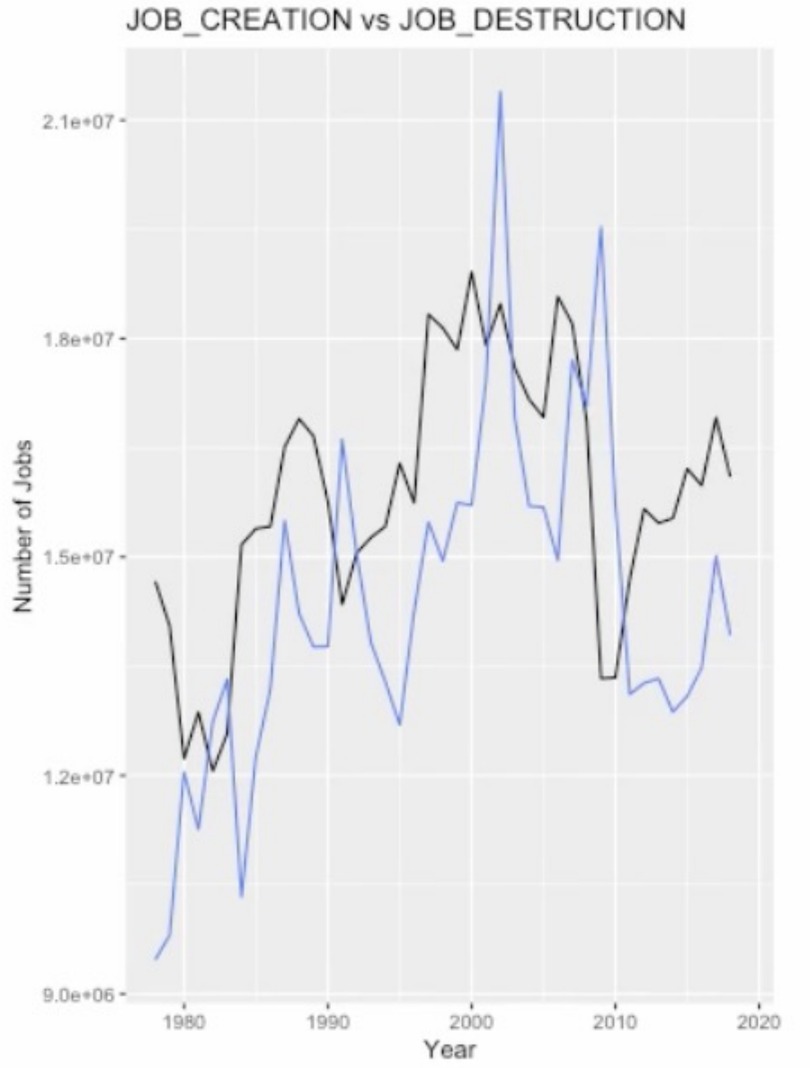
- Predict job creation and job destruction
- Predict establishment entry and establishement exit

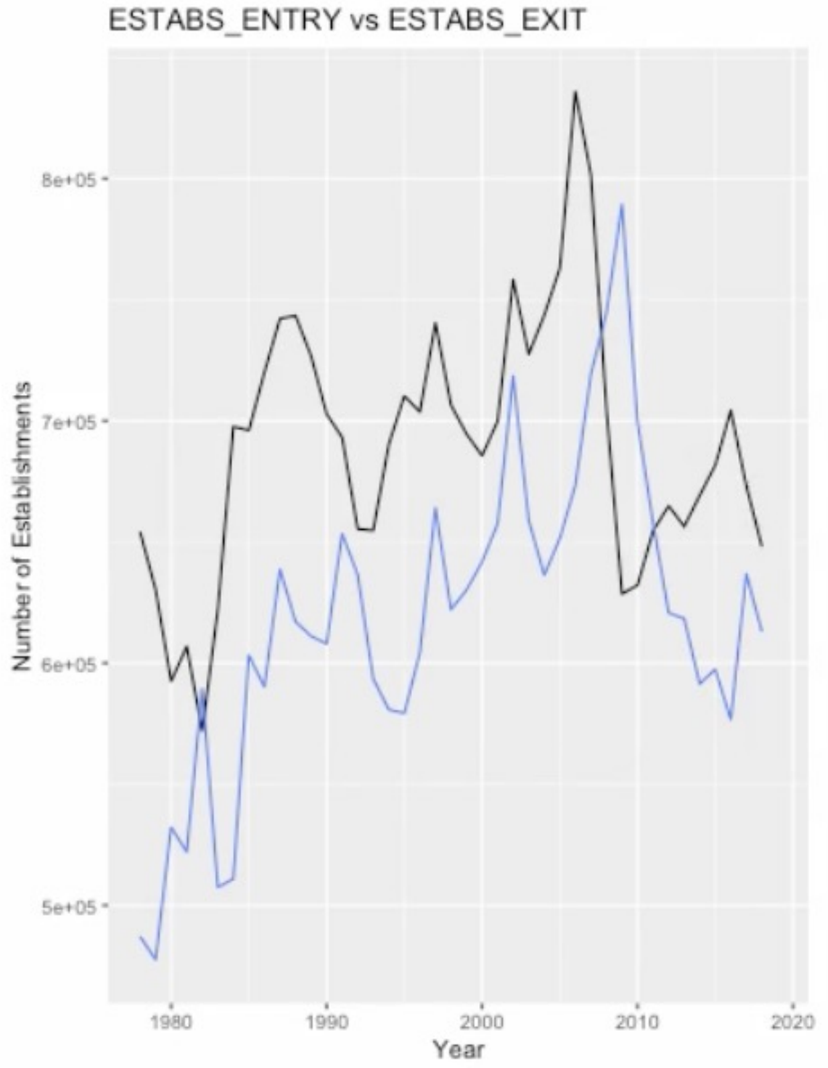
Data

Census :
Business Dynamics Statistics 1978-2019

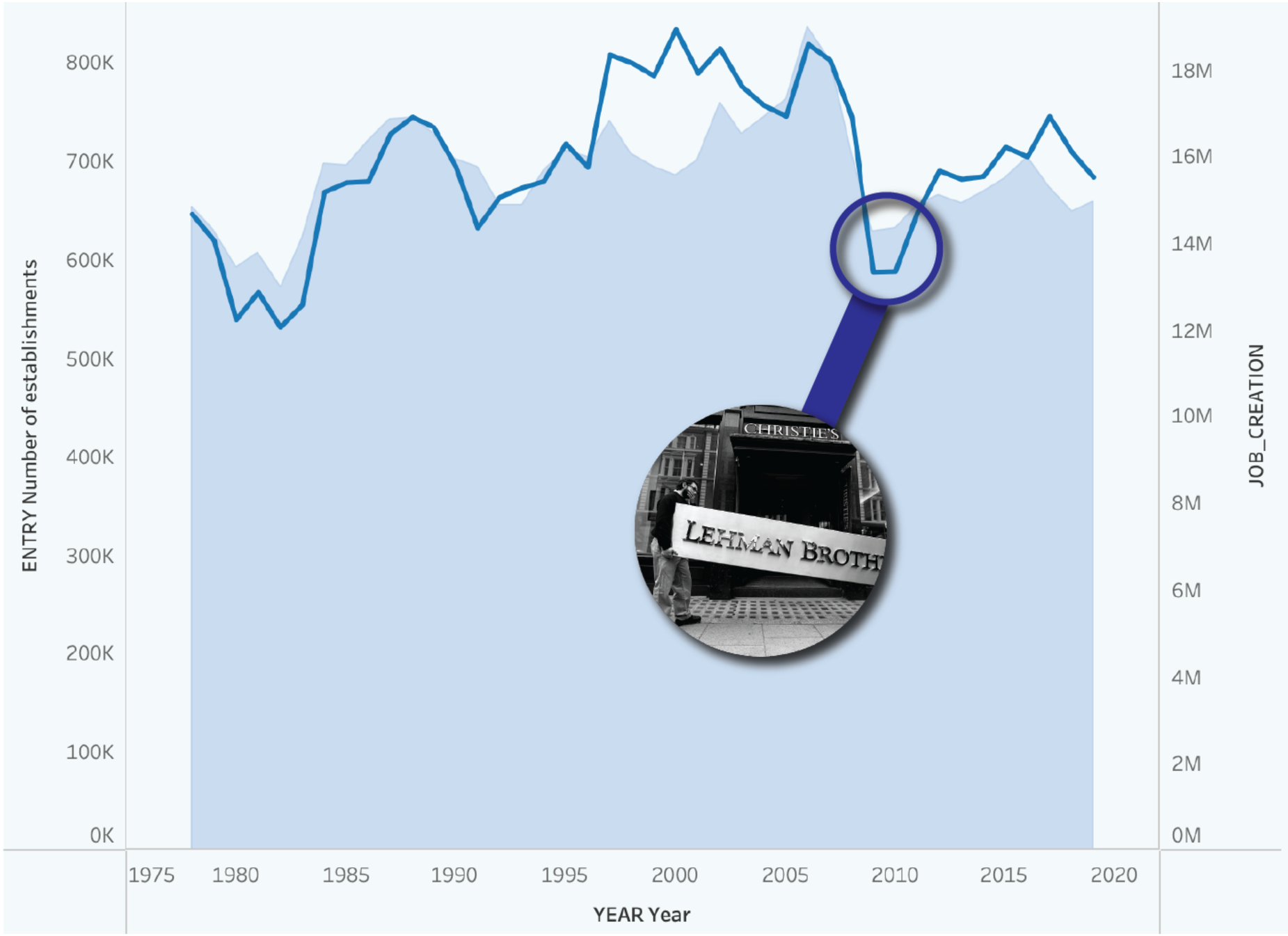
- **Descriptive Analytics**
- **Time Series Analysis**

Trend

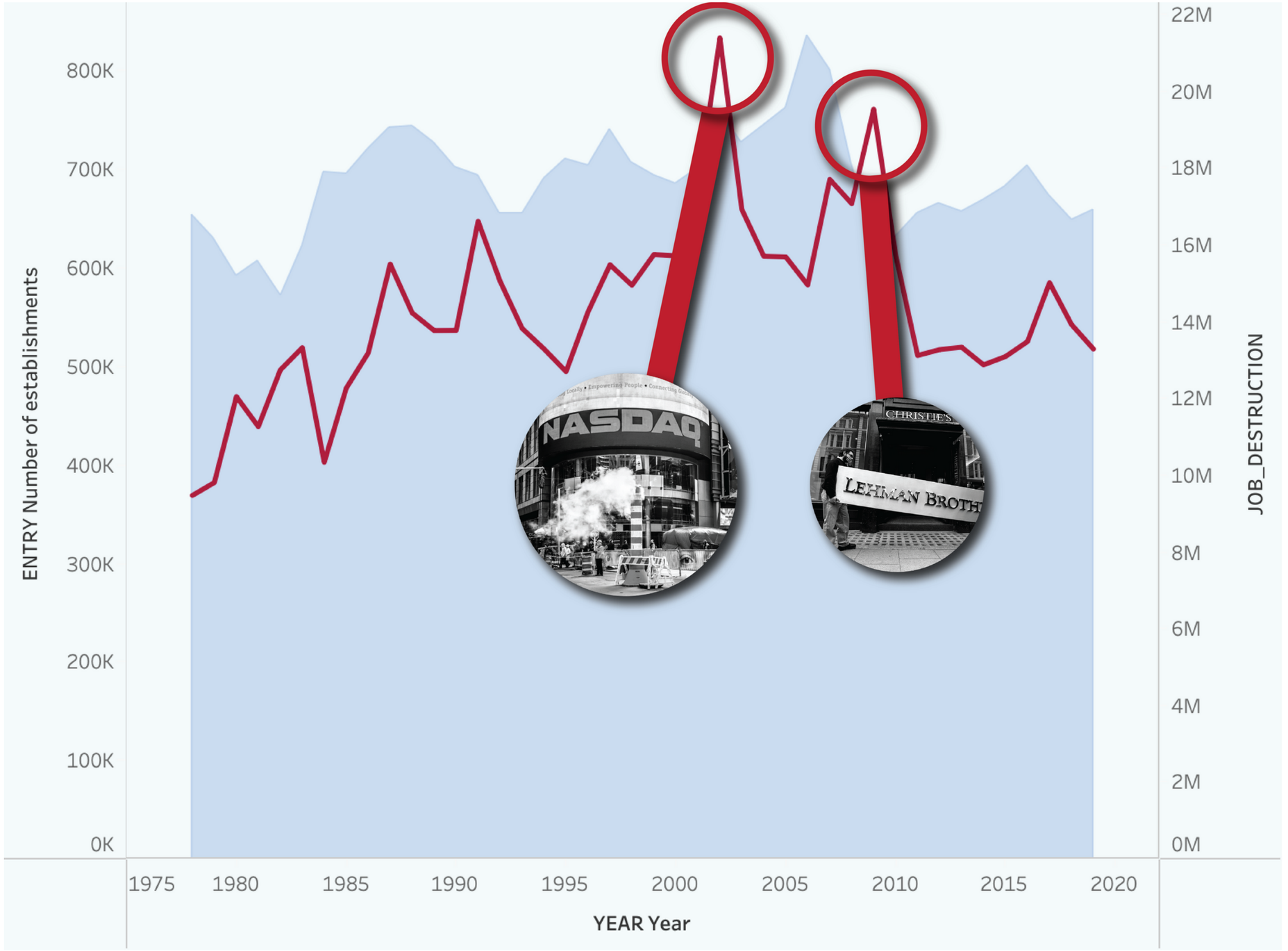

JOB_CREATION vs JOB_DESTRUCTION
Number of Jobs
2.1e+07
1.8e+07
1.5e+07
1.2e+07
9.0e+06
1980
1990
2000
2010
2020
Year


ESTABS_ENTRY vs ESTABS_EXIT
Number of Establishments
8e+05
7e+05
6e+05
5e+05
1980
1990
2000
2010
2020
Year

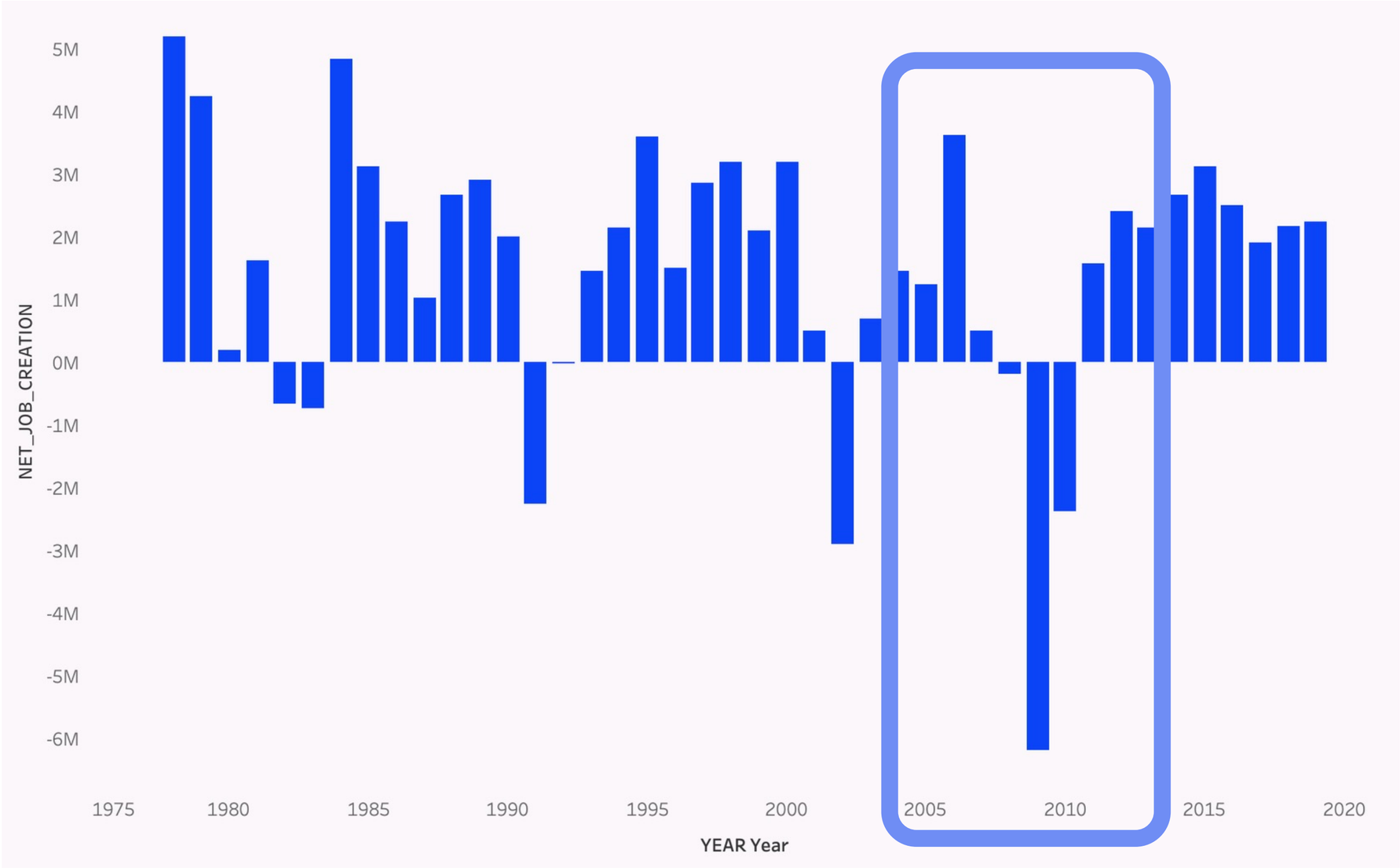
Job Creation



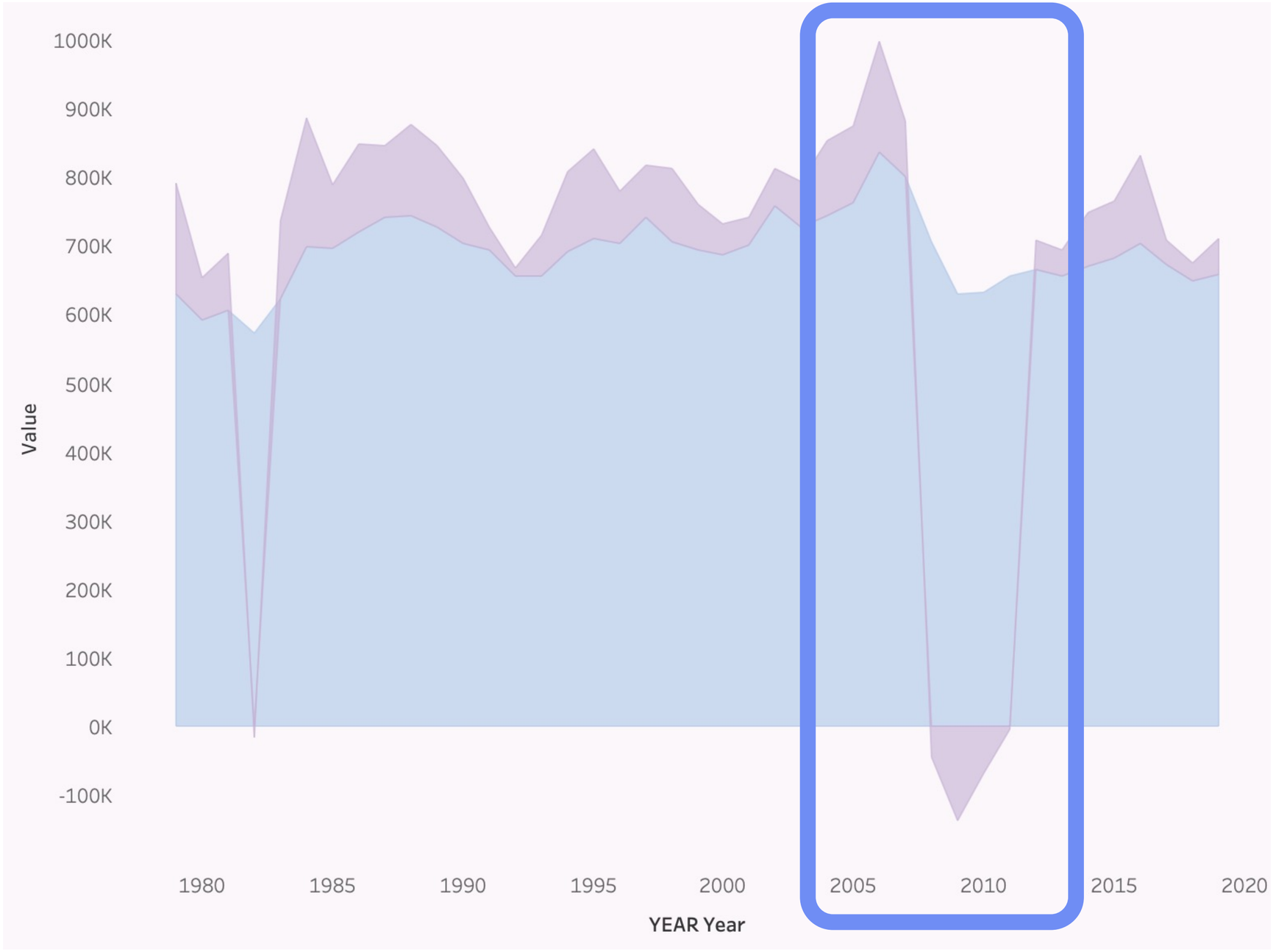
Job Losses


ENTRY Number of establishments
800K
700K
600K
500K
400K
300K
200K
100K
0K
22M
20M
18M
16M
14M
12M
10M
8M
6M
4M
2M
0M
JOB_DESTRUCTION
NASDAQ
CHRISTIE'S
LEHMAN BROTH
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
YEAR Year

Net Job Creation



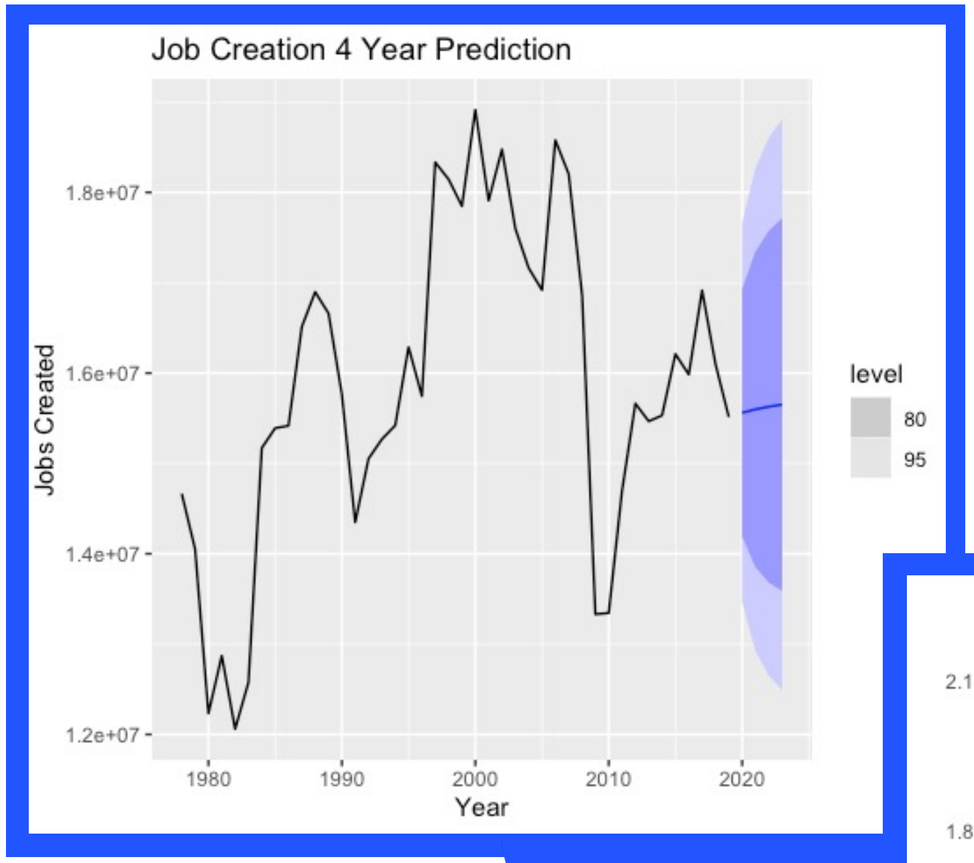
Net Job Creation

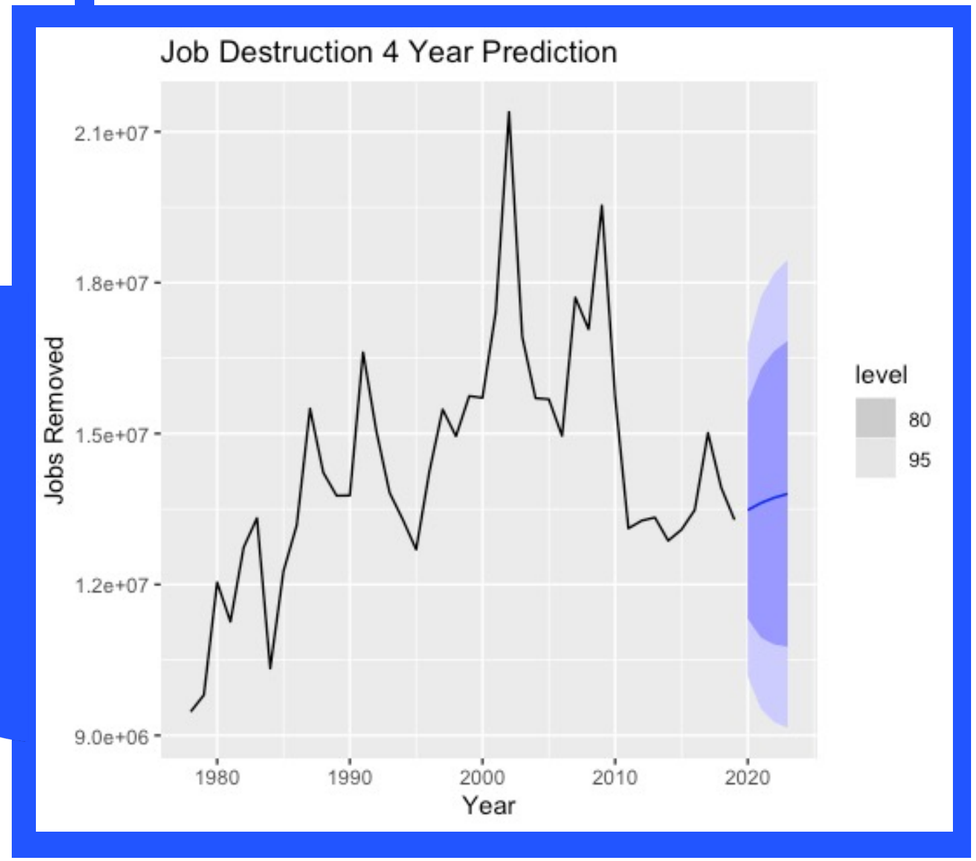


ARIMA

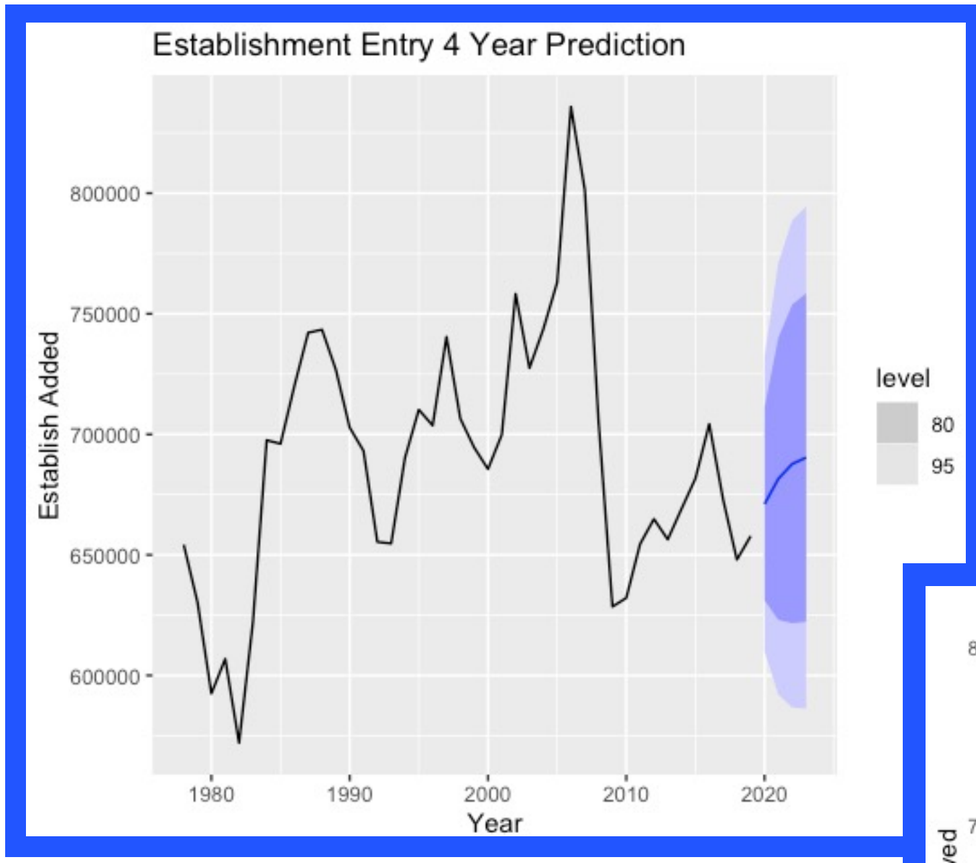
```
fit_1 <- model(dat1_ts, ARIMA(ESTABS_ENTRY))
report(fit_1)
augment(fit_1)
aug_1 <- augment(fit_1)
aug_1$.resid
forc_1 <- forecast(fit_1,  h = '4 years' )
autoplot(forc_1, dat1_ts) +
  labs(x = "Year", y = "Establish Added", title = "Establishment Entry 4 Year Prediction")
```

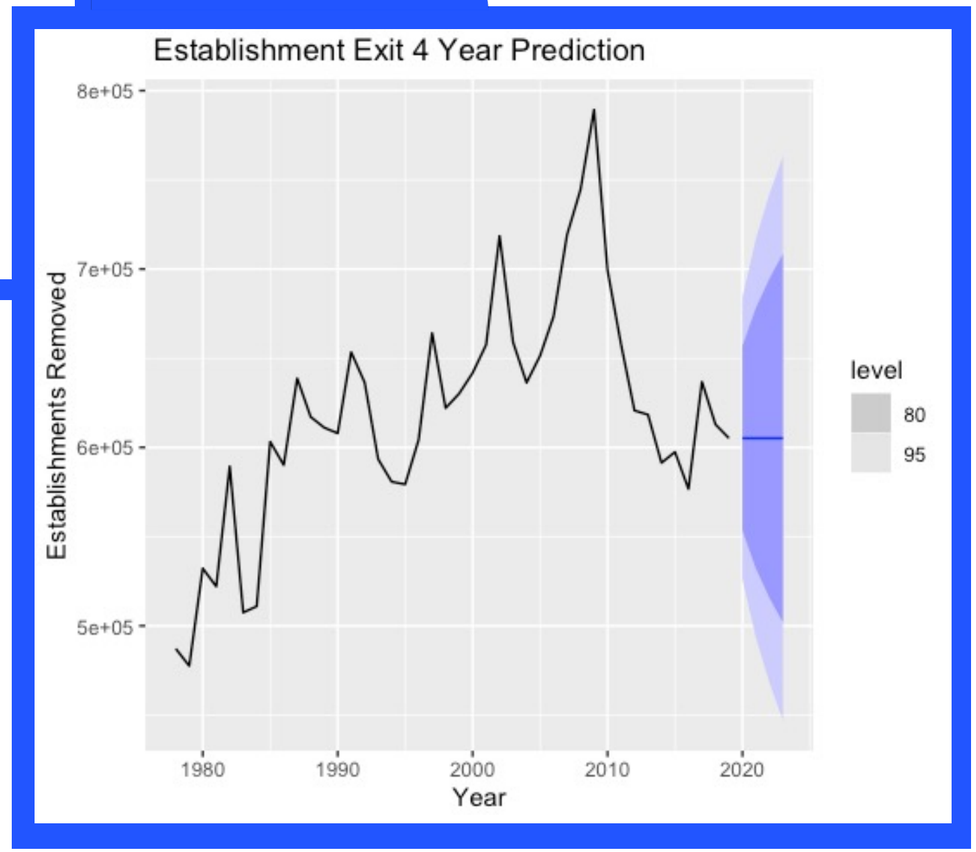
Forecast


Job Creation 4 Year Prediction
Jobs Created
1.8e+07
1.6e+07
1.4e+07
1.2e+07
1980
1990
2000
2010
2020
Year
level
80
95


Job Destruction 4 Year Prediction
Jobs Removed
2.1e+07
1.8e+07
1.5e+07
1.2e+07
9.0e+06
1980
1990
2000
2010
2020
Year
level
80
95

Forecast


Establishment Entry 4 Year Prediction
Establish Added
800000
750000
700000
650000
600000
1980
1990
2000
2010
2020
Year
level
80
95

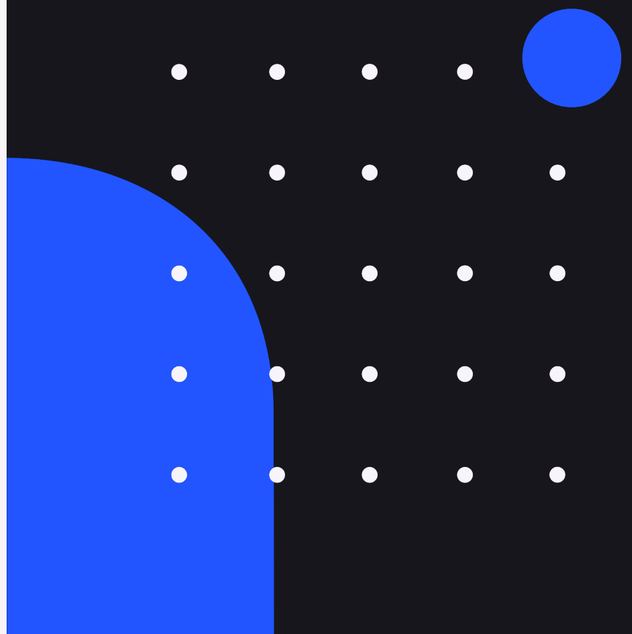

Establishment Exit 4 Year Prediction
Establishments Removed
8e+05
7e+05
6e+05
5e+05
1980
1990
2000
2010
2020
Year
level
80
95

Conclusion

Job market is **difficult** to **predict**

Usually **steady**, but heavily influenced by **irregular** events

Improve prediction with **more data**



THANK YOU