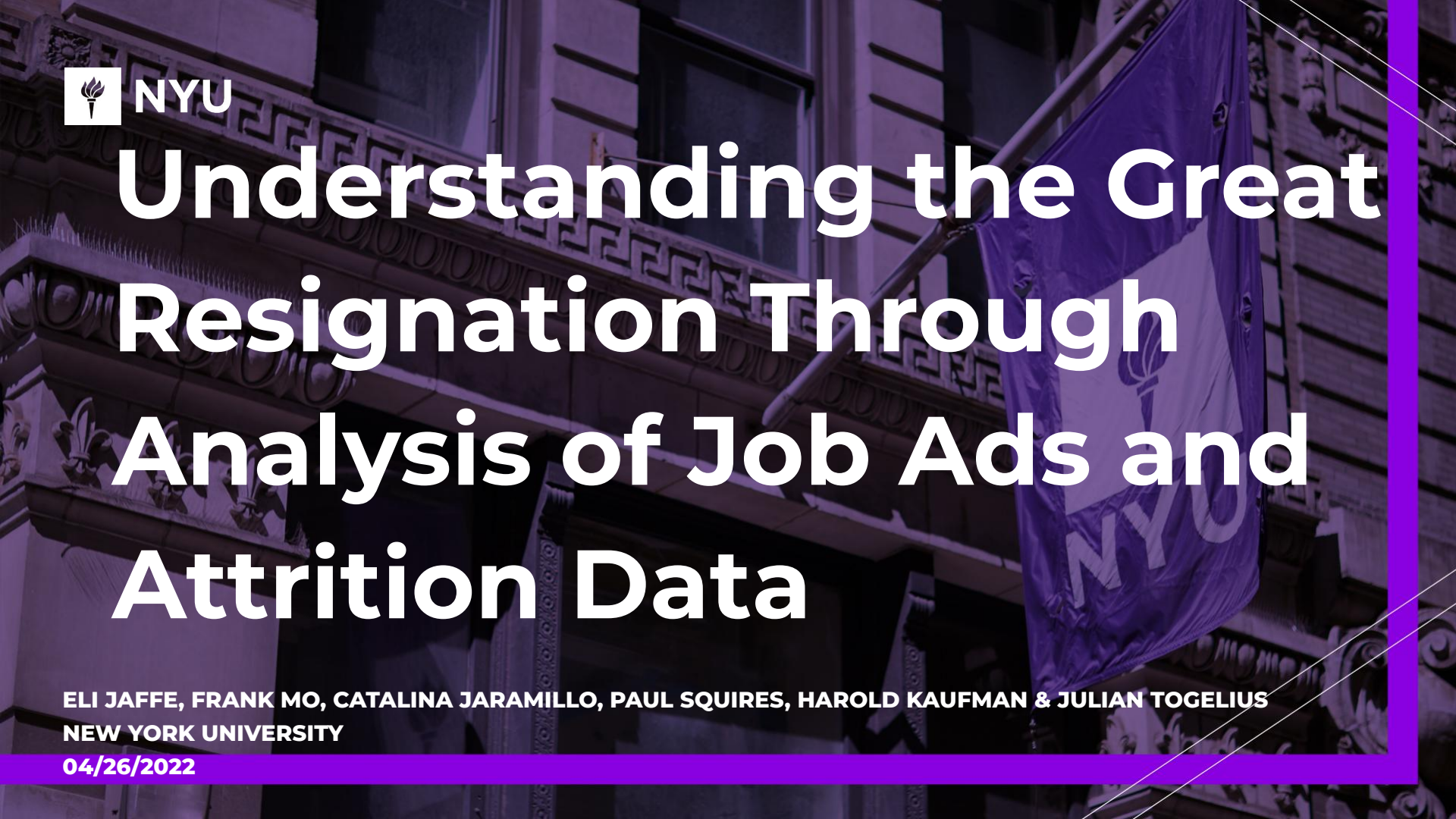

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Understanding the Great Resignation Through Analysis of Job Ads and Attrition Data

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NEW YORK UNIVERSITY

04/26/2022

Great Resignation: How to Respond?

- Disrupted labor market: Covid, Ukraine
- Changing worker expectations: Gen Z
- Skills “seller’s market”
- Strategy execution relies on organizations ensuring availability of capabilities
- Understanding how skills market is changing allows organizations to better respond
- Need of better forecasting methods

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Job Openings and Labor Turnover Survey, JOLTS

- Traditional source of labor market data: Industry retention, training & development, research & planning
- U.S. Bureau of Labor Statistics, BLS
- Data on total employment, job openings, hires, quits, layoffs & discharges, and other separations
- https://www.bls.gov/jlt/jltover.htm#dat

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Forecast Time...

- **Time Series**
  Data indexed in a timeline

- **Forecast**
  Prediction based on past and/or present data. Can be done using past behavior of the same variable or past/present levels of external variables

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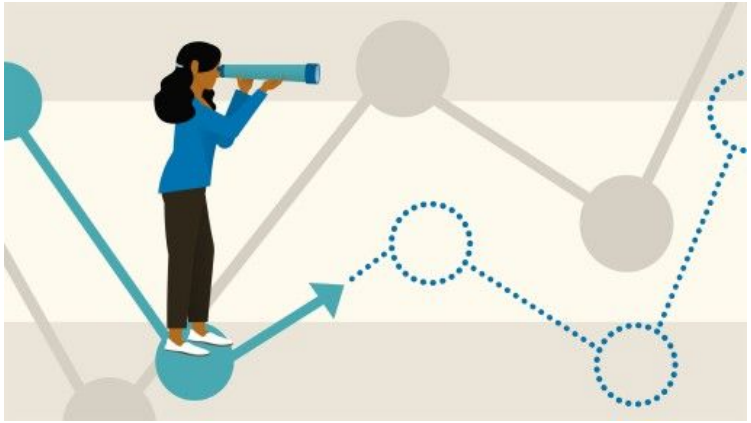
Forecast methodologies



- **Holts-Winter**: Identifies trend and seasonality
- **Prophet**: Bayesian based curve fitting, developed by Facebook
- **SARIMA**: Seasonal Auto Regressive Integrated Moving Average
- **Silverkite**: Conditional mean (time, day, week, etc.) and volatility/error; by LinkedIn

DATASETS

~2MM job ads processed per day, 10,000 US employers

Structured data: skills, job family, employers, etc

Technical jobs/skills focus

Independent source

Survey based

Macroeconomics focus

Lagging data

Candogram™

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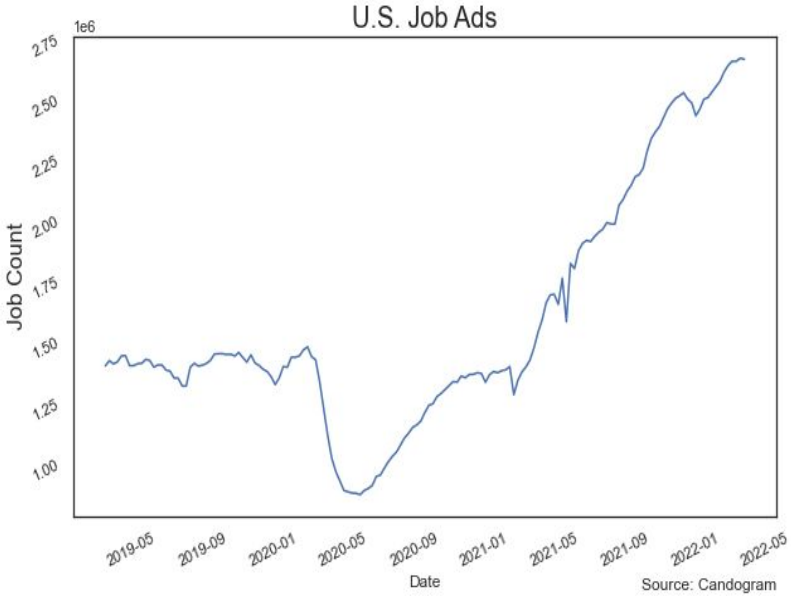
U.S. BUREAU OF LABOR STATISTICS

Data


U.S. Job Ads
1e6
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
Job Count
2019-05
2019-09
2020-01
2020-05
2020-09
2021-01
2021-05
2021-09
2022-01
2022-05
Date
Source: Candogram


U.S. Quits
2400
2200
2000
1800
1600
1400
1200
# of Quits (Thousands)
2019-05
2019-09
2020-01
2020-05
2020-09
2021-01
2021-05
2021-09
2022-01
Date
Source: JOLTS

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EMPLOYEE GROUPS

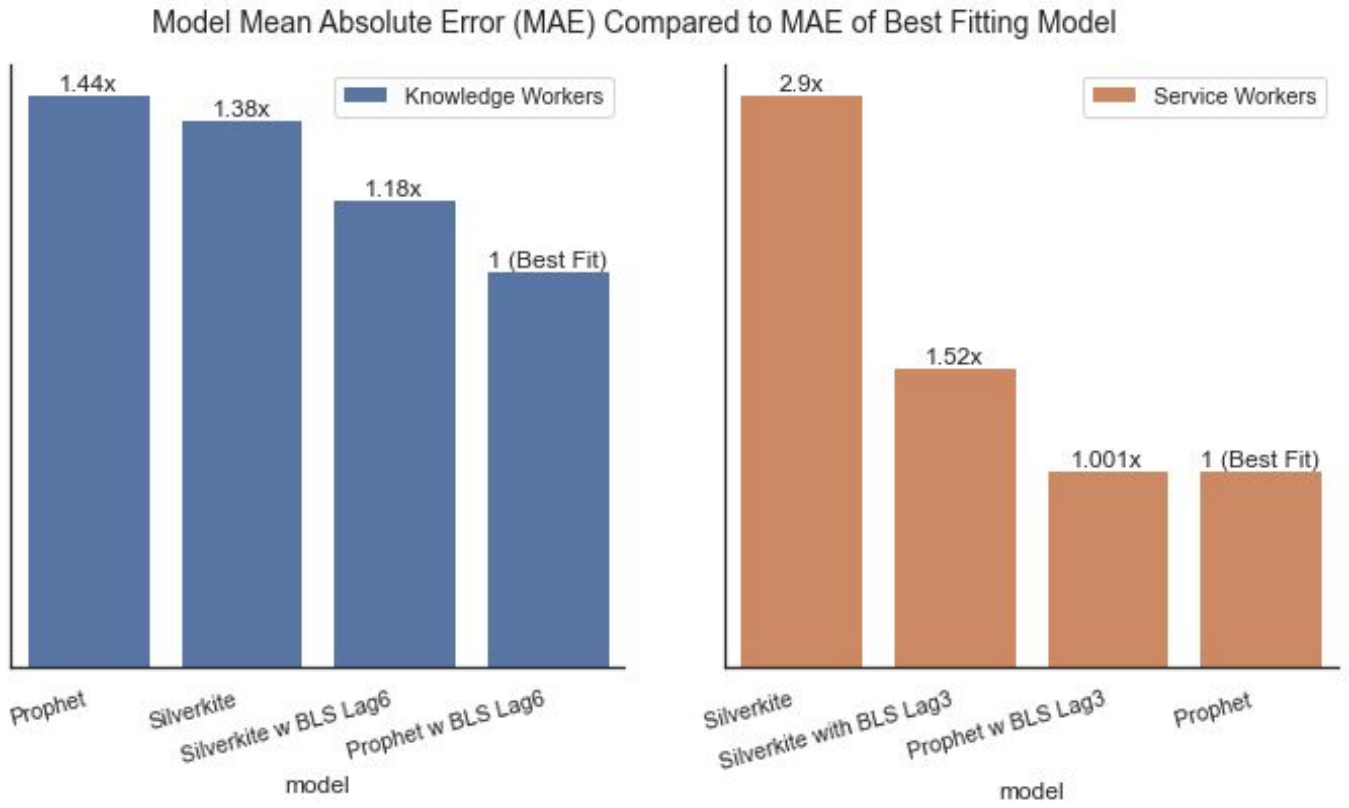
KNOWLEDGE WORKERS

- Information Technology
- Professional, Scientific, and Technical Services
- Finance and Insurance
- Management of Companies and Enterprises

SERVICE WORKERS

- Health Care and Social Assistance
- Accommodation and Food Services
- Educational Service

Results


Model Mean Absolute Error (MAE) Compared to MAE of Best Fitting Model
Knowledge Workers
1.44x
1.38x
1.18x
1 (Best Fit)
Prophet
Silverkite
Silverkite w BLS Lag6
Prophet w BLS Lag6
model
Service Workers
2.9x
1.52x
1.001x
1 (Best Fit)
Silverkite
Silverkite with BLS Lag3
Prophet w BLS Lag3
Prophet
model

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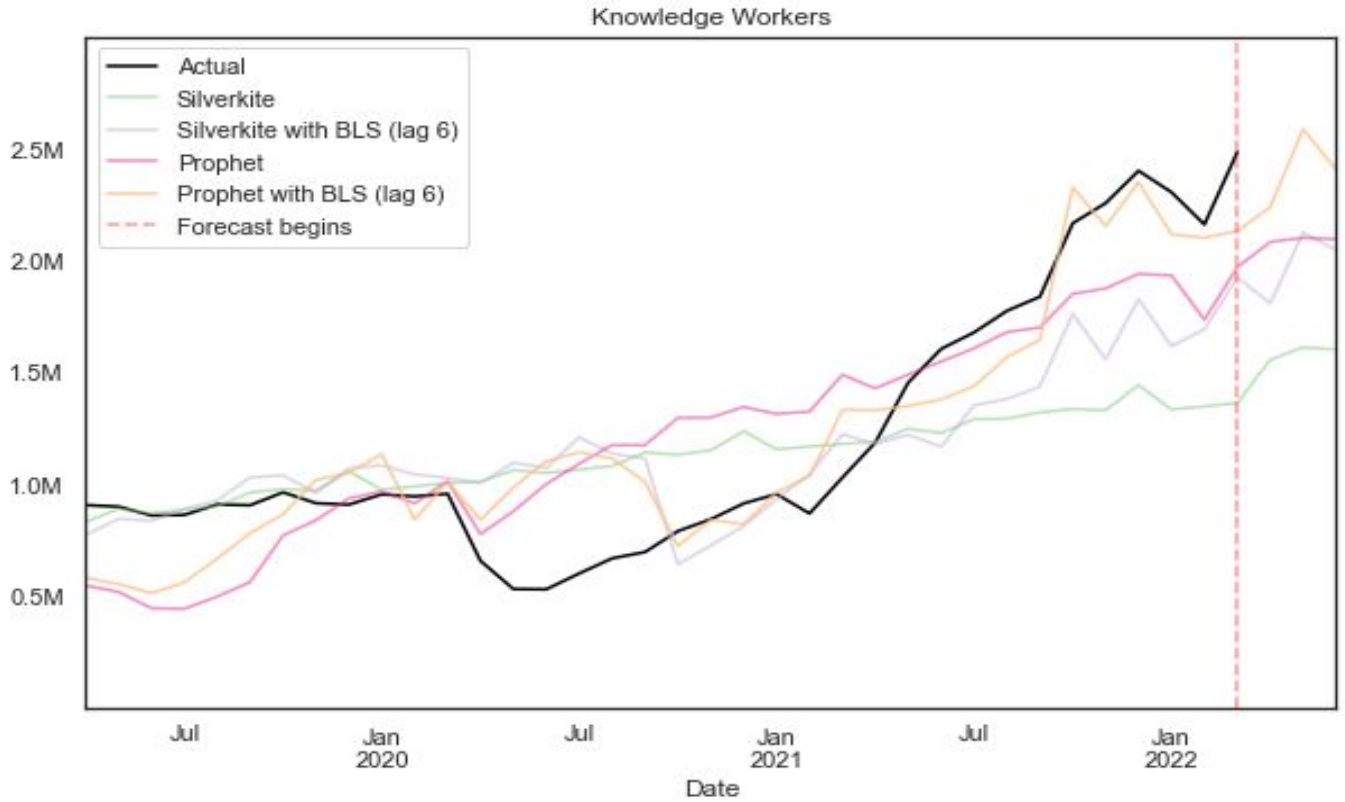
JOB AD FORECAST MODELS



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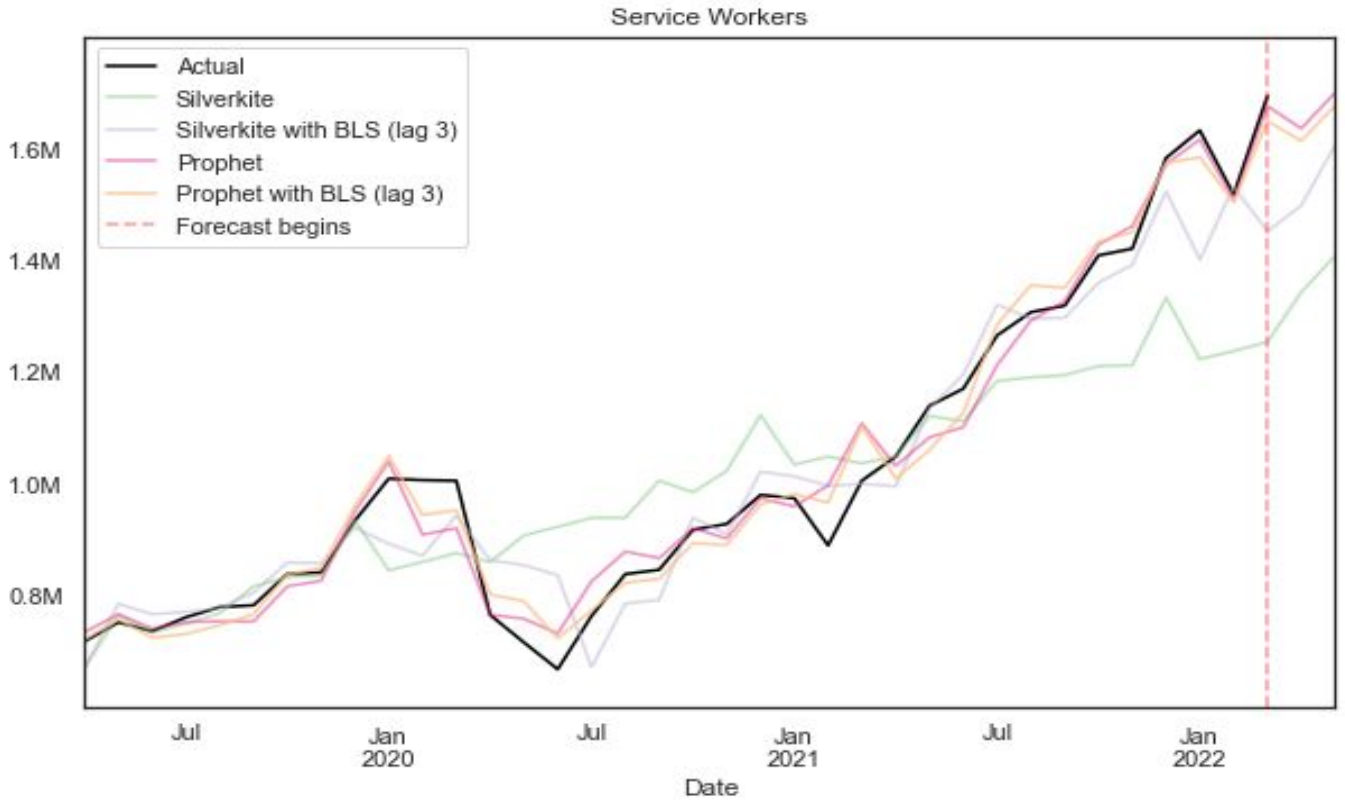
JOB AD FORECAST MODELS



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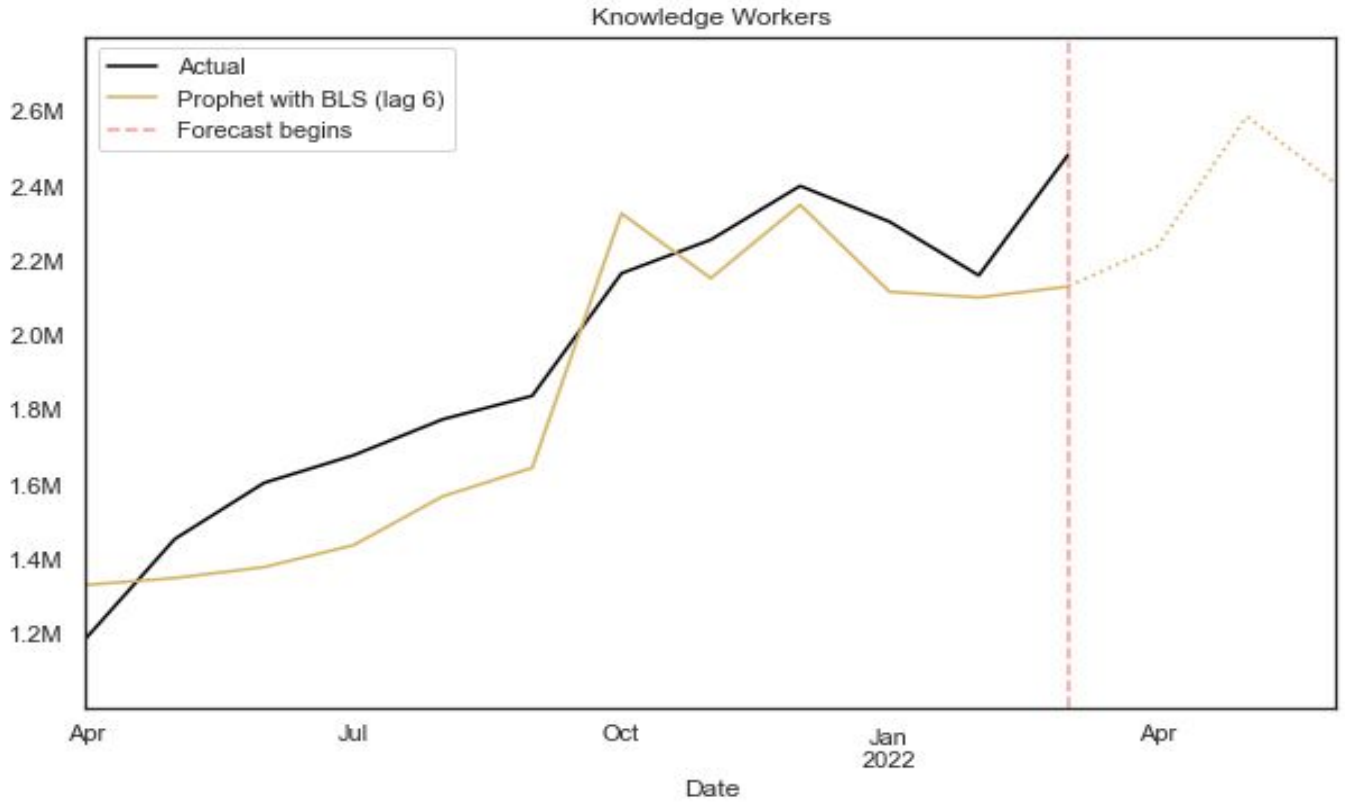
JOB ADS FORECAST



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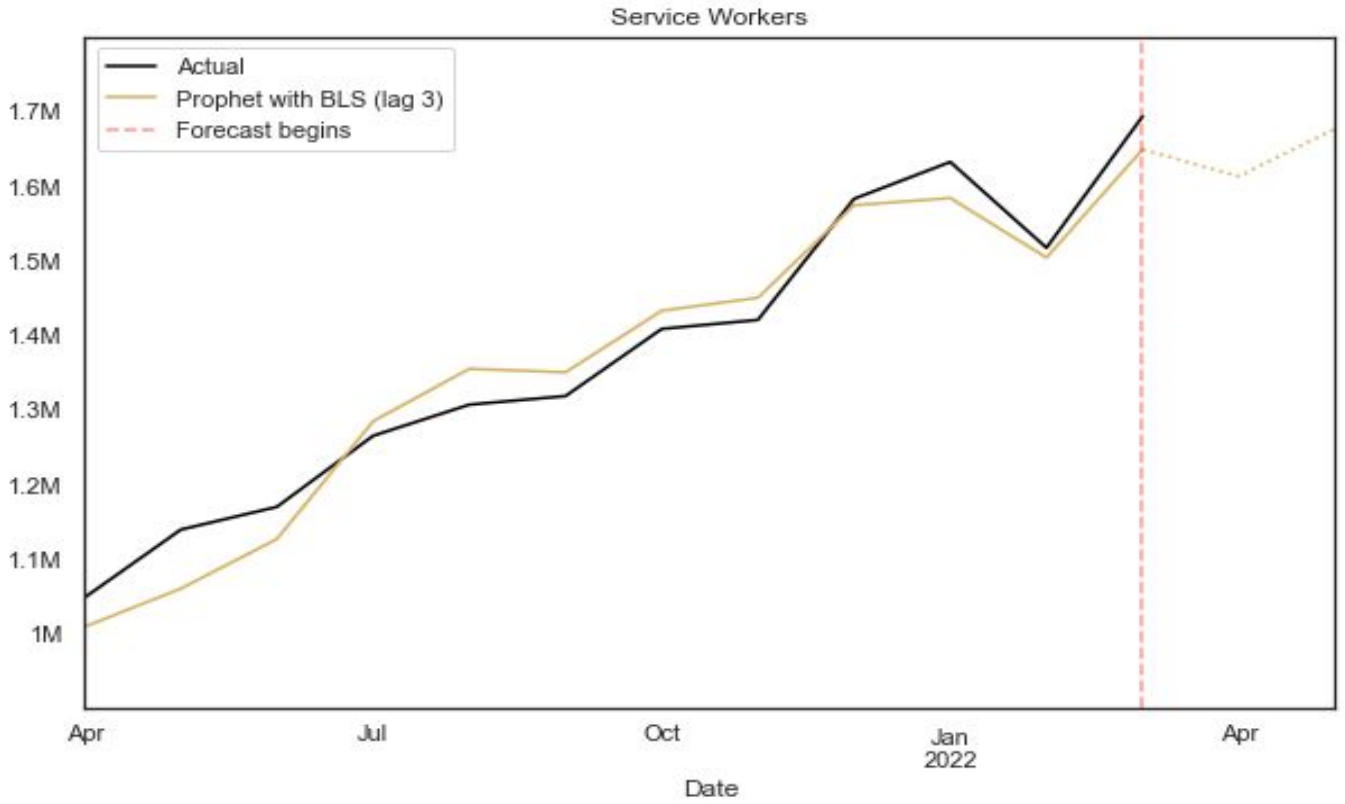
JOB ADS FORECAST



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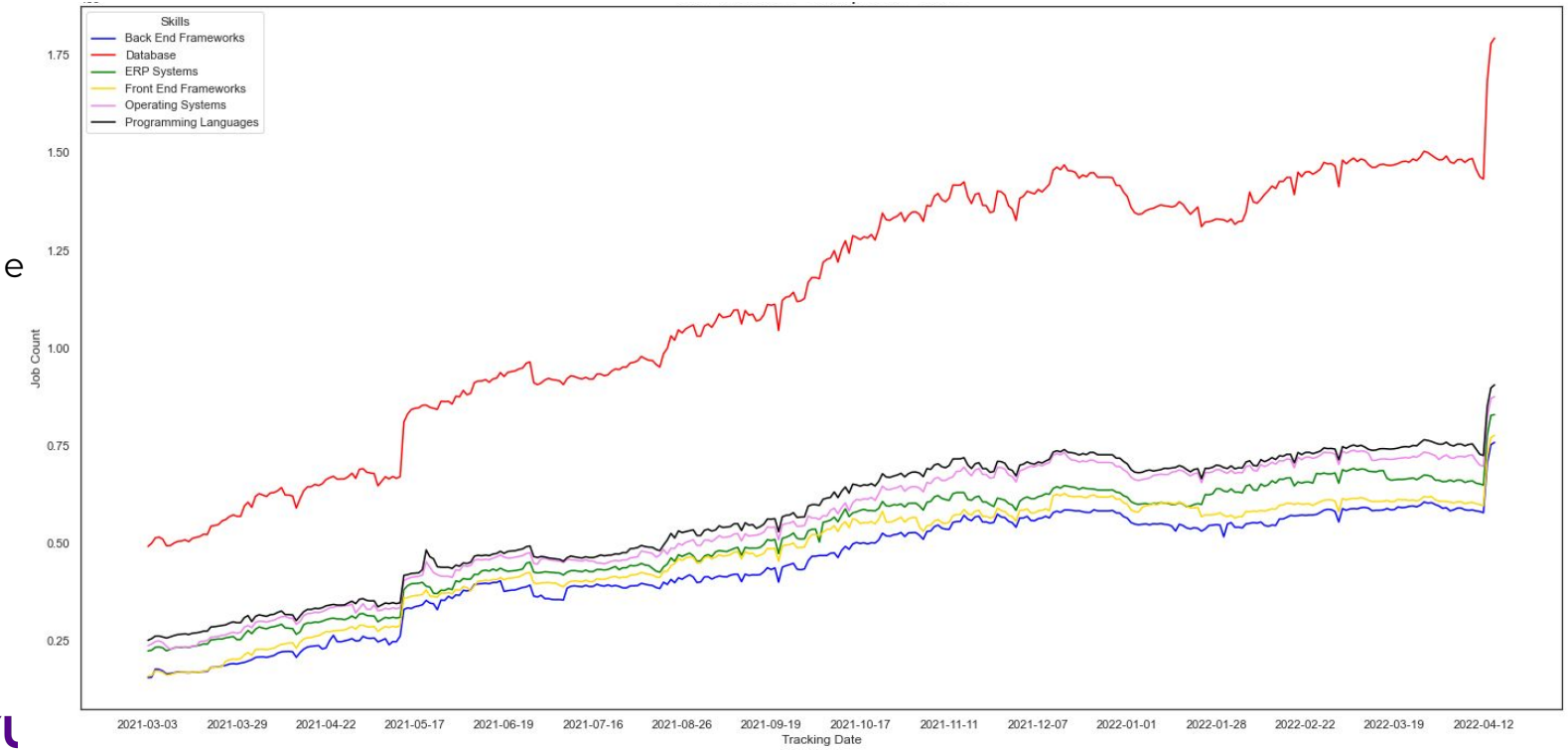
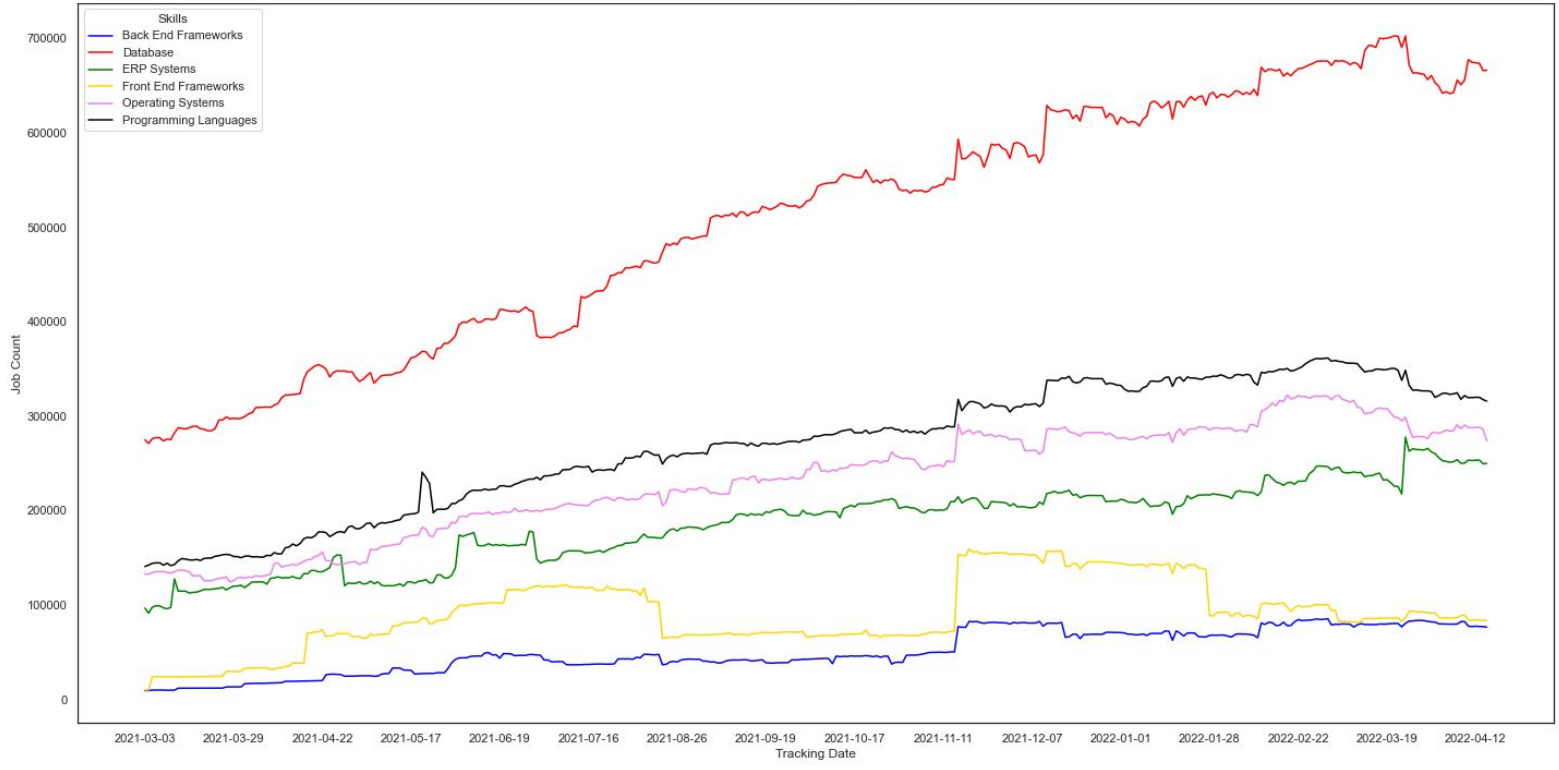
TECHNICAL SKILLS TRENDS

Knowledge Workers

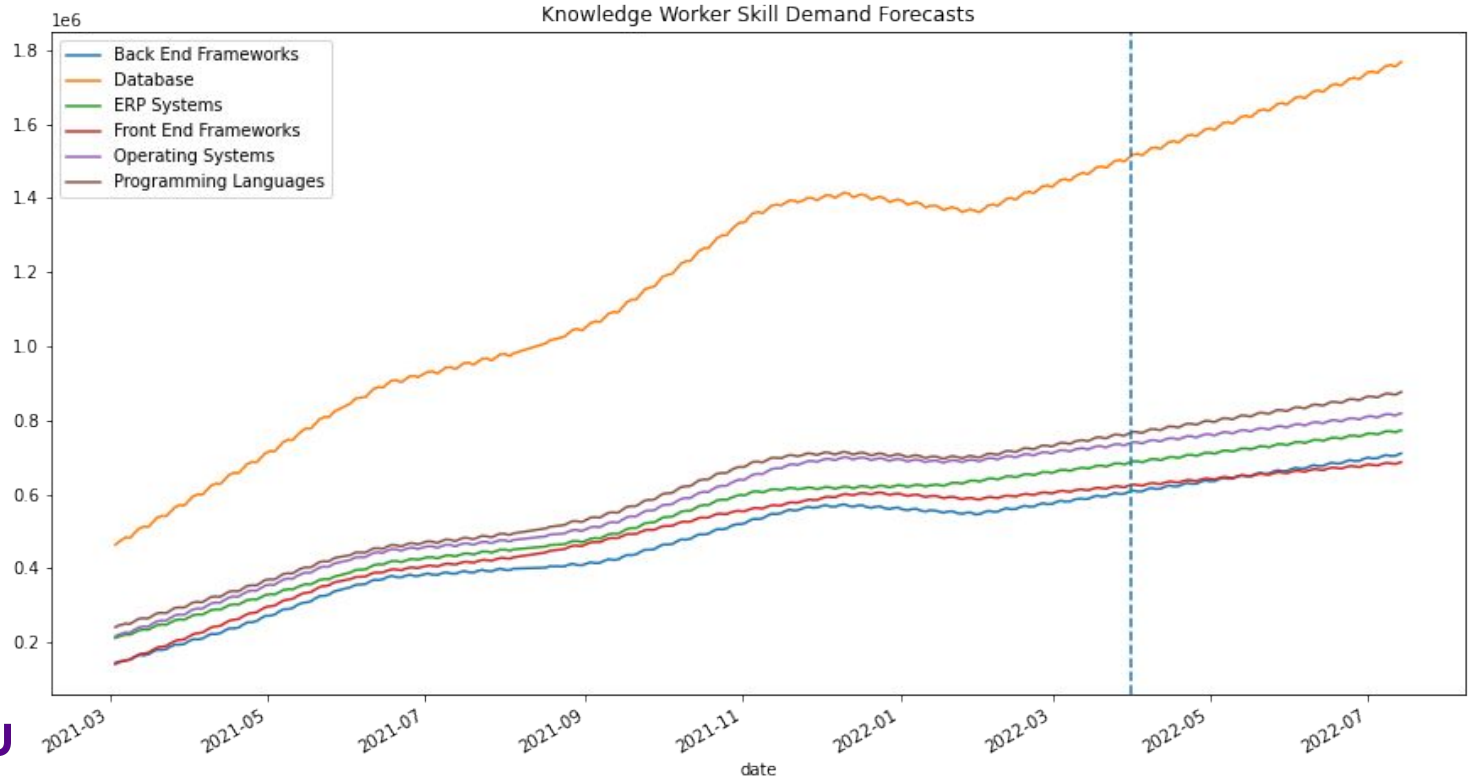


TECHNICAL SKILLS TRENDS

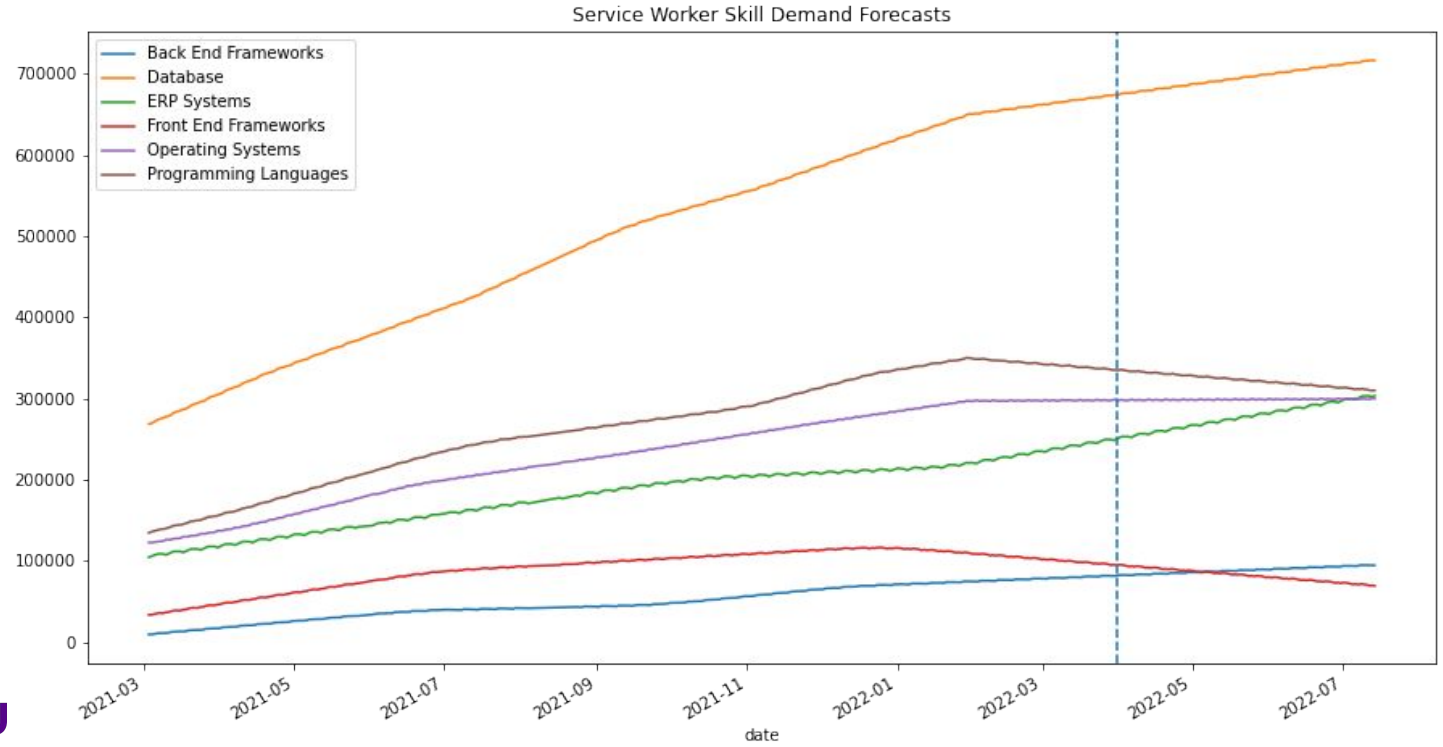
Service Workers



TECHNICAL SKILLS FORECASTS



TECHNICAL SKILLS FORECASTS



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CONCLUSIONS

1. Job ad forecasting models are better when resignations are included.
2. Knowledge and service worker forecasting models differ.
    - Six vs three months following quit event.
3. Combining independent sources of big data (JOLTS quits & Candograms job ads) provided promising results.
4. More powerful AI models predict best.
5. Technical skill demands in knowledge and service worker industries were similar.
    - Change is ahead in the service industry.

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FUTURE WORK

- Explore more connections between JOLTS and big data sources such as Candogram.
- Add skills prediction to the forecasting models, not just job ads
- Build models for all industries, not just knowledge and service workers.

HR Implications

HR Leaders

Providing HR leaders with accurate forecasts of the demand for critical skills in the labor market enables them to act preemptively and make better talent management decisions which, among other benefits, reduces resignations.

Employees

Knowledge of the demand in the labor market for specific skills enables employees to make better career planning and development decisions and may be less likely to resign.


THANK YOU.
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