

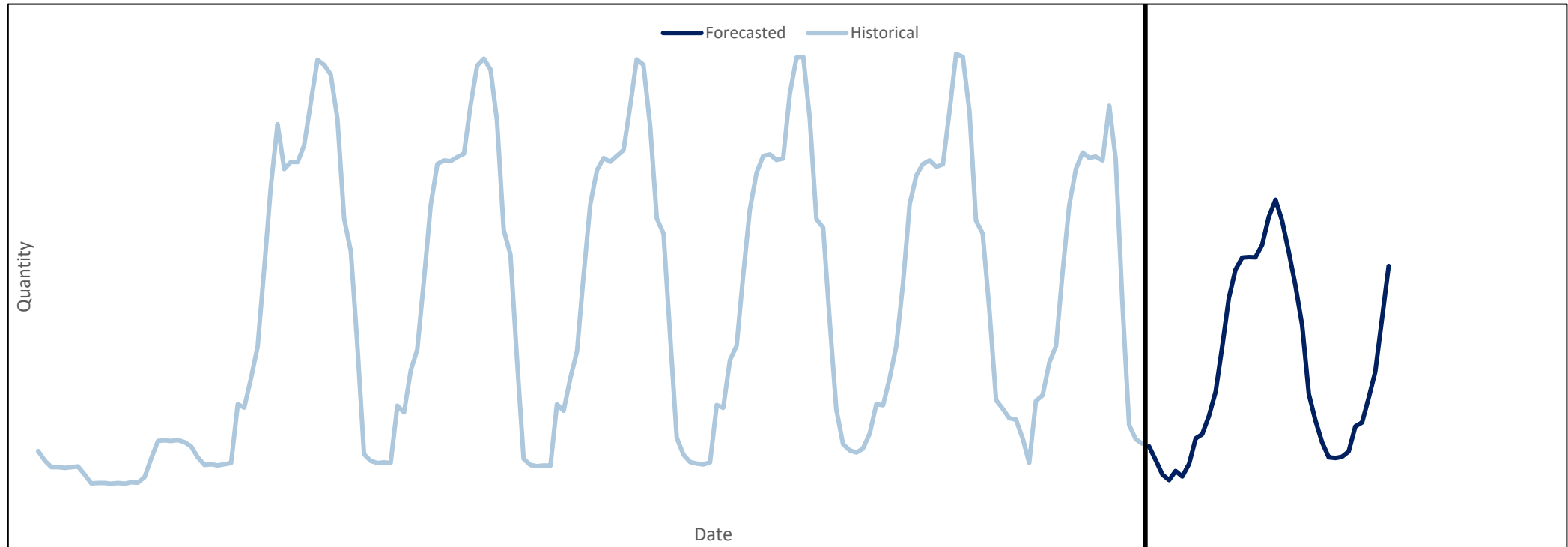
# Forecasting with Amazon Forecast

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# Forecasting is a Machine learning technique used to predict the future trends

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Automatically understands historical data and patterns

# Time Series Forecasting is used frequently in many industries

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Demand forecasting for retail stores



Supply chain and Inventory Management



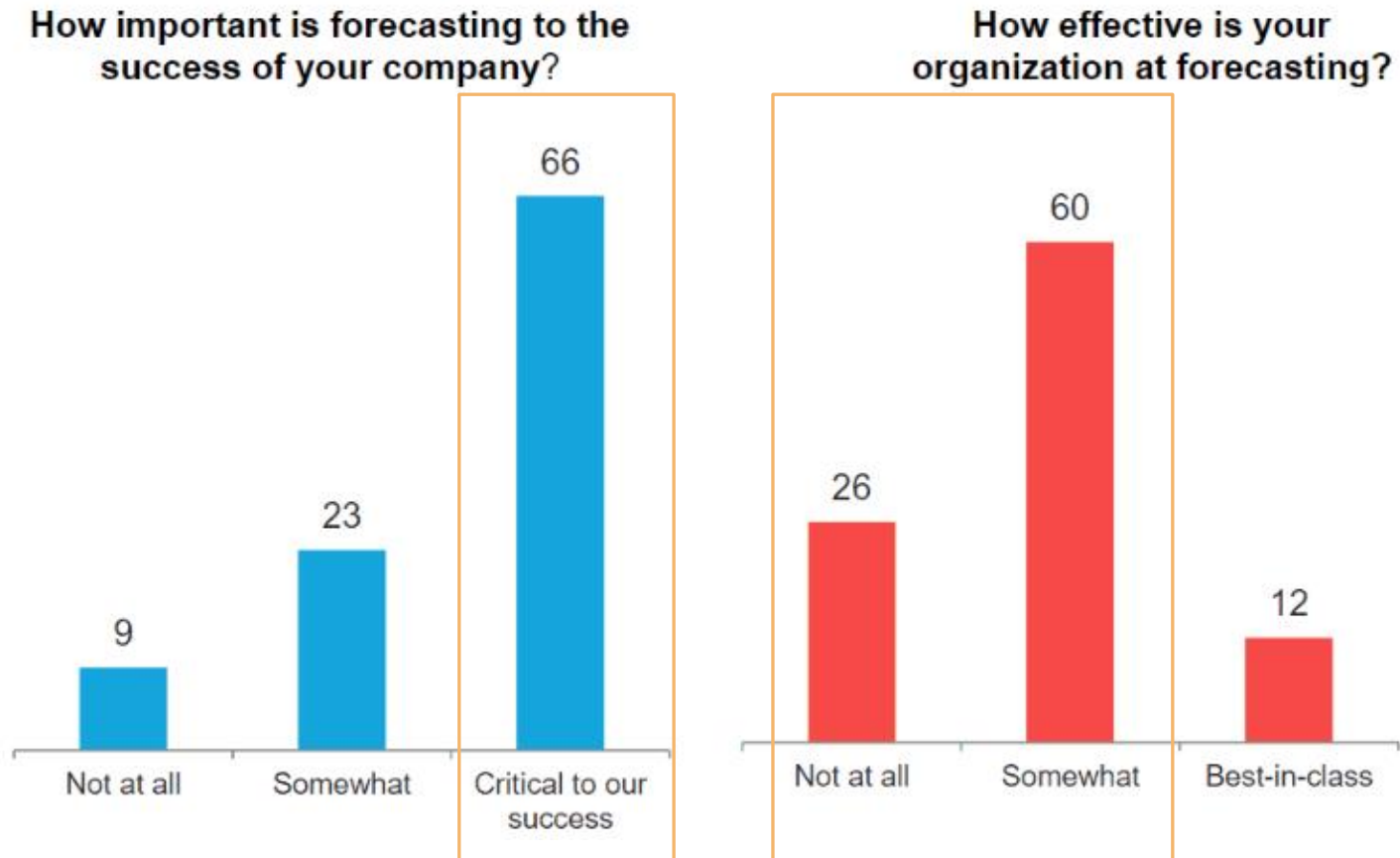
Stock market analysis



Weather forecasting

# Forecasting is critical to a company's success

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# Building accurate forecasts is the core of many industries today

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- In retail, poor sales forecasts result in -
  - Lost Sales
  - Increasing inventory costs
- Companies today require automation of forecasts
  - Manual work – inefficiency
  - Difficult to implement at Scale

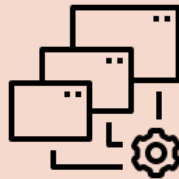
# What is Amazon Forecast?

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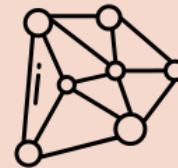
**Based on machine  
learning**



**Automated**



**Multiple Data Sources**



**Accurate Forecasts  
(50% greater than only  
time series)**



# Amazon forecast provides accurate results with ease

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- No Prior ML Experience required
- Uses state of the art algorithms based on over 20 years of forecasting experience
  - **Forecast Explainability** – AF tells you what factors are driving your forecasts
  - **Include local weather information** – Increase accuracy using local weather information
  - Works with any **historical time series** data
- Fully managed service, no need to build your own models

# It can handle large volumes of data

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OVER 50M FORECAST DATA  
POINTS



FAST RESULTS



CAN COMBINE MULTIPLE  
DATASETS



# It uses state of the art algorithms

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## CNN-QR

- Convolutional Neural Network - Quantile Regression, is a proprietary machine learning algorithm for forecasting time series using causal convolutional neural networks
- Works best with large datasets containing hundreds of time series

## ARIMA and ETS

- Commonly used algorithms for time series
- Useful for simple datasets with under 100 time series

## Prophet

- Based on an additive model where non-linear trends are fit
- Best with time series with strong seasonal effects and several seasons of historical data

# Pay for only what you use – Dynamic Pricing Options

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Generated forecast data points per month	Price per 1000 forecast data points
First 100K forecast data points	\$2.00
Next 900K forecast data points	\$0.80
Next 49M forecast data points	\$0.20
Over 50M forecast data points	\$0.02

# Easy to integrate with your existing tools

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✓ Compatible with SAP and Oracle Supply Chain



✓ Easy API Configuration to Query AWS Forecast Results

✓ Secured by credential stored in AWS Secrets Manager

# Access your data in many ways

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Export as .csv



Retrieve through private API



Access your data from S3

# We used the electric power consumption data to showcase the capability of Amazon forecast

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Time (hour)	Usage (kWH)	Client (household)
1/1/2014 1:00	32.78	client_339
1/1/2014 2:00	31.50	client_339
1/1/2014 3:00	34.80	client_339
1/1/2014 4:00	28.57	client_339
1/1/2014 5:00	28.57	client_339
1/1/2014 6:00	28.57	client_339
1/1/2014 7:00	28.39	client_339
1/1/2014 8:00	26.01	client_339
1/1/2014 9:00	20.33	client_339
1/1/2014 10:00	17.58	client_339

# AF can be used in many industries

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**Retail demand  
planning**



**Supply chain  
planning**



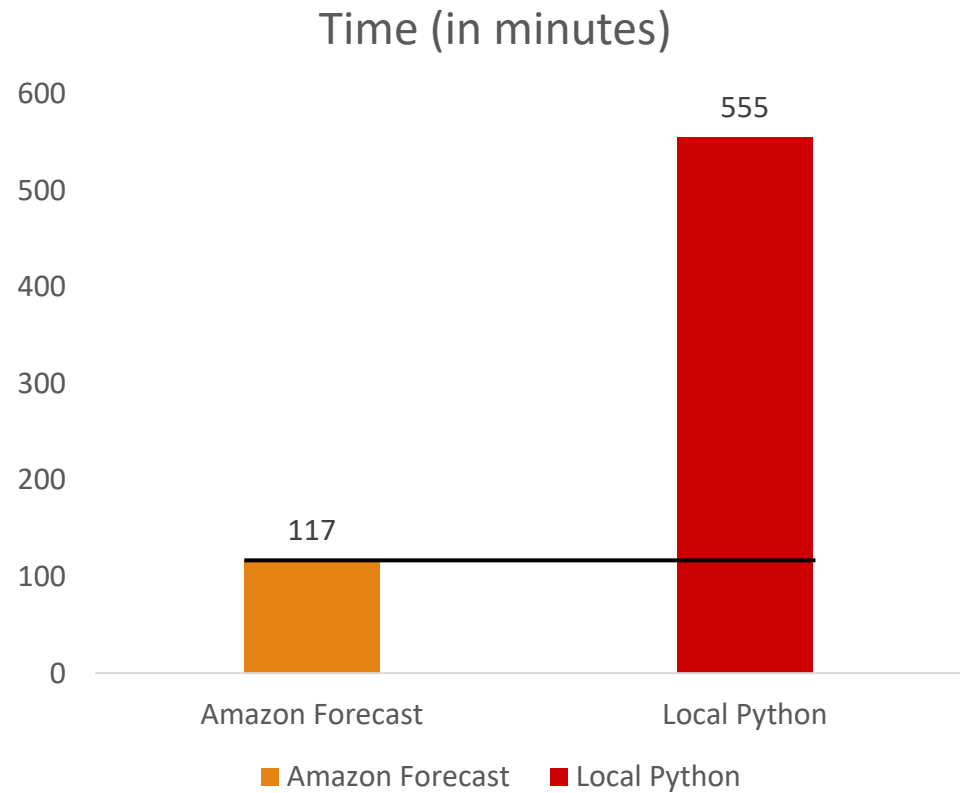
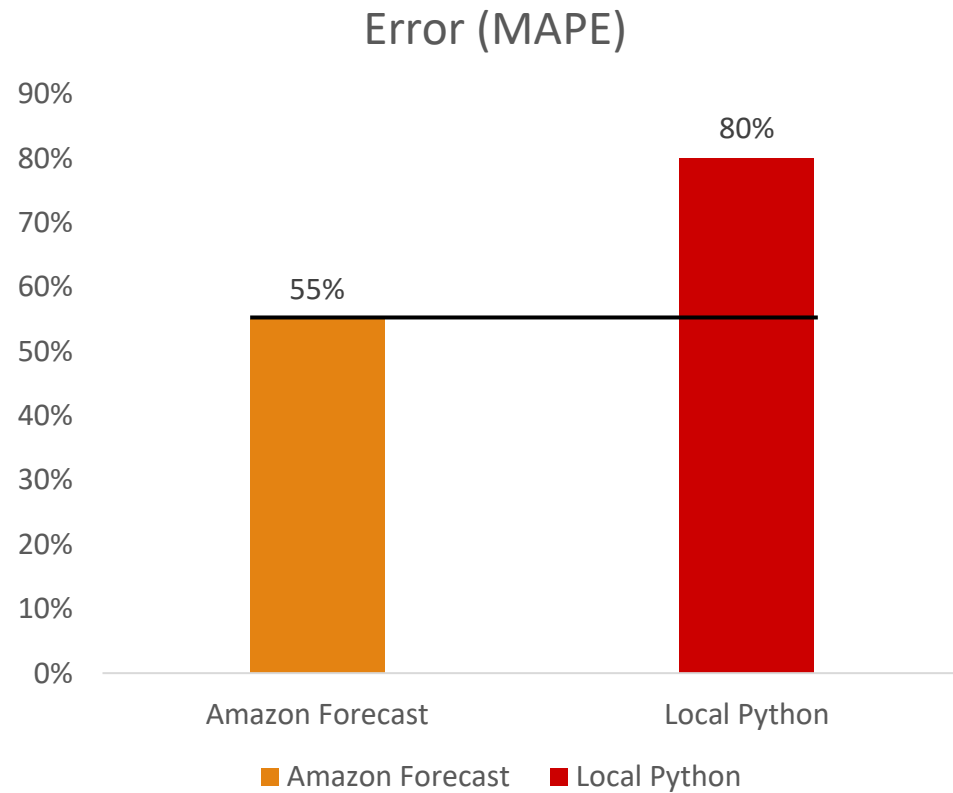
**Resource planning**



**Operational  
planning**

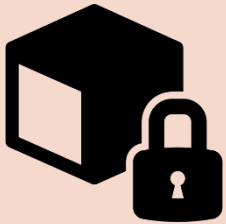
# Approximately 5 times faster than local python

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# Some Limitations of Amazon Forecast

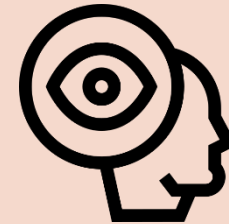
Amazon Forecast is a great tool for managing your statistical forecasting needs, however there are some limitations to using the service by itself -



“Black Box”  
modeling



Limited options for  
feature engineering



Results should be  
used in conjunction  
with existing  
forecasting intuition



# It has been proven to create value in many industries

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Online shopping for fashion  
Increased forecasting accuracy by 20%

clearly



Online retailer of contact lenses  
97% accuracy, and over 90% accuracy when predicting sales for the following month



Omni channel grocery brand  
Increase forecasting accuracy from 27% to 76% and reducing wastage by 20%