



# This Week's Florcast

Kristen Tokunaga



# Motivation



# Objective



- ✿ Predict daily flower **orders** *for up to 1 week in advance*
- ✿ Order predictions can assist in inventory planning

Date	Total	Roses	Lilies	Orchids	Designer's Choice	Other
12/9	6	0	0	0	2	4
12/10	7	0	0	1	2	4
12/11	9	0	0	1	2	6
12/12	8	0	0	1	2	5

# Methods



Obtain

Source:

Kiyo's Orders

Sample Size:

16,468

Period:

2014 – 2019

# Methods



Obtain

Source:  
Kiyo's Orders

Sample Size:  
16,468

Period:  
2014 – 2019

Clean

 python

**pandas**

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$

**spaCy**

# Methods



Obtain

Clean

Order #	Description	QTY
100020459	1 Dz. roses -dark ,hot pink tip with whitish rose	1
100020481	Pink lily w/red roses - w/other small red flowers - likened to Pam M order - Lisa knows	1
100020542	1. one wedding bouquet \$150 - white roses; and 2. one matching boutonniere - wh rose 25	1
	Casket arrangement - Red roses , white dahlias , white larkspurs ,white snaps ,ginestra	
100020545	1-corsage (gift)	1
100020553	DC - all white arrg w/white roses plz.... #16 as on website under "Special Occasions" - Seasonal Arrangements	1
100020579	#16 -- with eight(8) roses instead of 12 and NO orchid plz (downsized)	1
100020600	DC one doz red roses arrg	1
100020633	DC Valentine's Day Section #2 - Five roses/white ph, princess pine etc	1

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python

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spaCy

Model

PROPHET

statsmodels

scikit  
learn

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Model

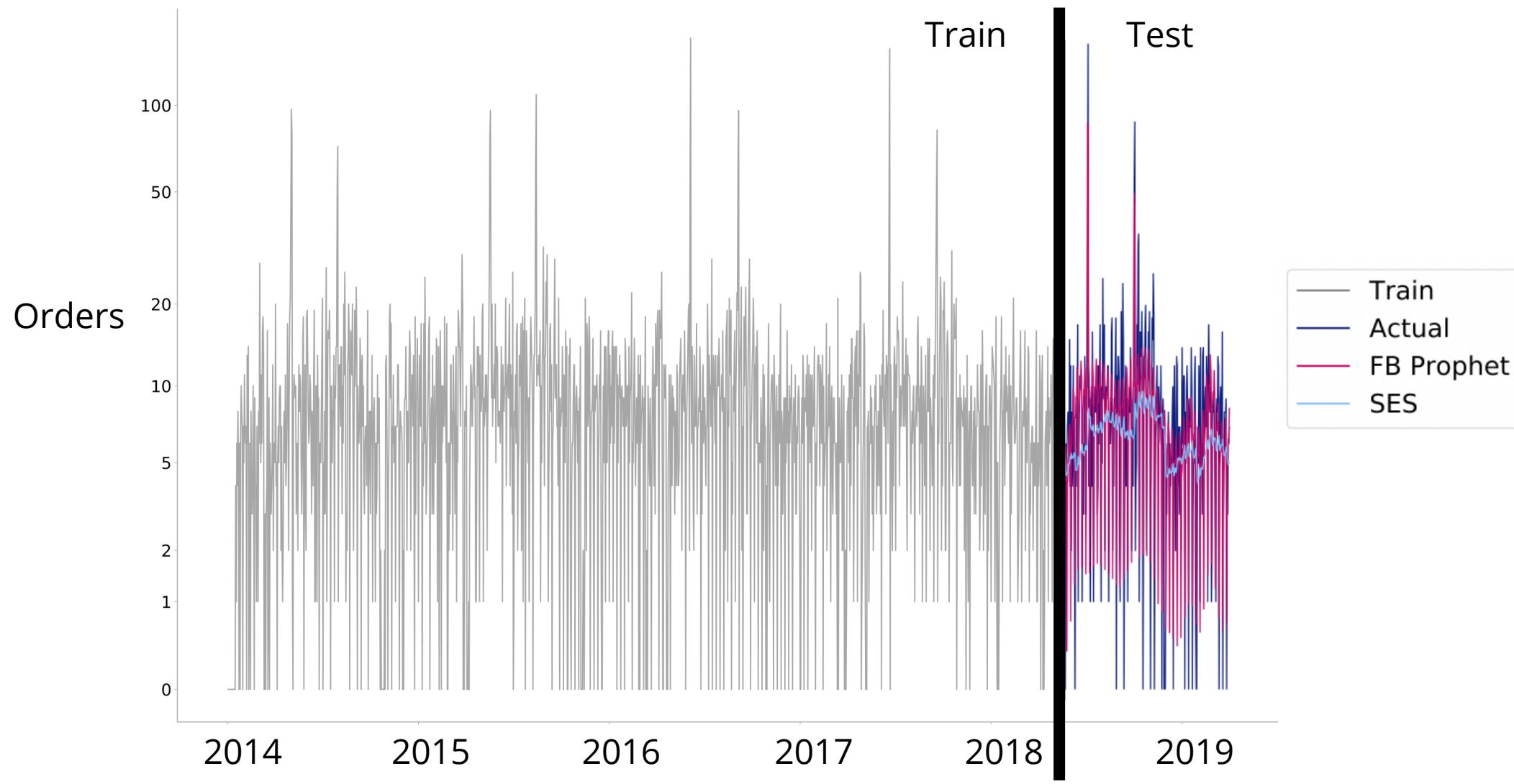


Visualize

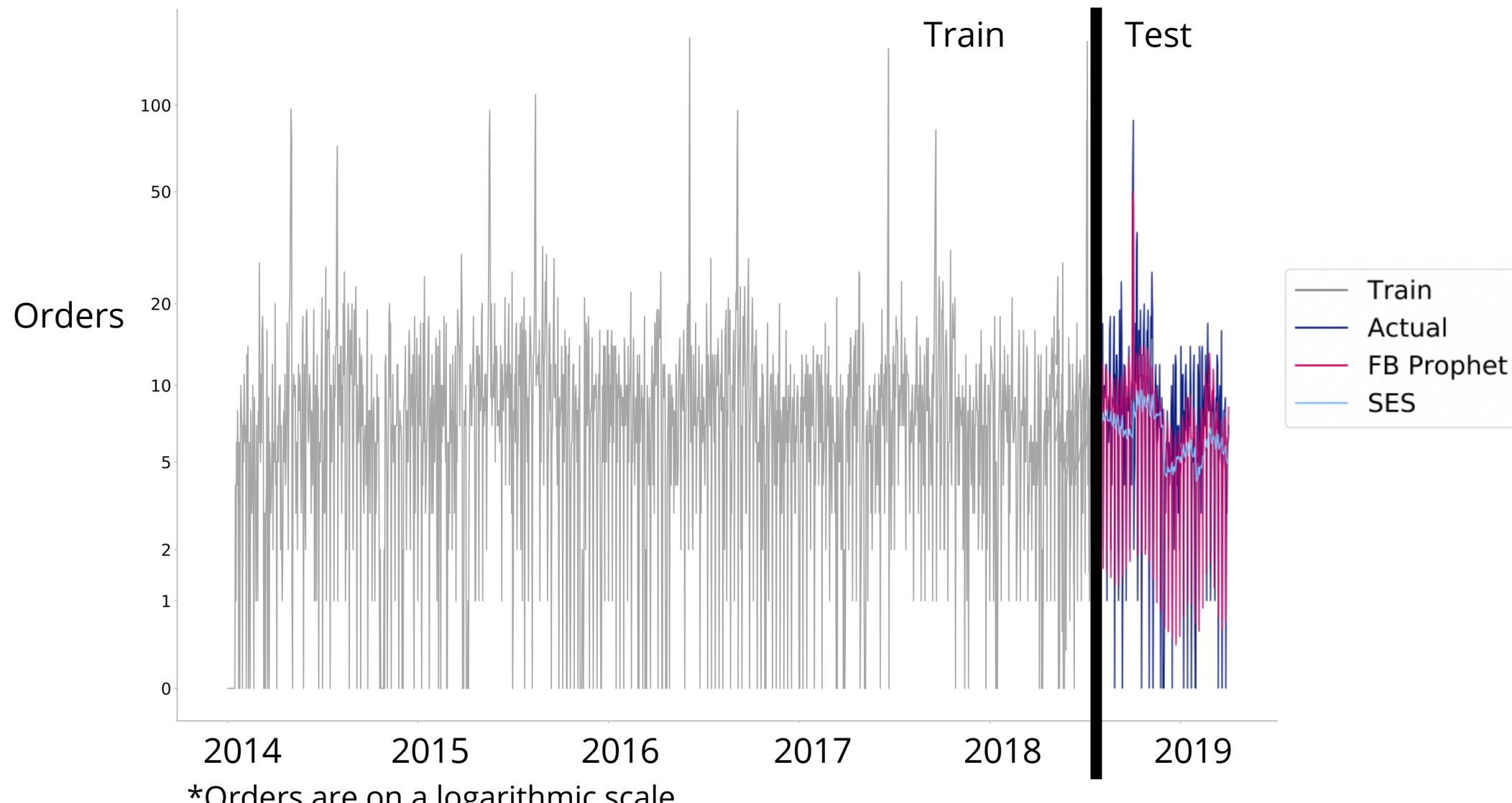


Flask

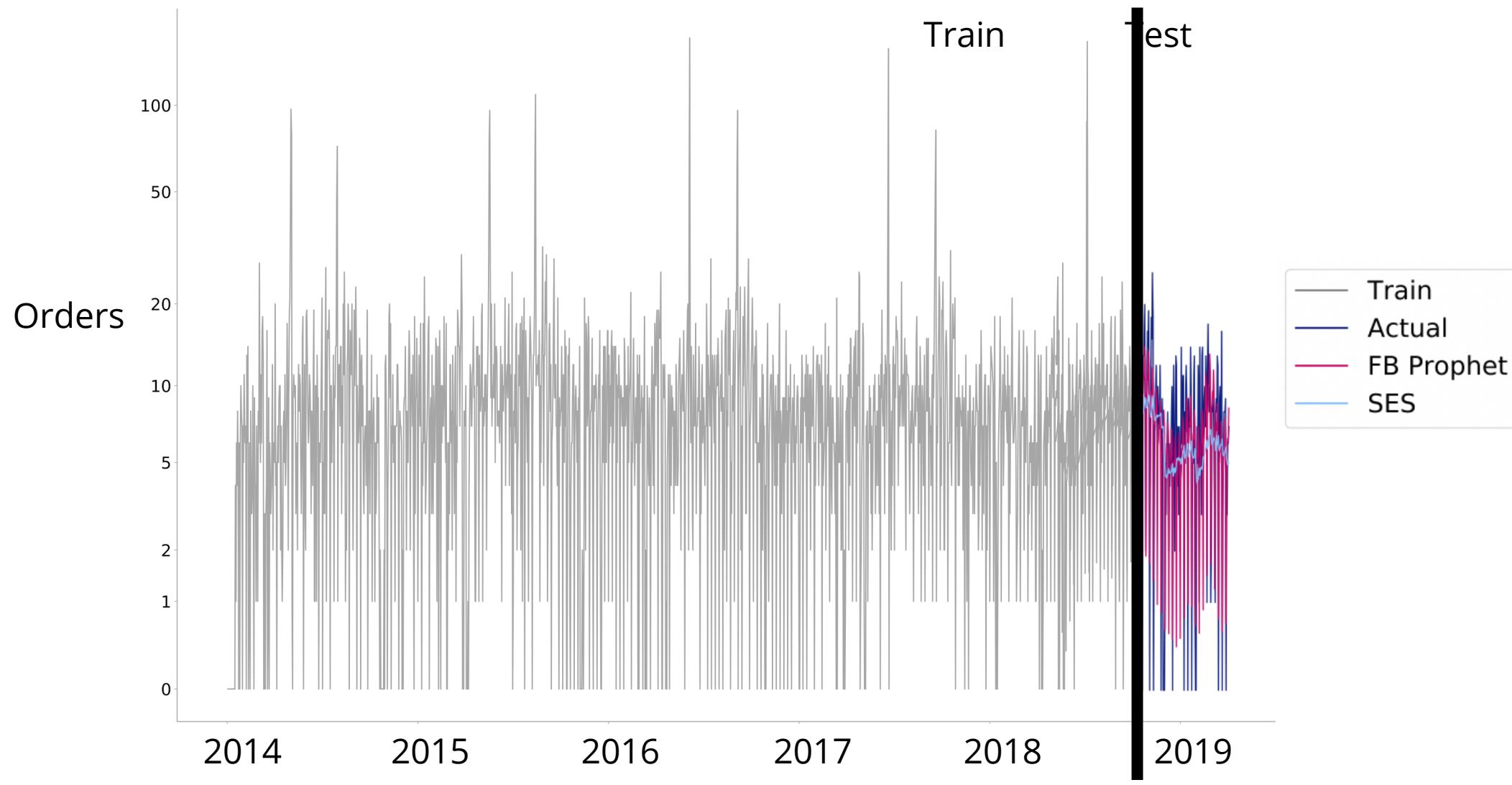
# Results



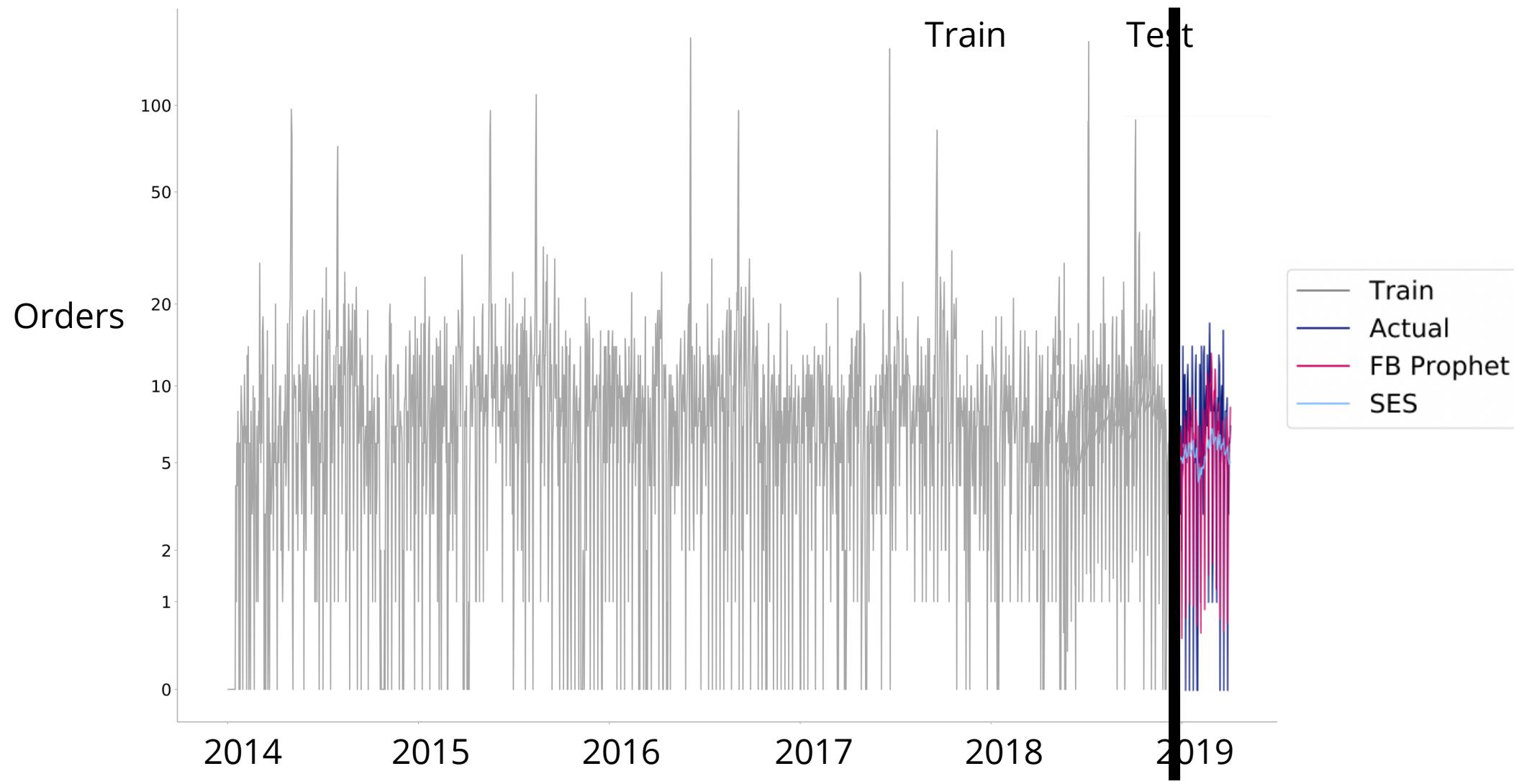
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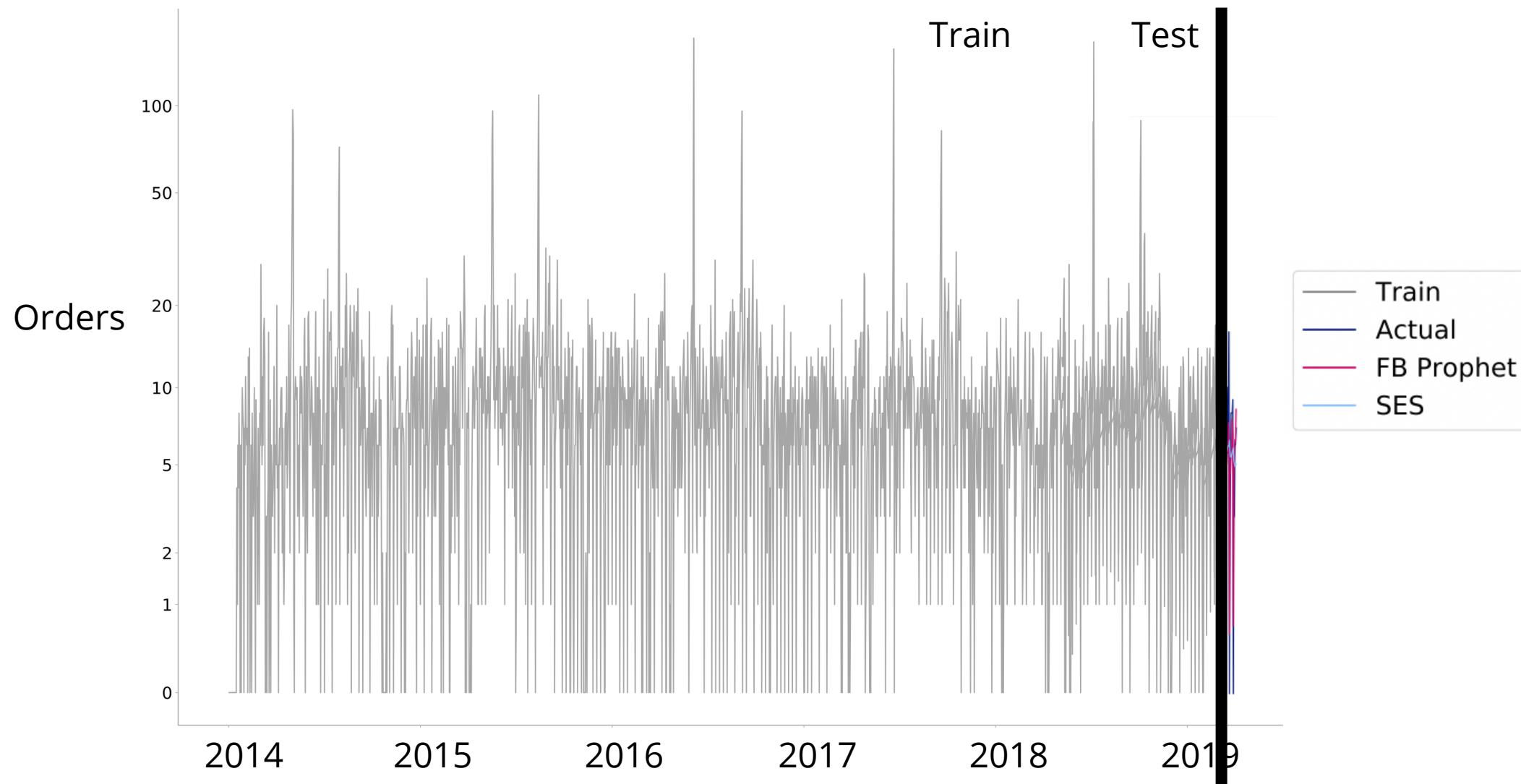
# Results



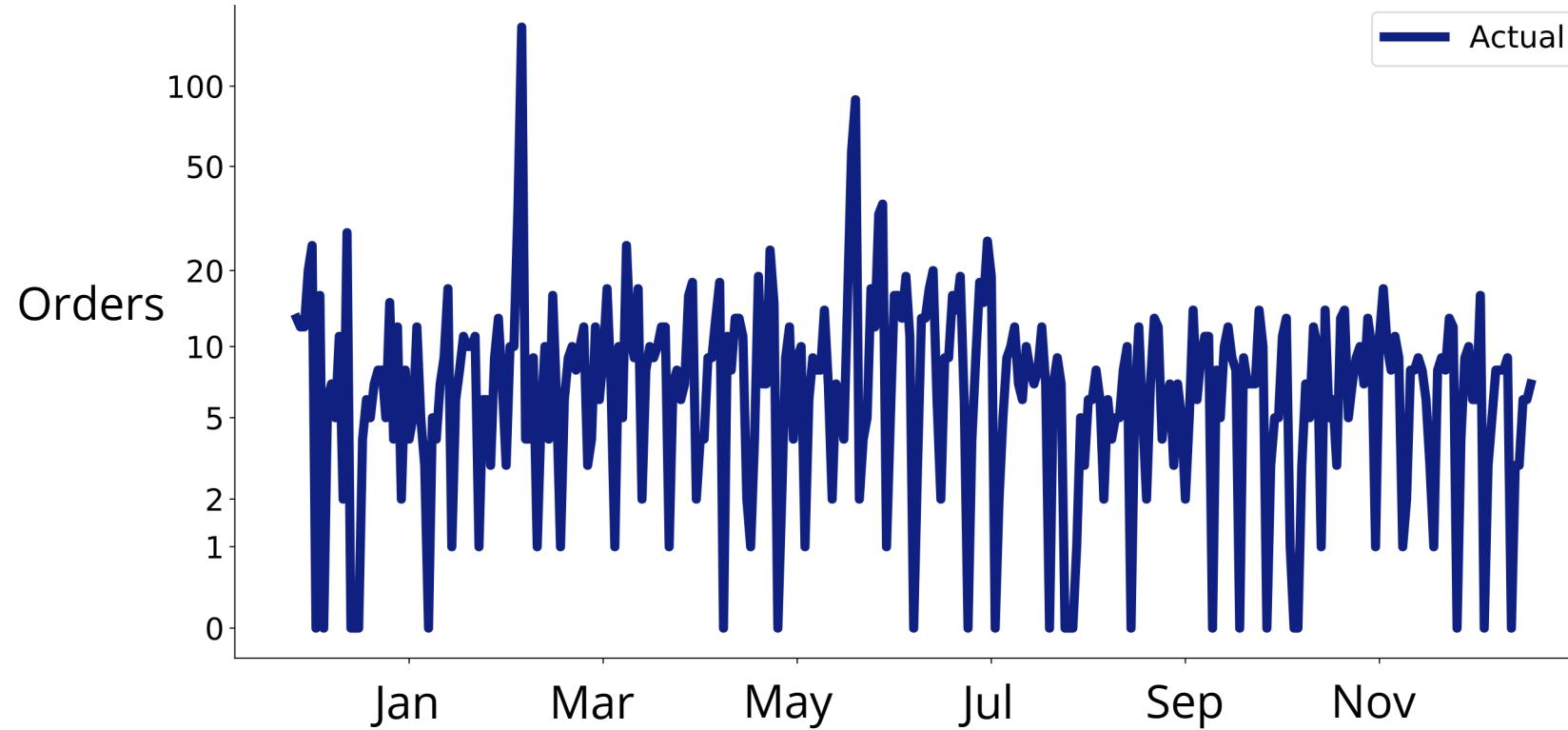
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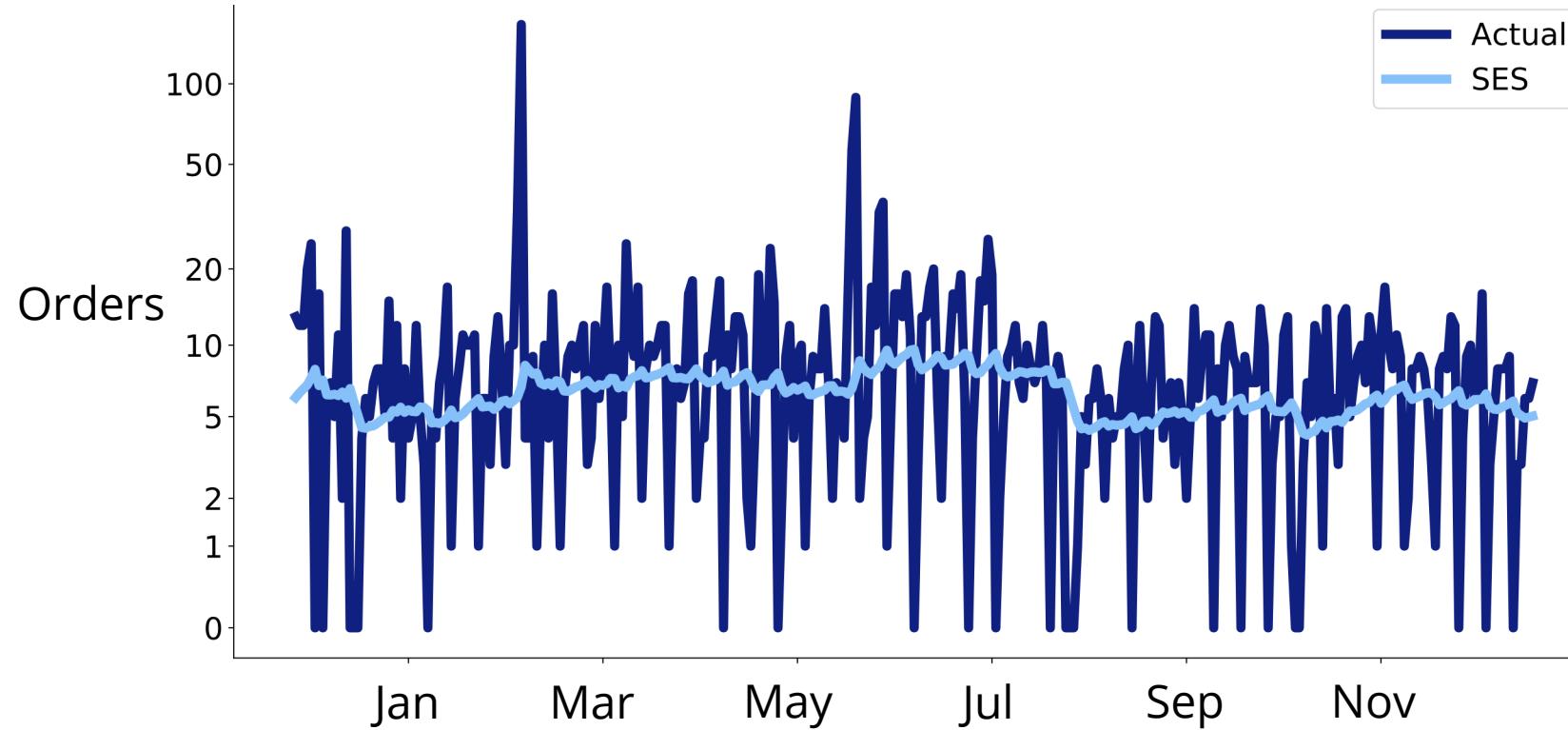
# Results



2019

\*Orders are on a logarithmic scale

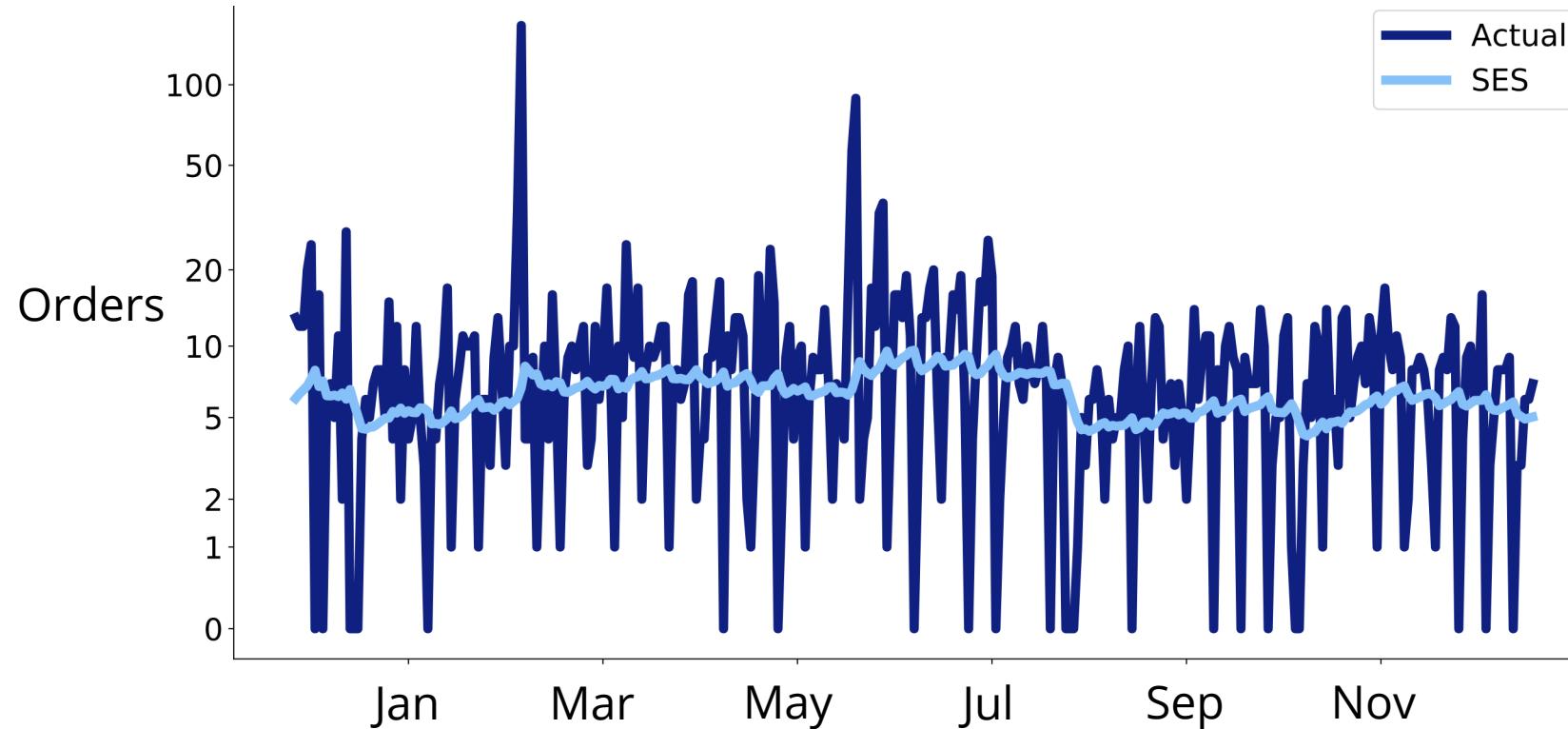
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2019

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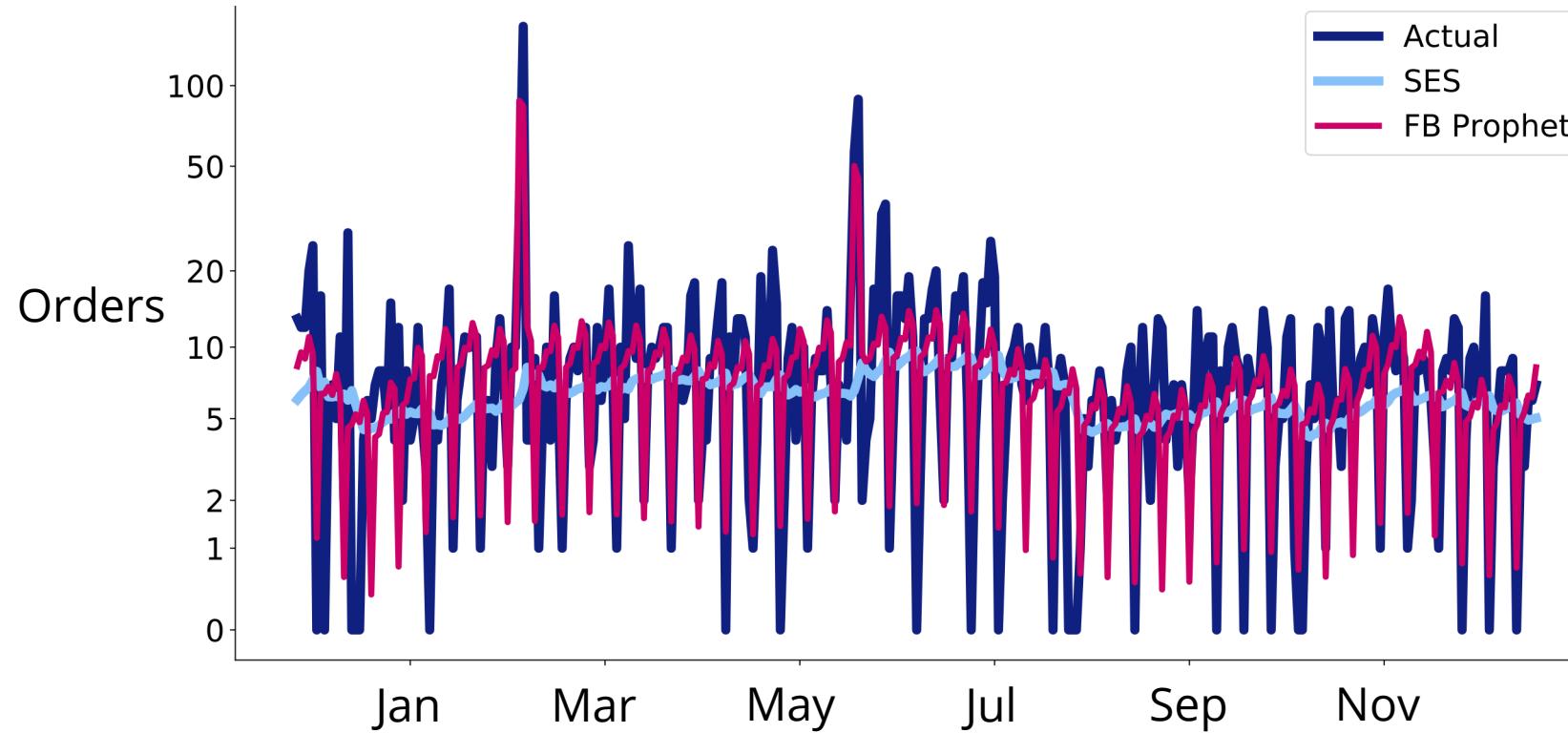
Mean Absolute Error Naïve  
(Simple Exponential Smoothing)

0.8 orders

2019

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# Results



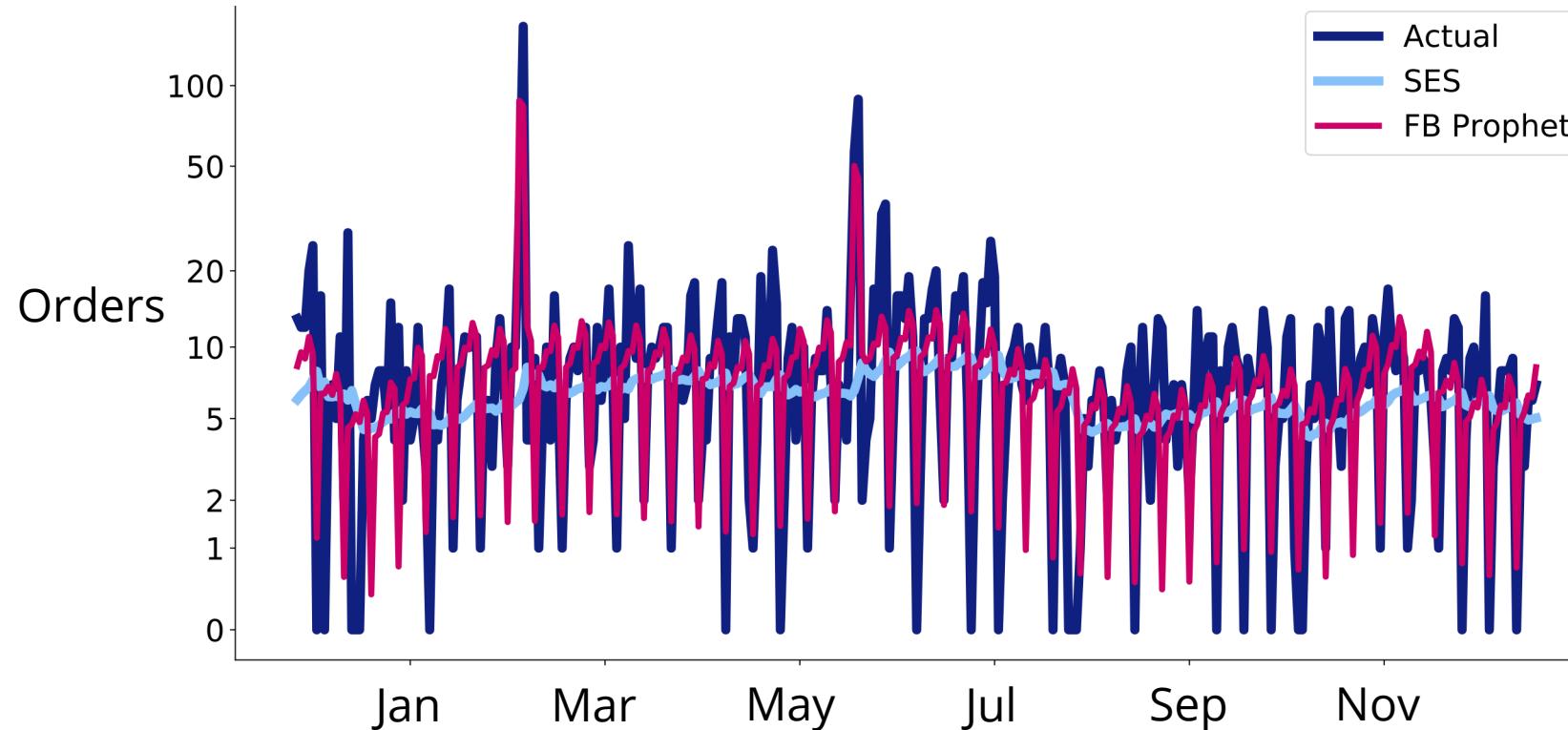
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# Results



Mean Absolute Error Naïve  
(Simple Exponential Smoothing)

0.8 orders

Mean Absolute Error Prophet

0.4 orders

2019

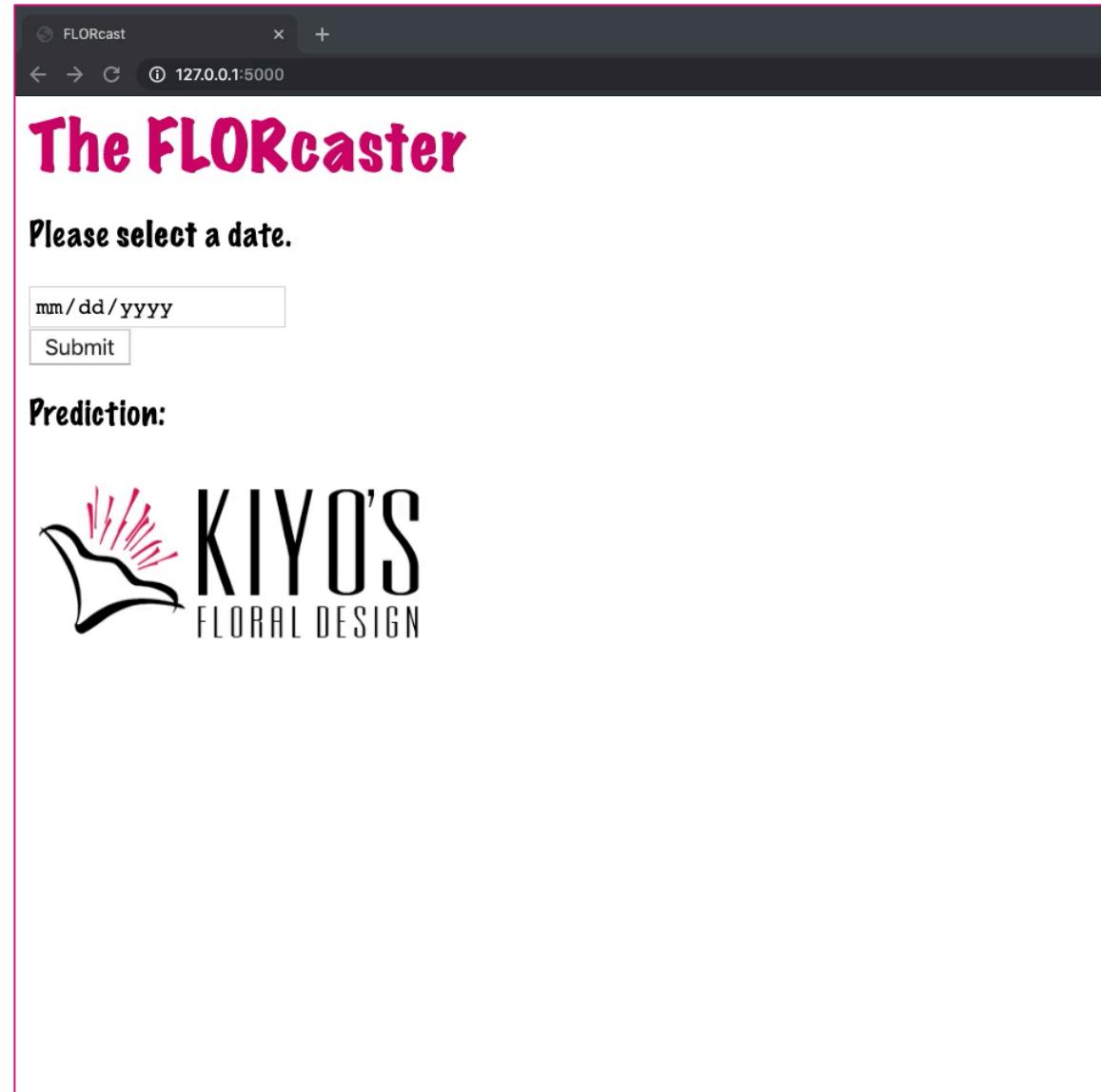
\*Orders are on a logarithmic scale

# Results



## Flask App Demo

The screenshot shows a Flask application interface titled "The FLORcaster". The title is displayed prominently at the top in a large, bold, pink font. Below the title, a message "Please select a date." is shown in black text. Underneath this message is a text input field with the placeholder "mm/dd/yyyy" and a "Submit" button below it. Further down the page, the word "Prediction:" is followed by the logo and name of "KIYO'S FLORAL DESIGN". The logo consists of a stylized black and pink graphic element to the left of the brand name.



FLORcast

127.0.0.1:5000

## The FLORcaster

Please select a date.

mm/dd/yyyy

Submit

Prediction:

KIYO'S  
FLORAL DESIGN

# Future Work



**Incorporate  
inventory records**



**Add holidays &  
exogenous features**



**Explore other time  
series models**

# Thank You



## Kristen Tokunaga, PharmD

Data Scientist at Metis | Managed Care Pharmacist |  
Board-Certified Geriatric Pharmacist (BCGP)



Health Plan of San Joaquin



The Gerald J. and Dorothy R.  
Friedman School of Nutrition

-  [K\\_Tokunaga@u.pacific.edu](mailto:K_Tokunaga@u.pacific.edu)
-  [kristen-tokunaga-pharmd](https://www.linkedin.com/in/kristen-tokunaga-pharmd)

# Appendix



## Performance Metrics

Total				Roses				Lilies				Orchids				Designer's Choice			
horizon	mse	rmse	mae	horizon	mse	rmse	mae												
1 days	0.345806	0.588053	0.414531	1 days	0.175645	0.419100	0.343461	1 days	0.212878	0.461387	0.385847	1 days	0.305018	0.552285	0.443345	1 days	0.339661	0.582805	0.443183
2 days	0.338155	0.581511	0.411543	2 days	0.176135	0.419684	0.342961	2 days	0.212356	0.460821	0.385395	2 days	0.303506	0.550914	0.441335	2 days	0.337230	0.580715	0.441366
3 days	0.329321	0.573865	0.407059	3 days	0.176144	0.419696	0.342781	3 days	0.212394	0.460862	0.385891	3 days	0.301329	0.548935	0.439811	3 days	0.336057	0.579704	0.438946
4 days	0.329823	0.574302	0.407897	4 days	0.174172	0.417339	0.340553	4 days	0.212786	0.461288	0.386096	4 days	0.301751	0.549319	0.440062	4 days	0.335897	0.579566	0.439244
5 days	0.329437	0.573966	0.408056	5 days	0.173879	0.416989	0.340241	5 days	0.211748	0.460161	0.384629	5 days	0.299276	0.547061	0.437409	5 days	0.336353	0.579959	0.438564
6 days	0.322552	0.567936	0.404272	6 days	0.174871	0.418175	0.341126	6 days	0.211904	0.460330	0.384823	6 days	0.299247	0.547035	0.437641	6 days	0.337288	0.580765	0.439859
7 days	0.323145	0.568458	0.404438	7 days	0.177061	0.420786	0.343784	7 days	0.213009	0.461529	0.386519	7 days	0.299239	0.547027	0.437343	7 days	0.337161	0.580655	0.439710