



Algorithms Enabling Cool Analytics

Ric Kosiba

WFM/Planning systems are modeling platforms

Predictive Models

Use history to predict future customer and agent behaviors

Descriptive Models

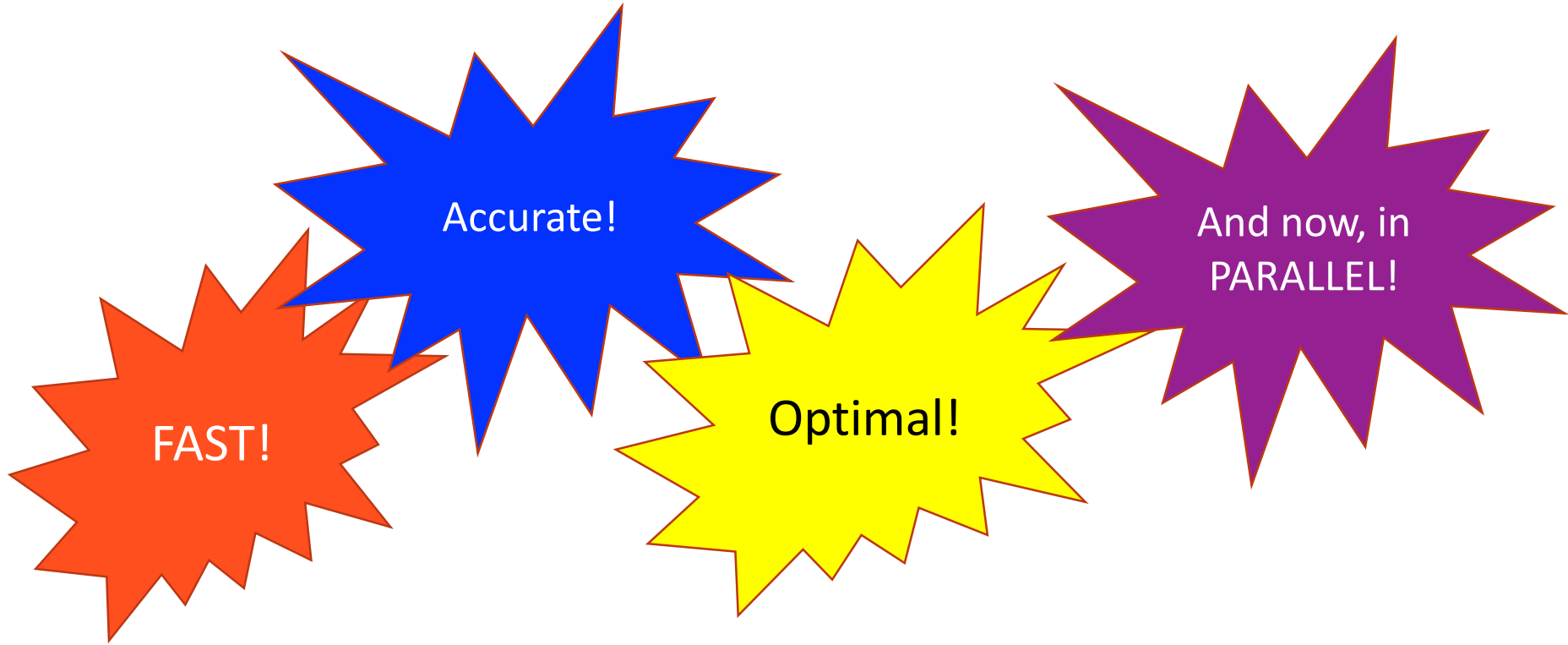
Use history to predict relationship between staffing and service

Prescriptive Models

Use scenario data to determine the best capacity plan

Cloud computing has greatly improved the capabilities of these models

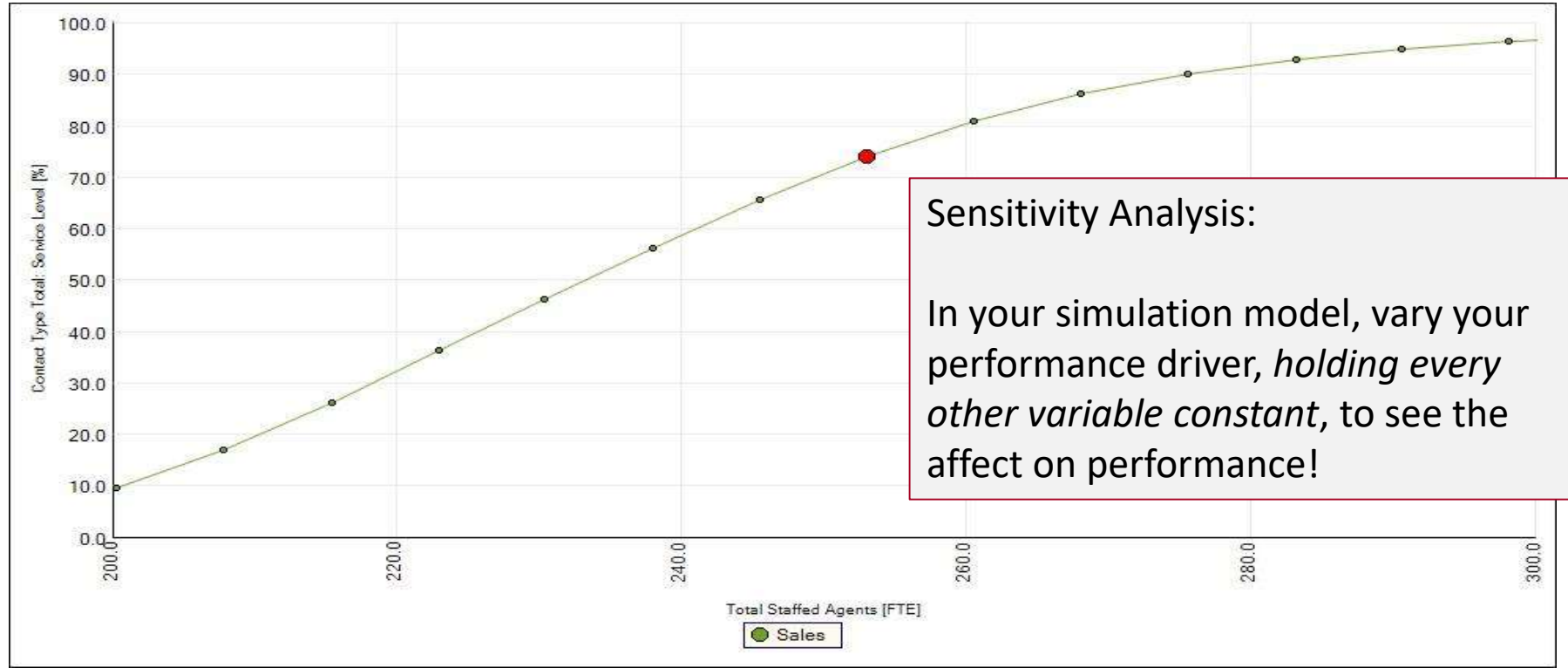
WFM vendors are investing in cloud-based, AI-Driven algorithms



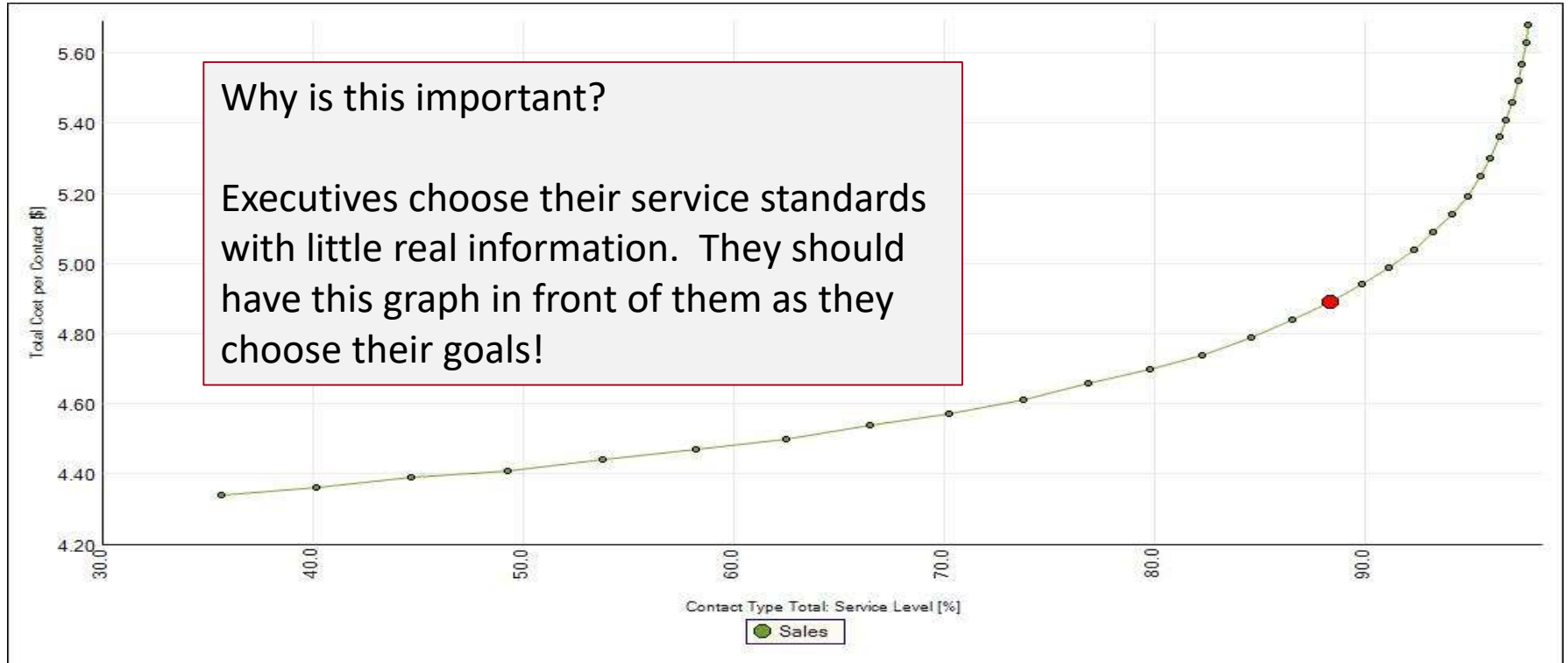
This enables a whole new class of contact center analytics

Neat! We are fast, accurate, and optimal. So what?

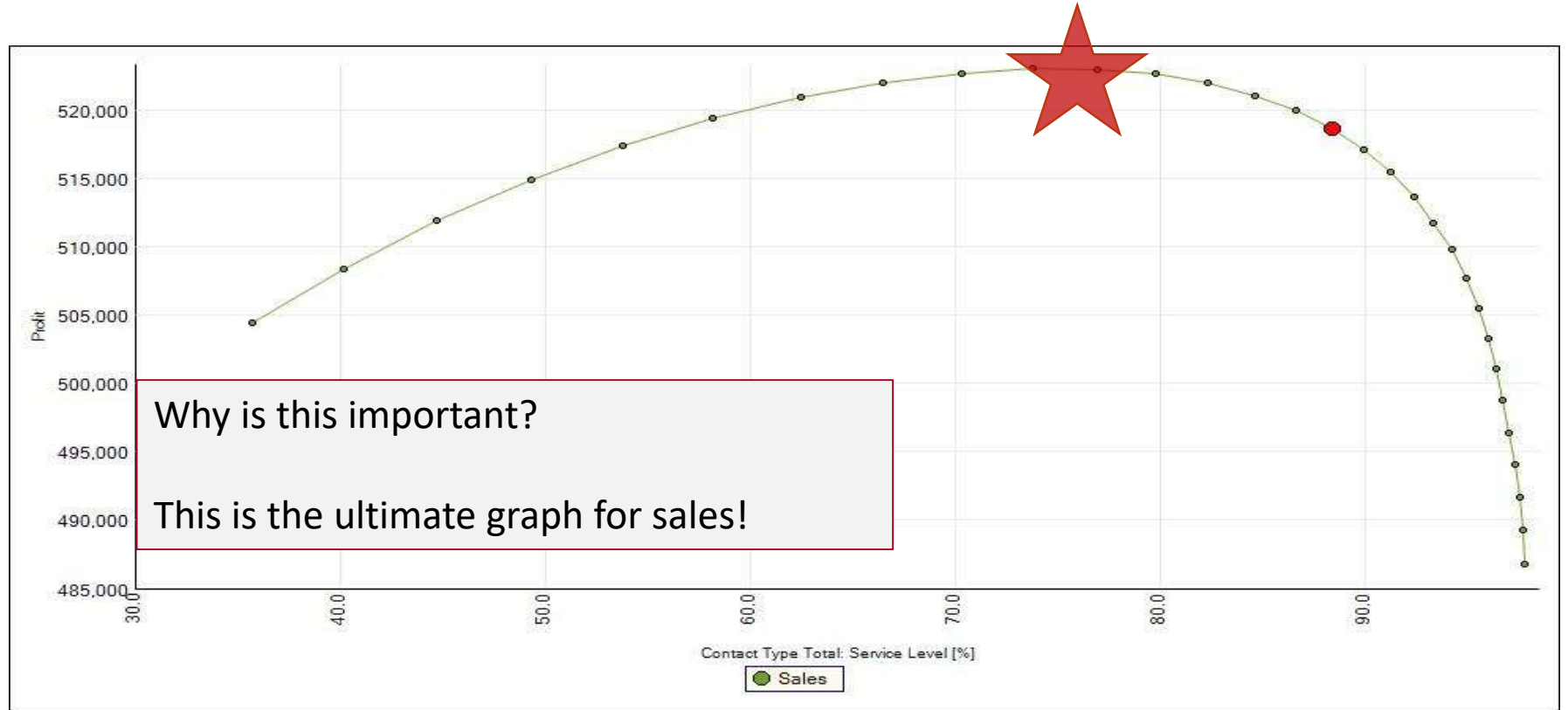
1. Sensitivity What-Ifs: Staffing Vs. Service Level



Service Level Vs. Cost per Call (every executive's dream graph)



Service Level Vs. Profit!



2. What do the bosses want??

- Happy Customers, great Net Promoter Scores
- Fix our customer's issues (First Call Resolution)
- Answer the phone quickly (Service Levels)
- Low variability in service
- Happy employees (great shifts)
- A lot of sales

They have many goals!

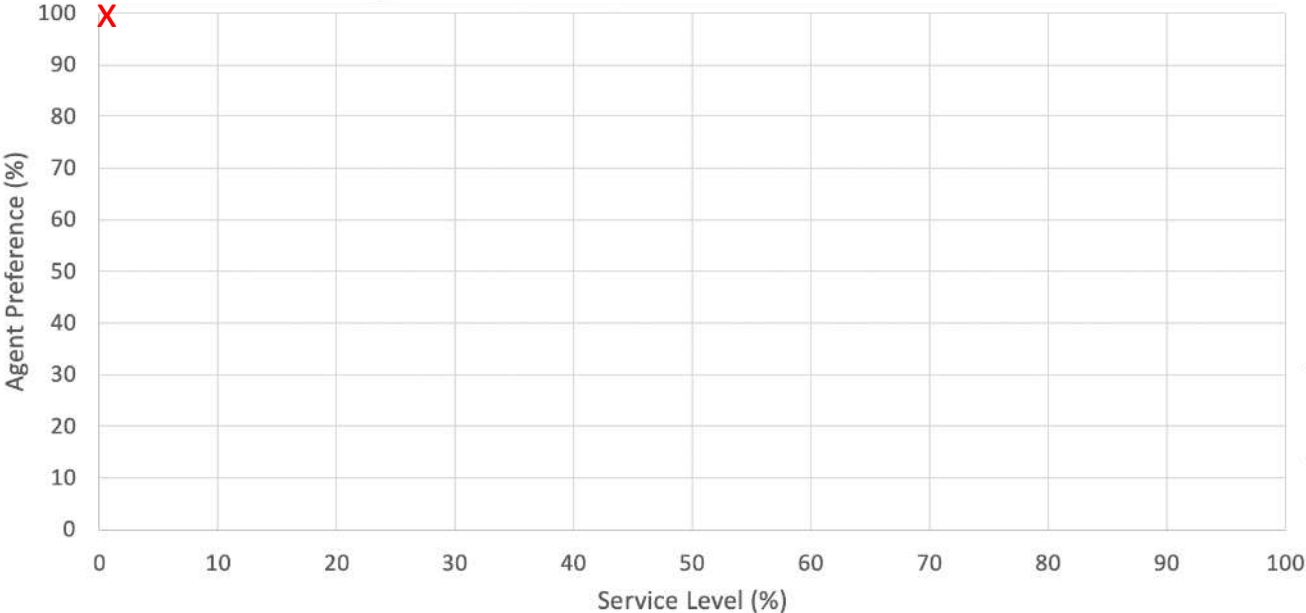
(but WFM typically only worries about service levels)



If our algorithms are fast, accurate, optimal, and can run in parallel, we can solve to maximize all of these goals at the same time.

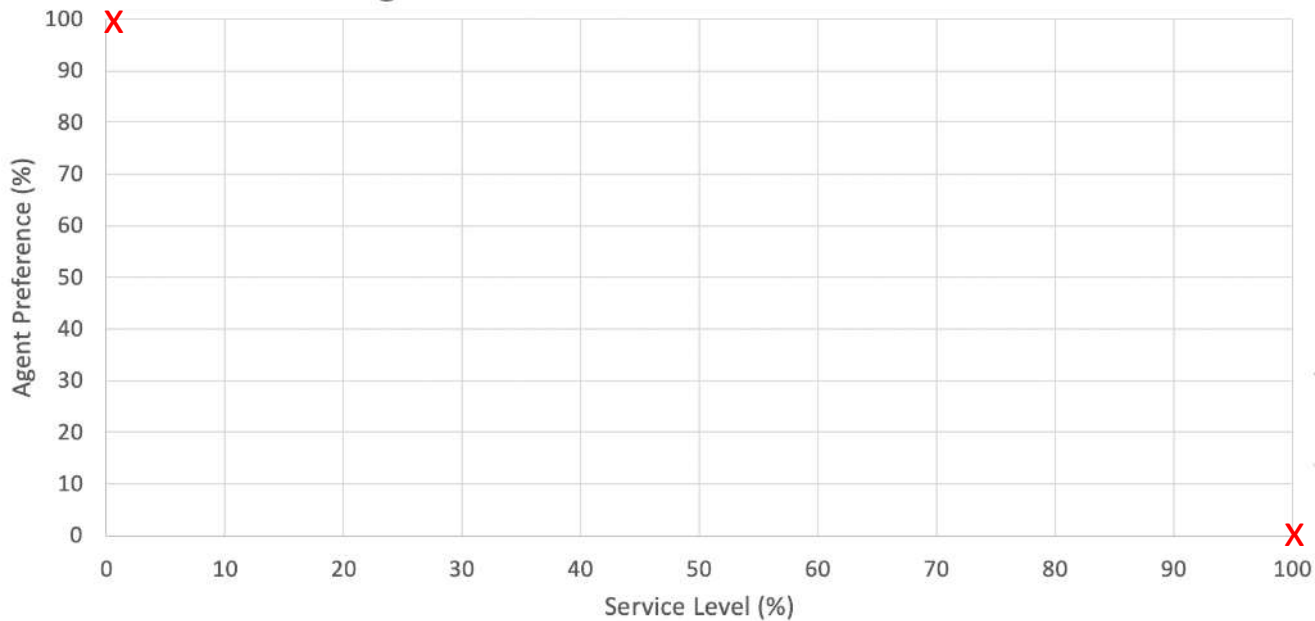


Agent Preference Vs Service Level Trade-Off



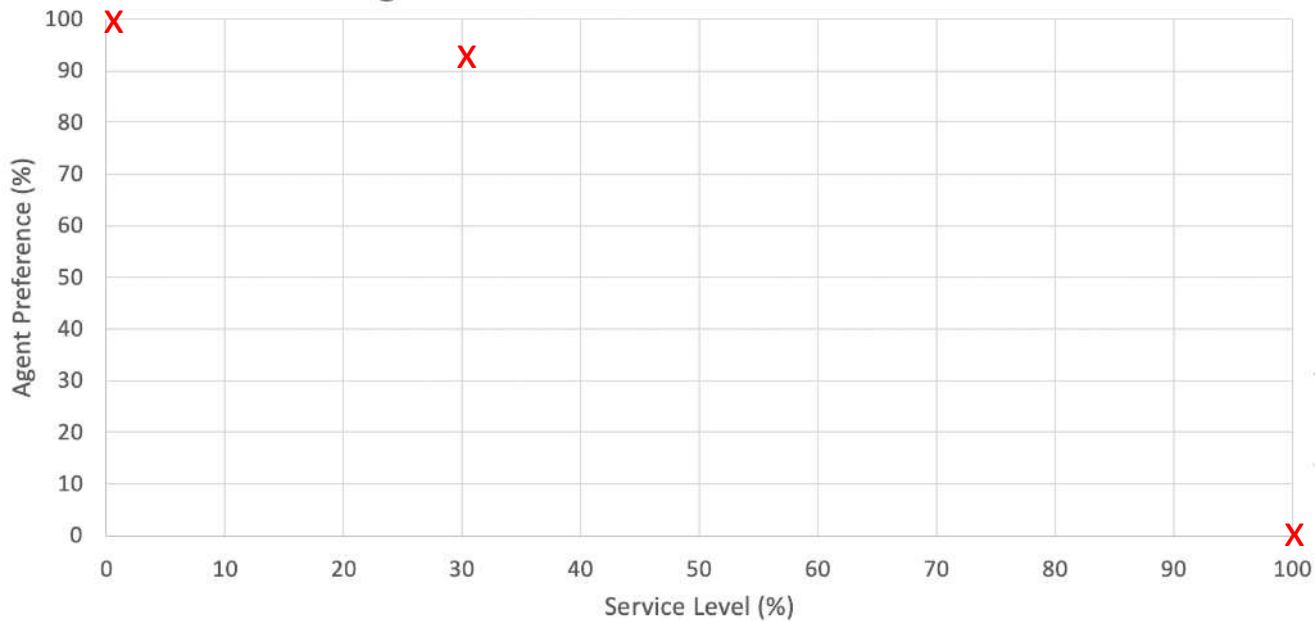
Agent Preference	Service Level	First Call Resolution	Variability in Service	Total Cost
100	0	56	20	40k

Agent Preference Vs Service Level Trade-Off



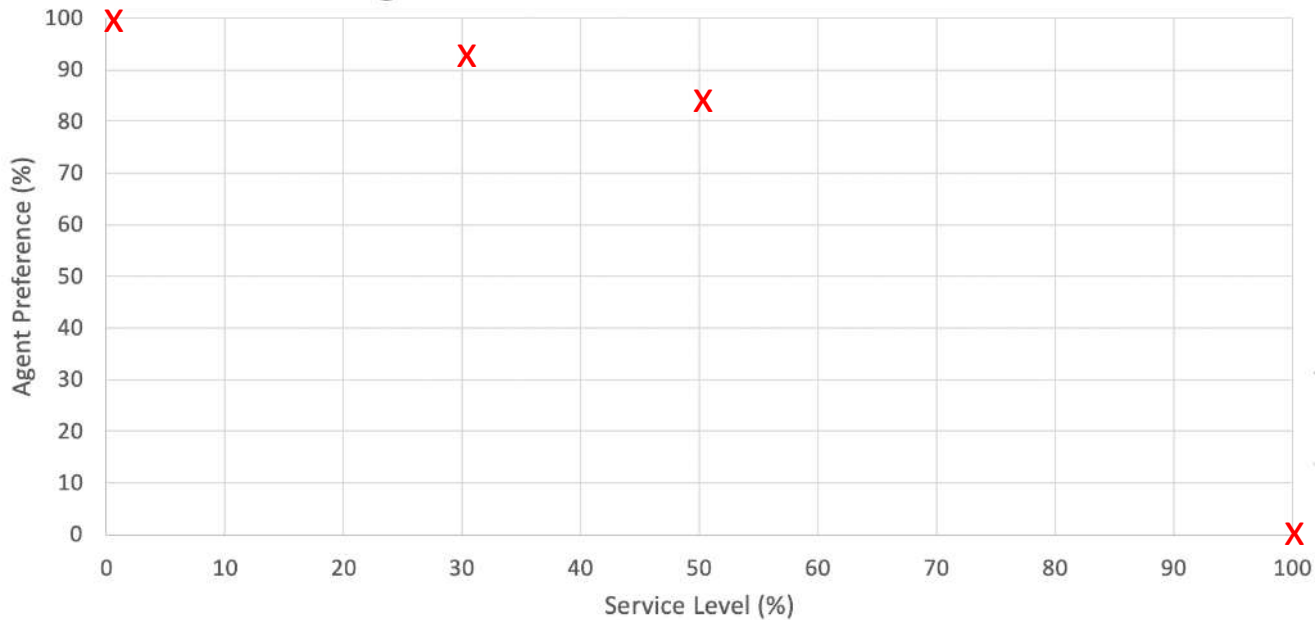
Agent Preference	Service Level	First Call Resolution	Variability in Service	Total Cost
100	0	56	20	40k
0	100	38	12	22k

Agent Preference Vs Service Level Trade-Off



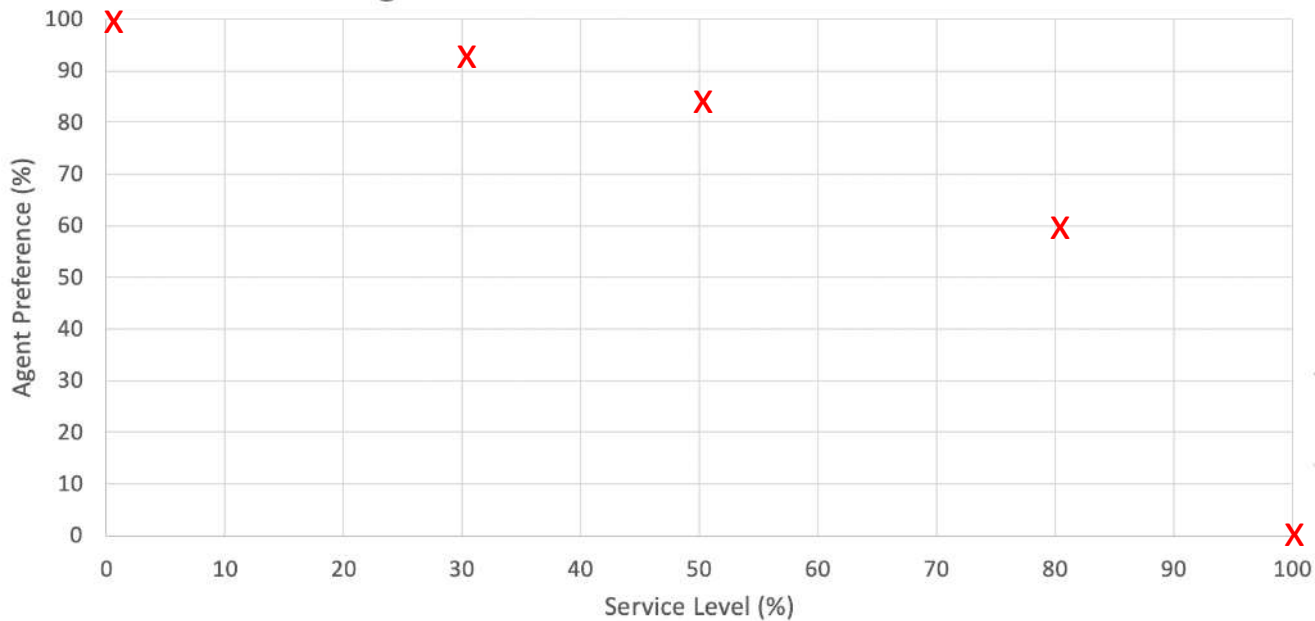
Agent Preference	Service Level	First Call Resolution	Variability in Service	Total Cost
100	0	56	20	40k
0	100	38	12	22k
92	30	53	16	36k

Agent Preference Vs Service Level Trade-Off



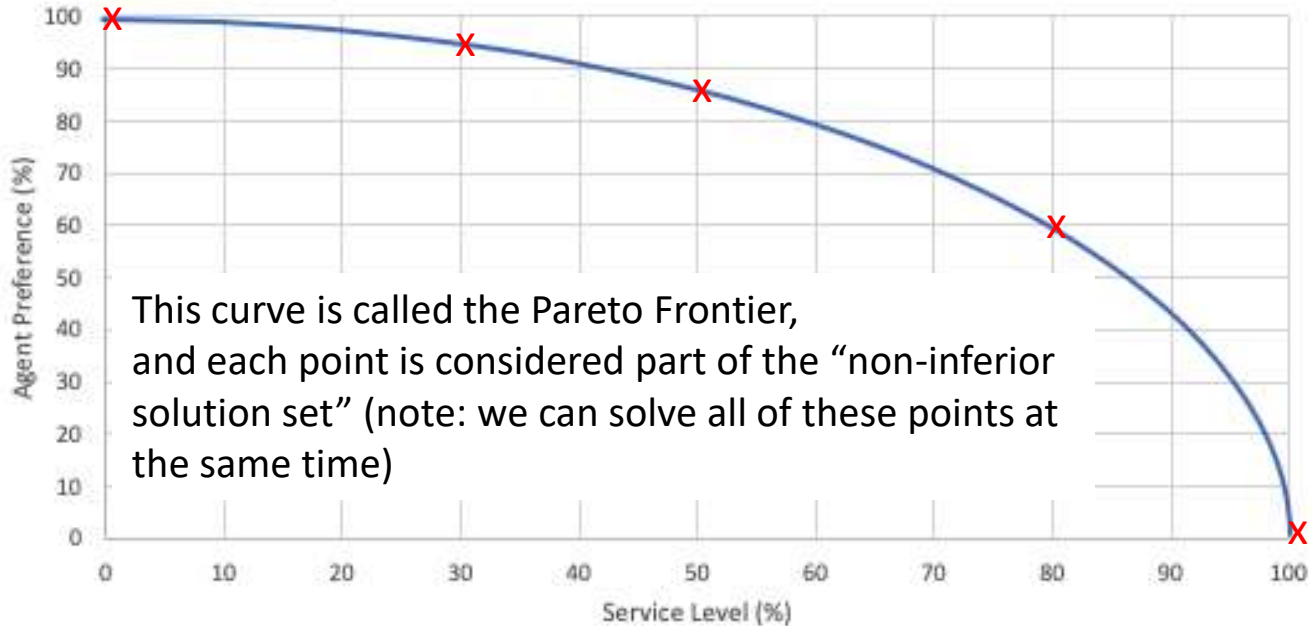
Agent Preference	Service Level	First Call Resolution	Variability in Service	Total Cost
100	0	56	20	40k
0	100	38	12	22k
92	30	53	16	36k
85	50	48	13	28k

Agent Preference Vs Service Level Trade-Off



Agent Preference	Service Level	First Call Resolution	Variability in Service	Total Cost
100	0	56	20	40k
0	100	38	12	22k
92	30	53	16	36k
85	50	48	13	28k
60	80	46	15	25k

Agent Preference Vs Service Level Trade-Off



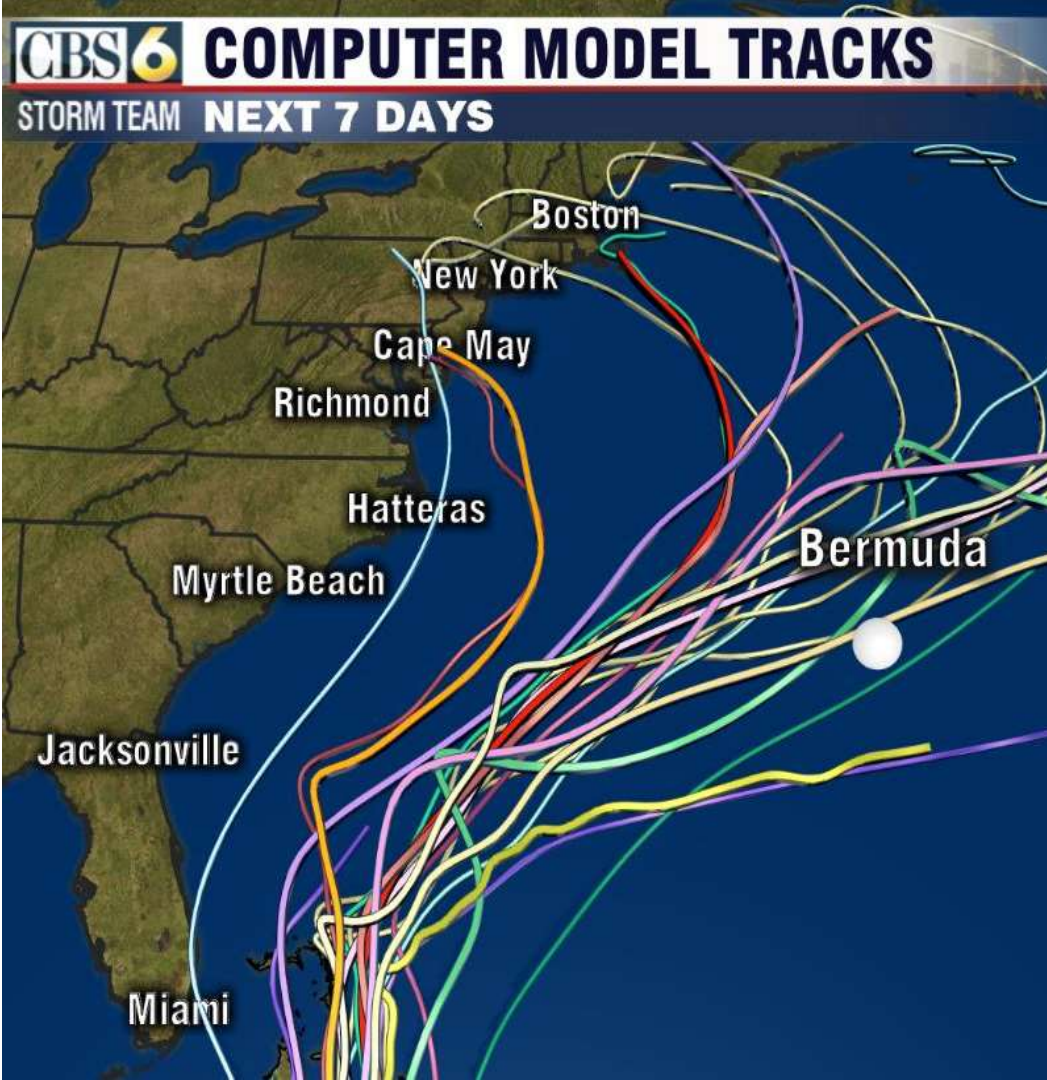
Agent Preference	Service Level	First Call Resolution	Variability in Service	Total Cost
100	0	56	20	40k
0	100	38	12	22k
92	30	53	16	36k
85	50	48	13	28k
60	80	46	15	25k

3. Effects due to relaxing constraints (Comparisons)

Constraints	Δ Total Cost	Δ SL	Δ Sales	Δ Agent Preference
Agent shift start times 15 min, 30 min, etc.	-23k	-6%	+15k	0
Allow rotating shifts	+54k	-4%	0	+11%
All shifts should overlap 2 hours (to adjust with supervisor schedules)	+18k	0	0	+6%
We want to be right sized at peak	+48k	-8%	+24k	+2%
Overriding meeting priorities (relaxing)	-6k	+4%	-6k	0
Must take leave consecutively for 2 days	-4k	0	0	-7%
Work rules – schedule range of breaks and lunches	+12k	+7%	-8k	-2%
Keep all agent teams on the same shift	+24k	-2%	+12k	+4%

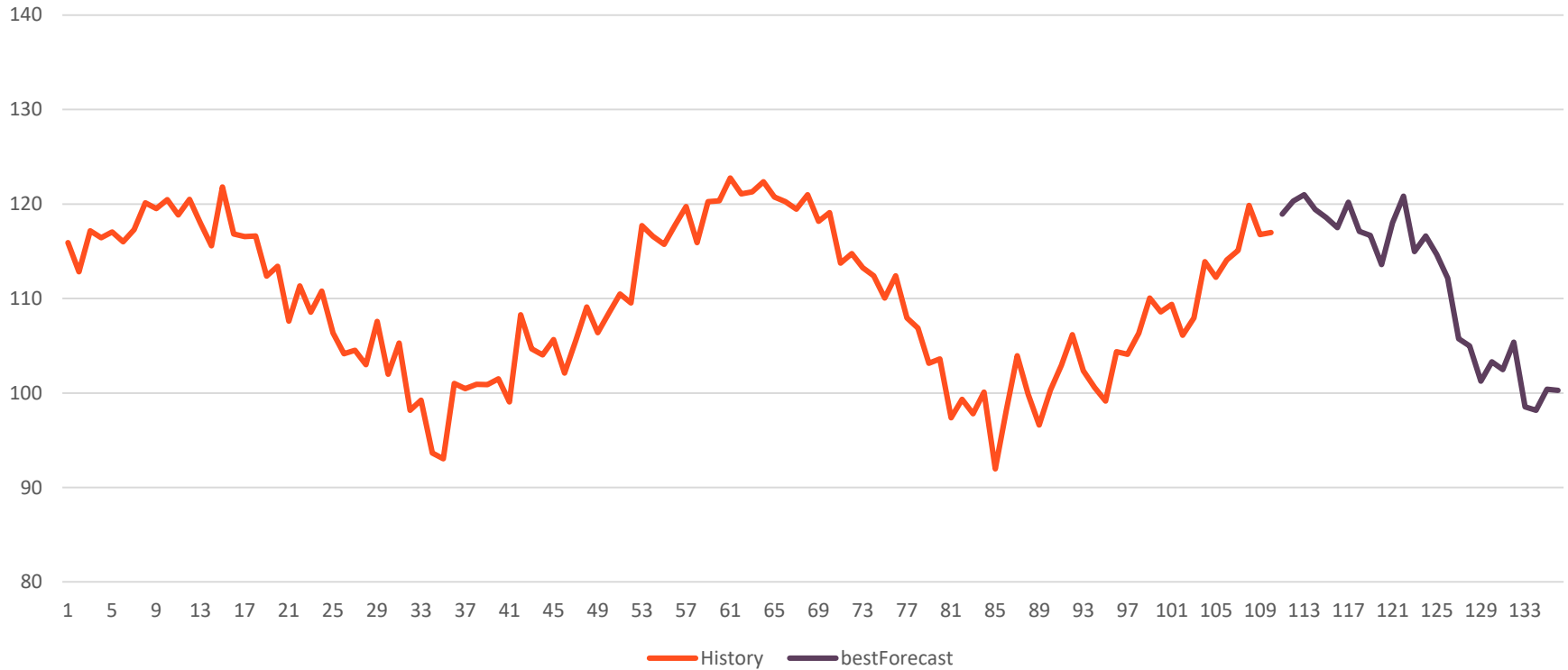
4. Managing forecast risk

We have a best-of-the-best forecast, and we can develop good forecasts fast, what else can we do with them?



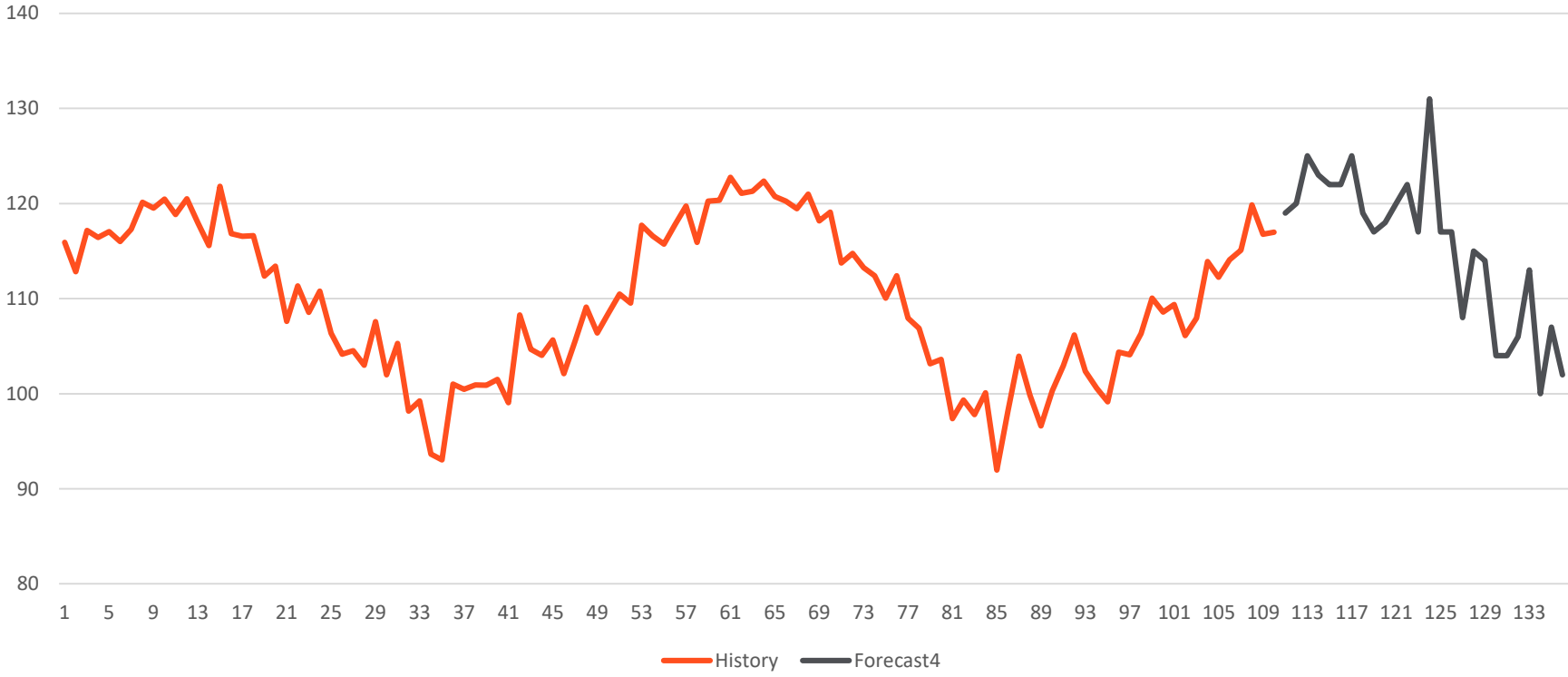
Best forecast using Best of the Best (BoB) forecaster

Call Volume Forecast



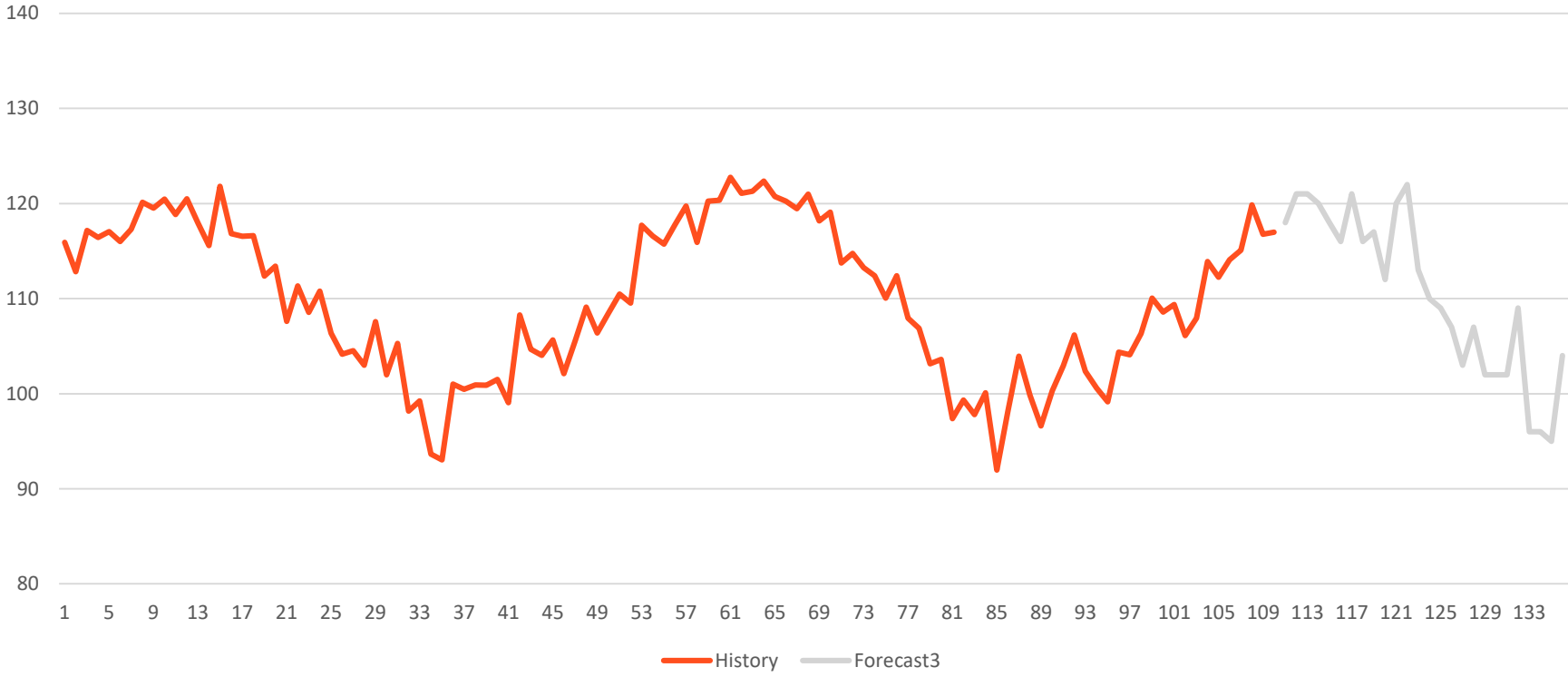
Second best forecast using Best of the Best (BoB) forecaster

Call Volume Forecast



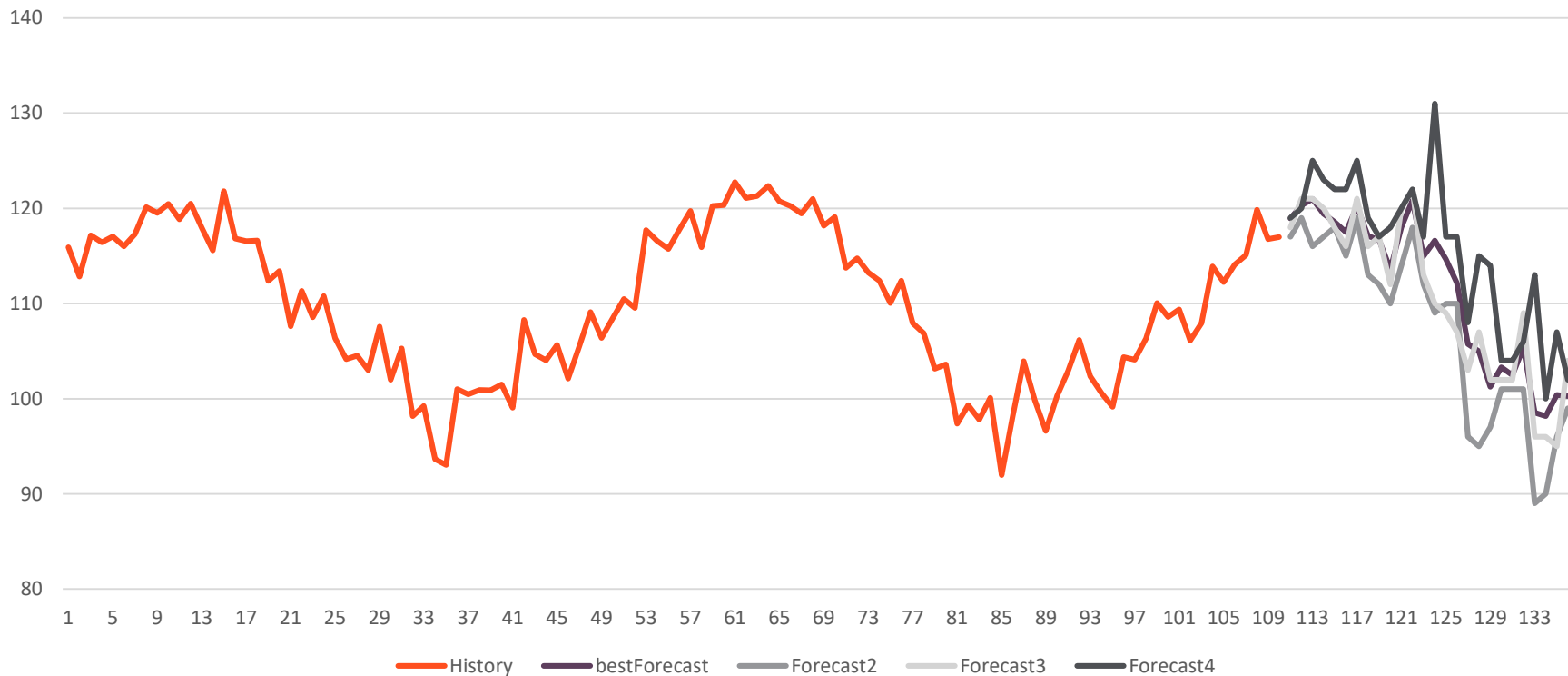
Third best forecast using Best of the Best (BoB) forecaster

Call Volume Forecast



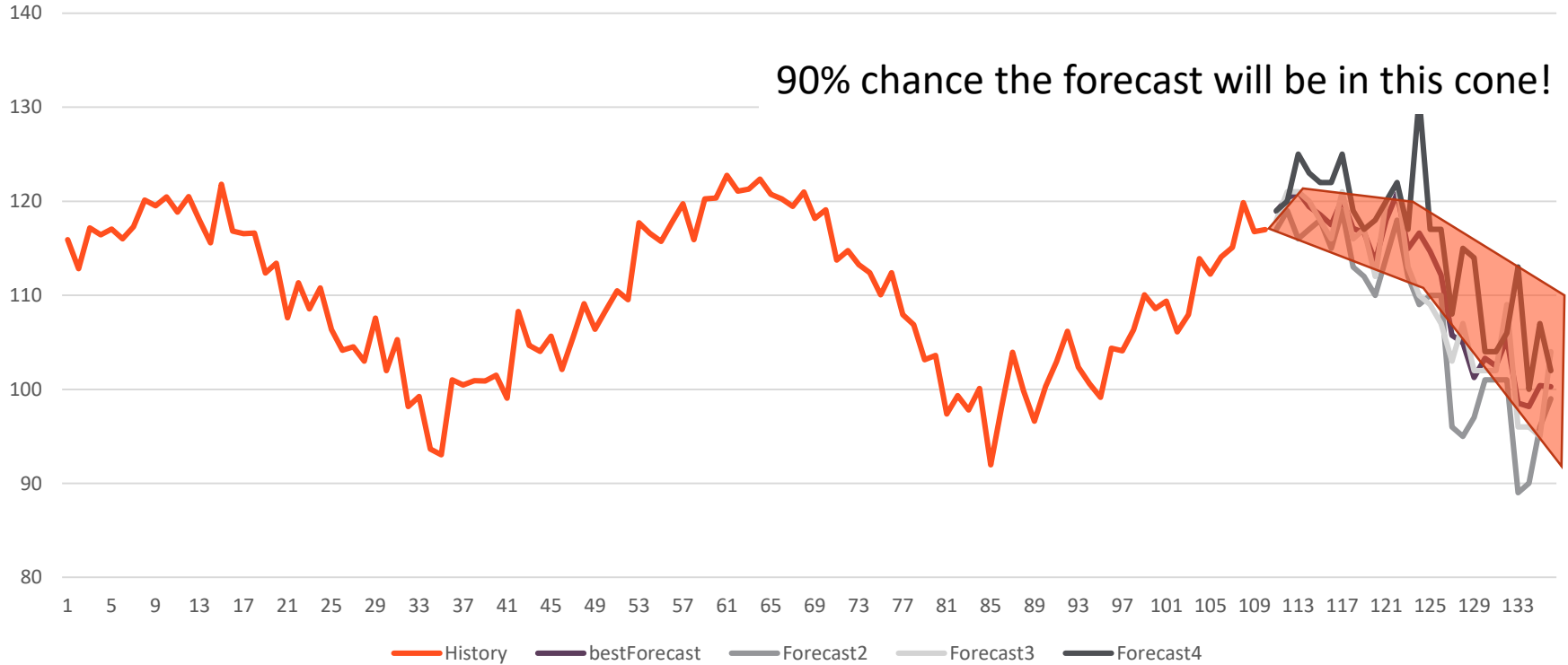
Look familiar?

Call Volume Forecast



We could create a probability cone around the best forecast

Call Volume Forecast



Speed, accuracy, and optimality enables automation and value added analyses *that has been unavailable until now*

Questions?

(Thank You)

