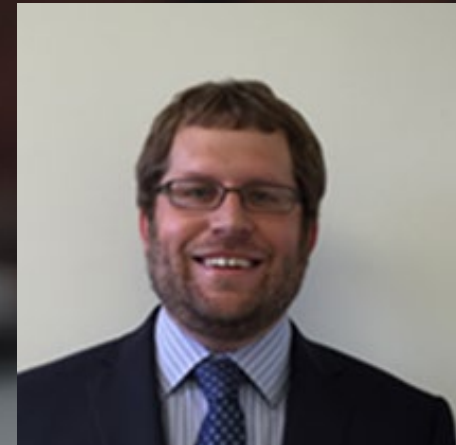


Demand Forecasting Through and Out of the COVID Chasm

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Demand Forecasting is becoming increasingly challenging

Store Closures

Overnight store closures and/or significantly reduced traffic

Economic Recession

Economic downturn, immediate unemployment, unknown recovery timeline, etc.

Modified Operations

Social Distancing, Masks, Increased Disinfecting, Additional Packaging, etc.

New “Normal”

History alone is not a good predictor for decisions – sales, returns, pricing, promotions, etc.



Predicting demand through the COVID chasm

Peak COVID-19 demand was/is unforecastable

Traditional forecasting models are less-than-useful or outright fail during the COVID-19 peak.

COVID-19 recovery period IS forecastable

Configurable and well-designed models have proven to be effective. Trends from geographies and other leading indicators, e.g., infection rates & re-opening rate, are useful.





Dealing with the “Transition” Period

Focus on the HEROs!

- Observed trends of 30% decrease in the products that contribute 80% of sales.
 - ✓ *Reduce switchover in production and simplify planning.*
- Watch out for semi-permanent and permanent shift in the product mix.

Demand Shaping is Critical

- For many brands, focus moved from predicting demand to optimally clearing inventory.
 - ✓ *To better manage existing inventory, algorithmic approach to demand shaping has yielded better outcomes – sell-thru and margin improvement.*

Plan for recovery to happen differently across the portfolio

- Consumption and socio-economic factors drive how fast a brand/category/location reaches new normal.
 - ✓ *AI models can simulate and re-forecast quickly with new data.*
 - ✓ *Segmentation based approach can be applied to categorize.*

Handling the “New Normal”

Online! Online! Online!

- Shift to online and less frequent store trips is here to stay.
- eCommerce and Amazon are no longer small, manually planned entities.
 - ✓ *AI models can help forecast data-rich online channels.*

Move away from forecasting shipments

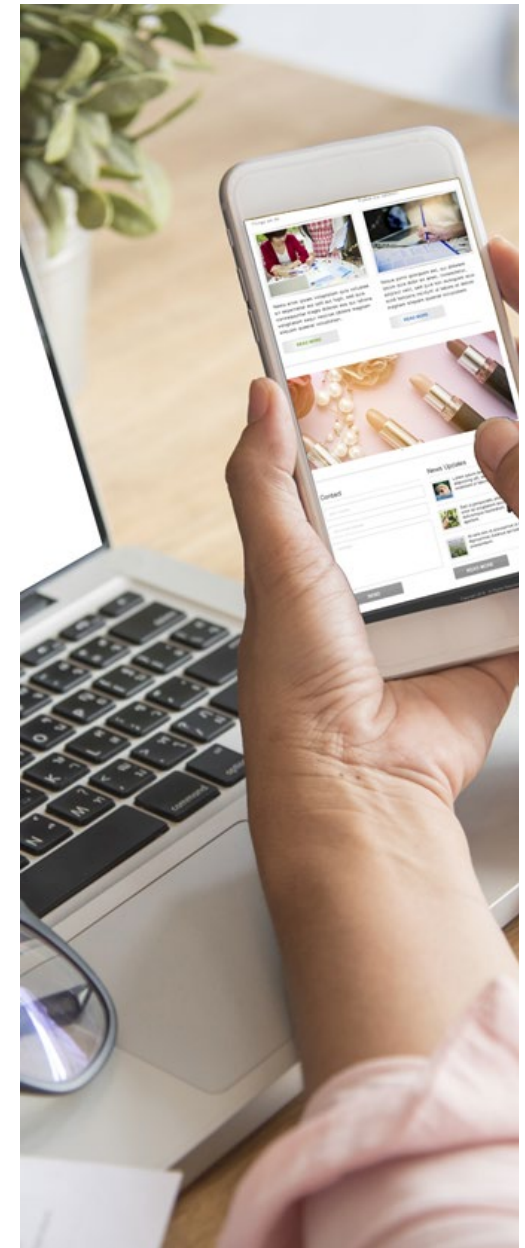
- Focus on forecasting consumer demand, not internal shipments
 - ✓ *Using external data, AI models can anticipate what consumers will be looking for on store shelves. I.e., Consumption Sensing*

Activate the Shift in Product Mix

- Forecasting and planning solutions need to be calibrated to deal with the shift in volumes across and within categories.
 - ✓ *Forecast at the optimum level, use recent SKU mix to drive replenishment and production*

Augmented Intelligence is Powerful

- Forecasting will require a mix of art and science, i.e., Planners and AI
 - ✓ *AI models with external data collaborating with demand planners working closely with sales teams on the ground.*



Near-Term and Forward-Looking is the way to go!

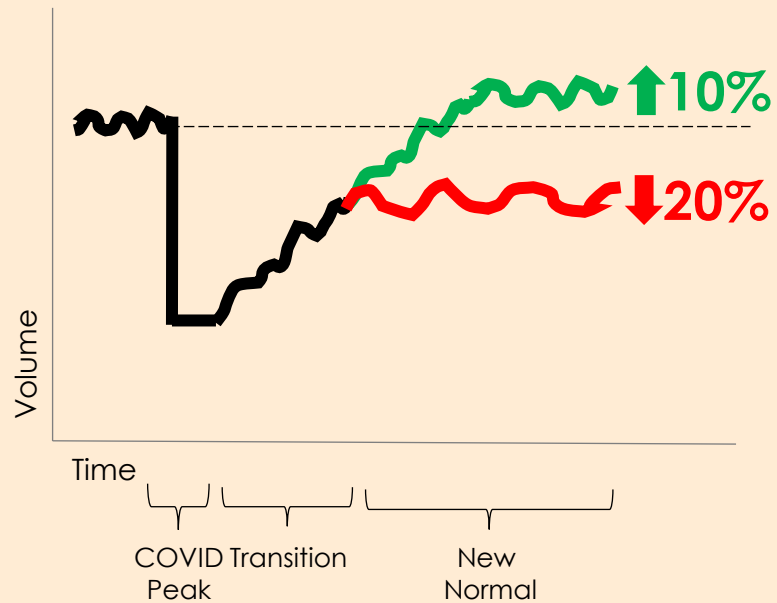


Building a Practical Framework –

Differentiating “transition” from “new normal”

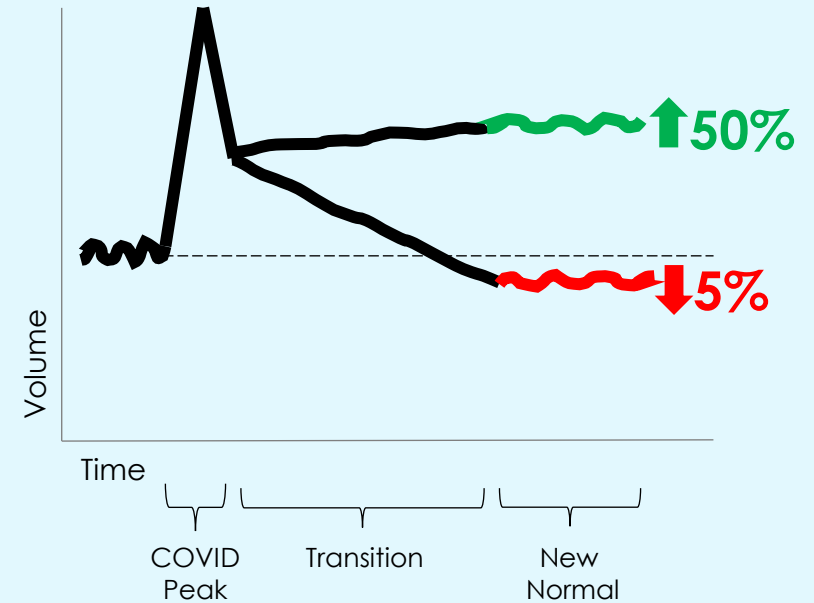
Store Closed during Peak

Non-Essential



Stores Open during Peak

Essential

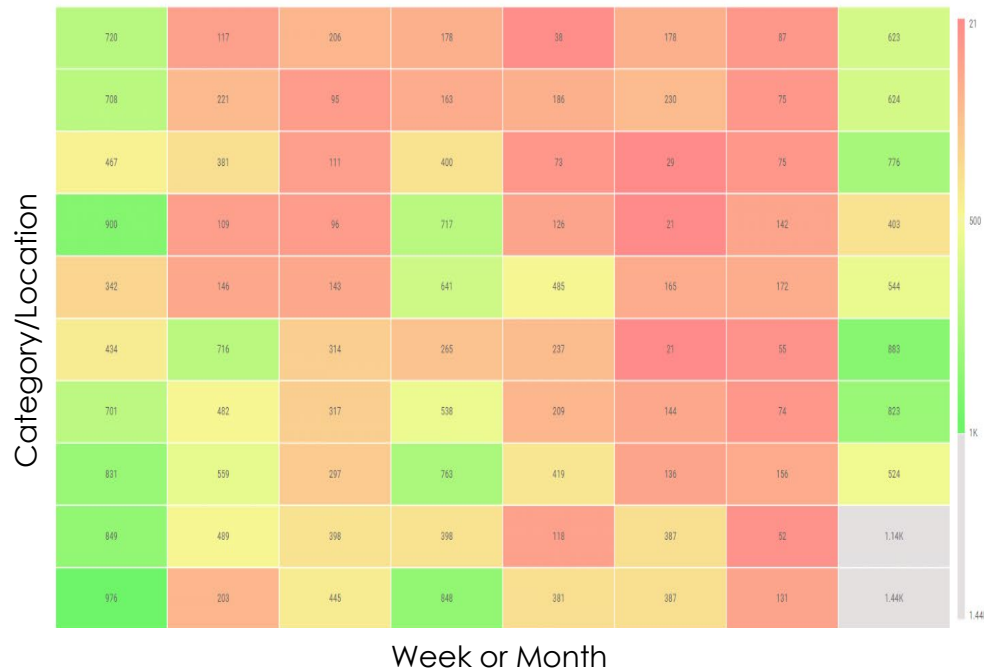


Building a Practical Framework –

Forecasting recovery “transition” requires leveraging external data

Simple heatmap can track recent sales versus pre-COVID (weekly or monthly)

Due to “unusual” demand, a heatmap can quickly identify where you are in recovery transition



Augment the heatmap with external data:

➤ **Geographical re-opening and infection data**

- Different geographies will open at different times. Be prepared for new peaks and closings.
- Incorporate learnings from similar markets. Be careful to avoid assuming dissimilar markets will now be similar, i.e., China versus US

➤ **Mobile phone movement data**

- Mobile phone data indicates when and where people are out and about. I.e., because an area re-opens doesn't mean people will be going out.

➤ **Unemployment data**

- Unemployment data can help inform where and how much areas are impacted by the recession.

Building a Practical Framework – *Forecasting for the “transition” and “new normal”*

1

Forecast Near-Term (Transition 0-2 months)

- Forecast with minimal corrections to history
- Sensitize forecast to recent time periods

2

Forecast Mid/Long Term (New Normal 3+ months)

- Forecast with COVID-19 period imputed so long-term demand is appropriate

3

Combine Near and Mid/Long Term Forecasts

4

Layer Transition Assumptions from Heatmap over combined forecast

Considerations:

- “Timing” for Near and Mid/Long Term (Steps 1 & 2) will vary by category, channel and geography
- Imputation strategy will vary across product portfolio. I.e., tail products may disappear, hero SKUs may need adjustment if they spiked during COVID peak, etc.

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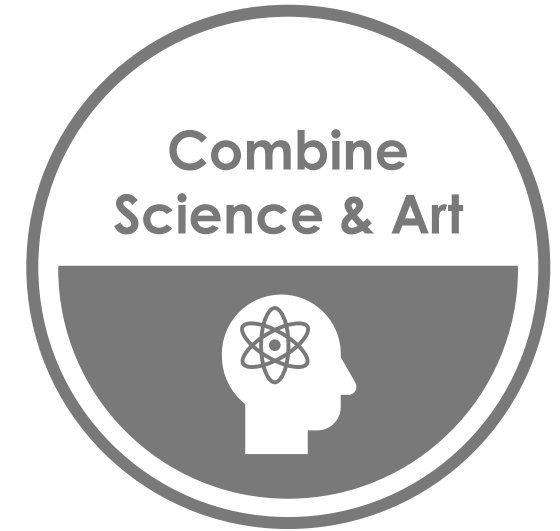
Take-Aways



Forecast for the “Transition” and the “New Normal”, be prepared for sudden changes in demand



Internal data integrated with external data sets provide a much richer and more accurate view of consumer trends



Augmented Intelligence, combining AI with human expertise, will be the key to success



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