



Opening the Black Box

Leveraging Track's Pricing Algorithm for Smarter Business Decisions

Decision-Making Factors



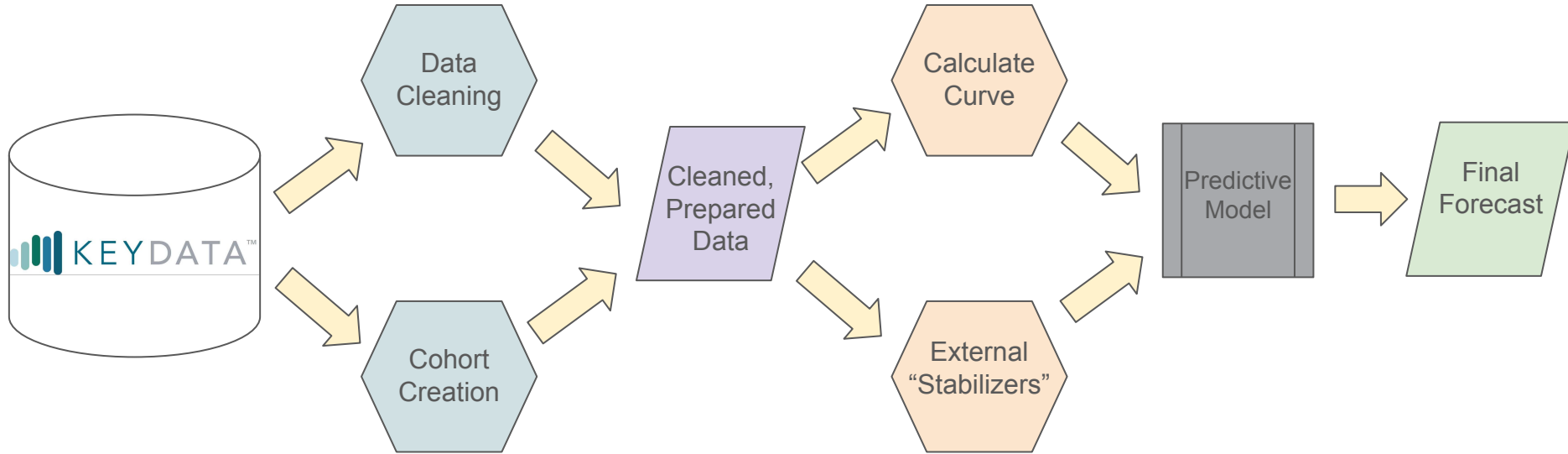
A Look Inside The Black Box...

How does it all work, anyway?

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SERIES

The **Heart** of Hospitality

Algorithm Workflow



Step 1: Clean Market Rates

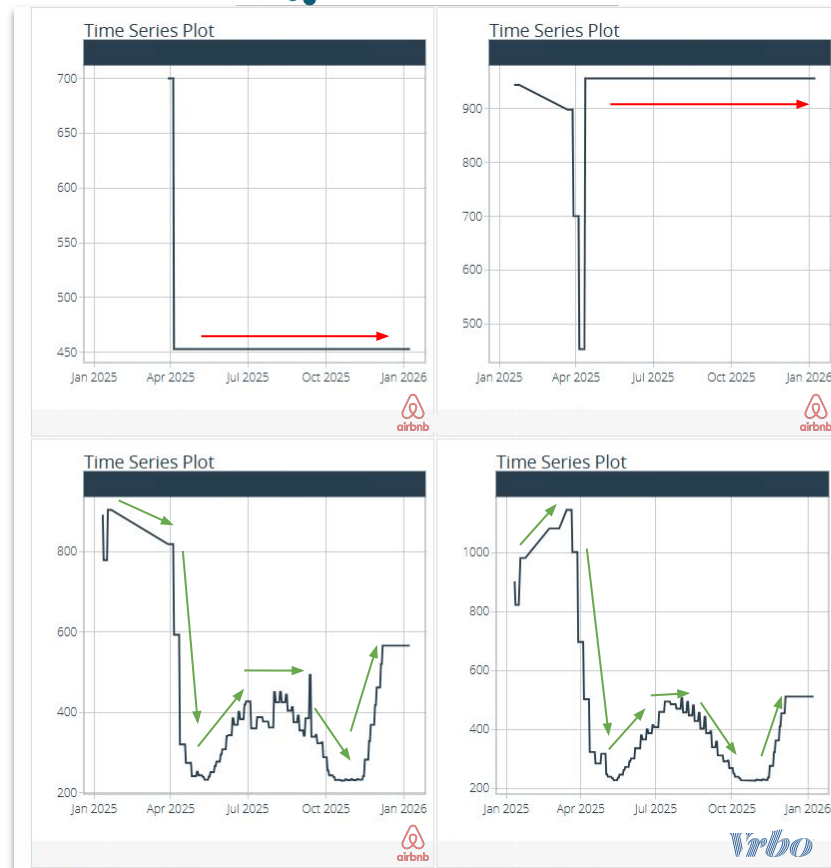
Turning Raw Data Into Reliable Data

Airbnb and Vrbo rates via **Key Data**

- New data received daily
- Calendar data is forward-looking
 - Market volatility made historical data potentially unreliable

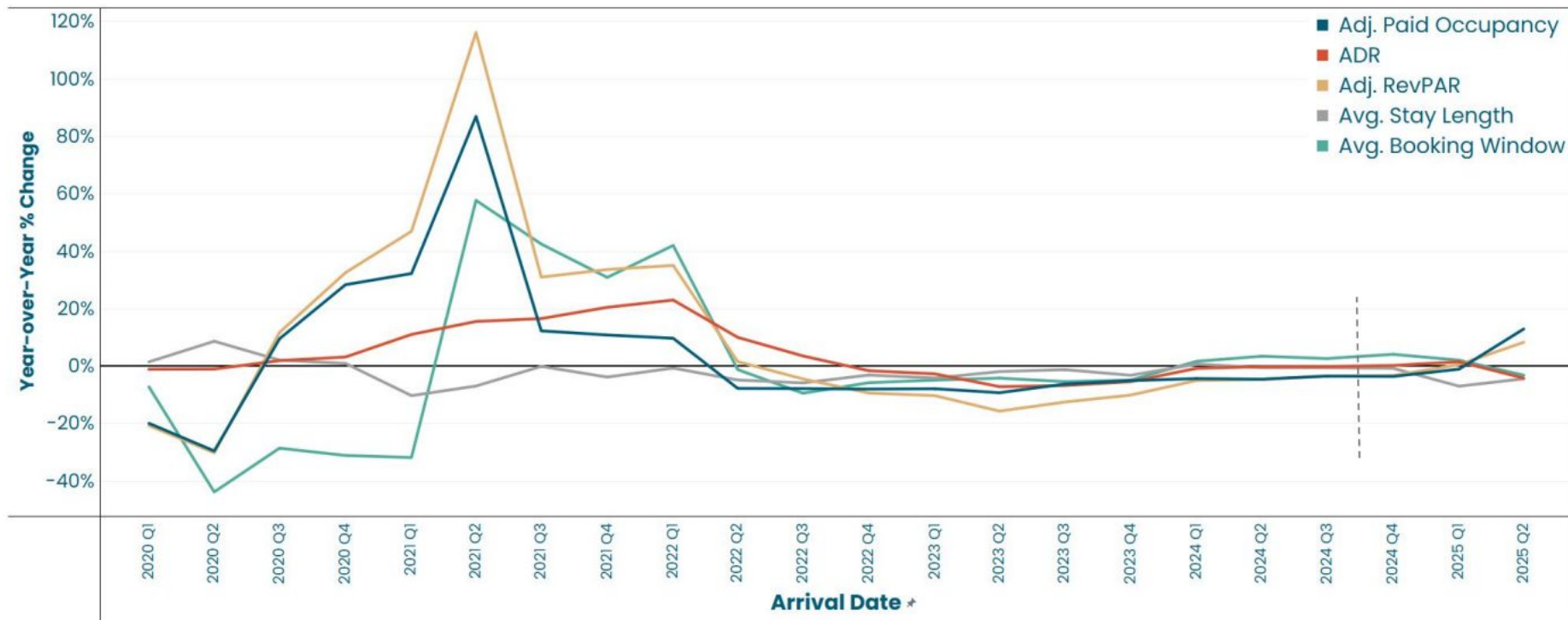
Listings not meeting the following criteria will be removed:

- No seasonality (flat lines)
- Missing dates
- Full availability for the next 365 days
- No availability for the next 365 days



Why No Historical Data Up Until Now?

Graph From Key Data's "United States Vacation Rental Trends" Presentation at DARM 2024:



Final data for Q1 2019 - Q3 2024. Pacing data for Q4 2024 - Q2 2025 as of November 19

Data aggregated from Key Data customer direct integrations

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Step 2: Build Geomarkets and Comp Sets

Honing In On The Data That Matters To You

Geomarket

Filtered data used to calculate prices

Ideal sample set = 300+ listings (but less is ok!)

Comp Set

Subset of filtered data used for market benchmarking

Ideal sample set = 100+ listings (but less is ok!)

How do we decide what matters?

- Location (Latitude/Longitude)
- Bed and Bath Count
- Lodging Type (i.e. Condo vs Single Family Home)
- Amenities (i.e. Pool, Beachfront, Ski In/Ski Out)

What happens in areas with low inventory?

- Expand range



Step 3: Identify Trends & Fill in the Blanks

Curves, Lines, and Math, Oh My!



Pricing Trends (aka the Magic Curve)

How prices in a Geomarket are changing over time

We don't price based on what the rates literally are - we price based on **how rates are changing**.

Why?

- OTA rates may be inflated due to commission, embedded fees, etc
- OTA rates do not represent all inventory on the market
- Maintain flexibility for introducing new data sources in the future

How?

- Use clean Geomarket rates to calculate the curve



Filling in the Blanks (aka Stabilizers)

What happens when there isn't enough reliable data?

When we don't have as much quality data as we'd like, we use "stabilizers" to **fill in the gaps**.

Why?

- Data may be limited or missing in certain markets at certain times
- The model is trained to pick up on patterns & trends which may be missing

How?

- Day of week
- Day of month
- Day of quarter
- Multiple seasonalities/trends
- Month of year
- Holidays

Step 4: Price, Price, Baby

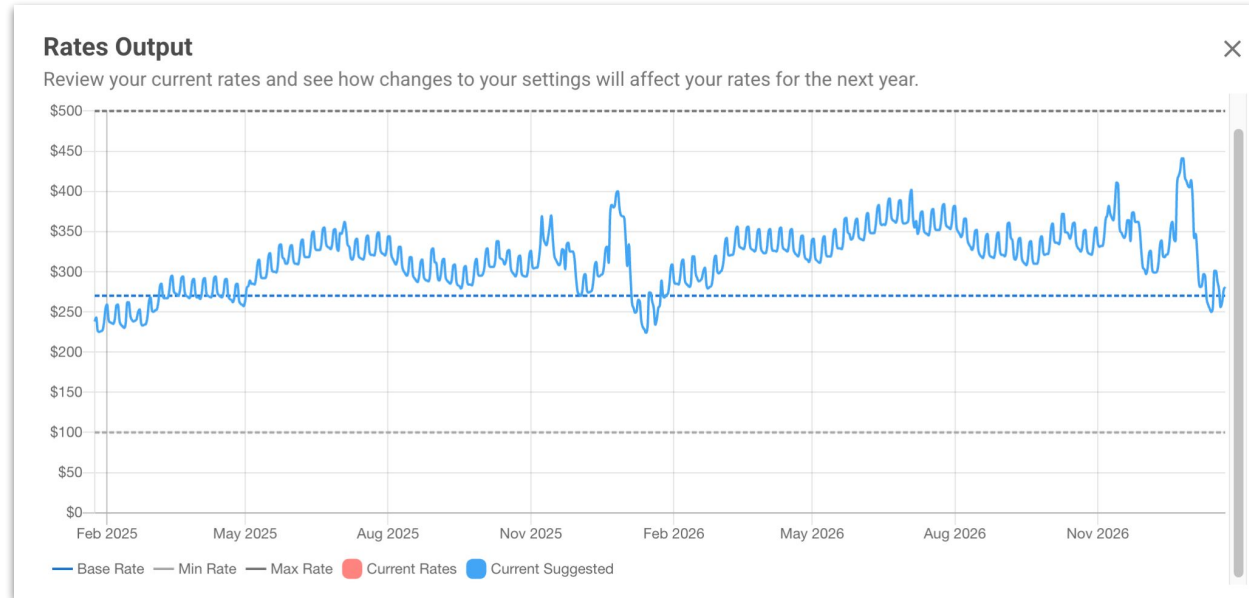
Show Me The Money!

✨ Final Touches

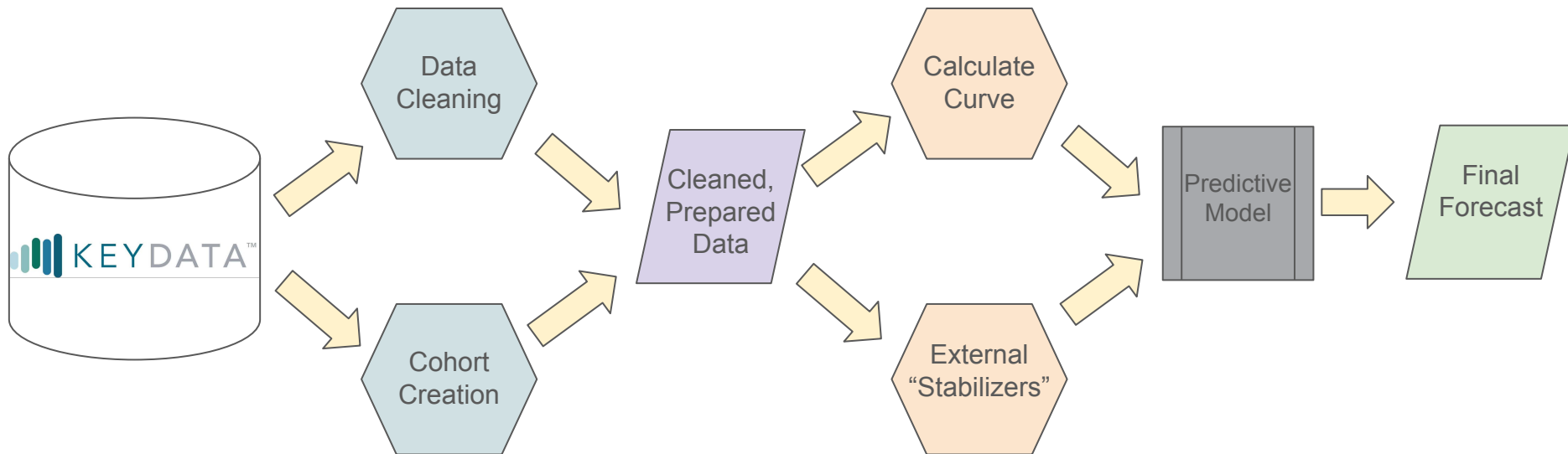
- Apply Base Rate, Min Rate(s), Max Rate(s)
- Adjust for Premiums & Discounts
- Adjust for Market Sensitivity settings

📈 Algorithm Kicks In

- Based on results from *all* prior steps, the Algorithm now generates a pricing recommendation



Algorithm Workflow



What's Next?

Algorithm Enhancements Under Consideration

- Additional Data Sources
 - Historical Market Data (coming in 2025!)
 - Now that the market is stabilizing, we can be more confident about using historic trends to predict future trends
 - Event Data
 - Using event attendance predictions to incorporate event-based travel trends
 - Anonymized Direct Data
 - Anonymous price and reservation data from other data sources
- Optimized Rate Breakdown (coming in 2025!)
 - In-application breakdown of how different factors are impacting the optimized rate (i.e. seasonality, premiums & discounts, holidays, etc)



*The **Heart** of Hospitality*