PredictHQ

How restaurants can improve restaurant forecast accuracy and drive profitability

Introducing Lineup

Brian Bemiller knew solving one of the biggest challenges for restaurants was going to take a lot of determination and data. But every restaurateur has always wished they could predict their sales accurately down to the day so Bemiller and his team reckoned restaurant forecasting was a problem worth solving.

All great businesses start off by identifying a large problem and building a powerful product or service to solve it. Lineup, an AI powered restaurant prediction platform aims to do just that. Specifically, they are focused on solving uncertainty for small to medium sized businesses. The first place they started? Restaurants. Restaurants are one of the top five industries by the sheer number of small to medium sized businesses in the United States, which represents a huge market opportunity. The restaurant industry has major challenges such as the rising cost of minimum wage that makes staffing correctly more important than ever, as well as being a permanently competitive sector with a heavy emphasis on strong customer service and quality.

Challenges with forecasting accuracy at restaurants

The largest contributing factor the Lineup team identified was the lack of data driven decision making. The second challenge was the lack of standardized decision making. They built Lineup to enable restaurants to be more data driven and accurate with their demand forecasting. Ultimately it enables restaurant chains to make faster and more accurate decisions to drive profitability.

Lineup

Name
Lineup

Bio
Lineup is an AI powered restaurant prediction platform based out of Ohio. They are a subsidiary of 1848 Ventures.

Website
https://www.lineup.ai/

Industry
Sales & labor forecasting

Business Type
B2B

Head Office
Westfield Center, Ohio, USA

The concept of Lineup started when a restaurateur was opening up a new location and said "I wish we could wave a magic wand to know how profitable they would be at the intersection of x street and y street." This caused Lineup's team to dig in to understand what other components would help build stronger businesses. What if Lineup could also accurately predict restaurant sales? And how much labor was needed on a given day? What if it could predict differences between in store, online and catering purchases by the hour? For many restaurants, these were questions that they weren't equipped to answer.

Lineup was taking on a massive challenge that required innovative thinking. They knew they needed to prioritize Data Science to address what they were hearing from restaurants along with all of the research that businesses struggle to make data driven decisions. They also knew that there were many factors affecting restaurant sales, profitability, labor, menu item ordering and inventory needs that they could uncover from data. The Lineup team started with a hypothesis that weather impacted restaurants and through several experiments they quickly uncovered another key demand catalyst: events.

Lineup quickly proved that events improve restaurant forecast accuracy, but the team needed help to scale

They led a proof of concept:

- They ran a test early on with five restaurants all within a couple of blocks of the United Center in Chicago, Illinois.

- The team received a list of events scheduled at the United Center to build out a machine learning model that would predict sales better than the industry baseline methods.

- The model leveraged historical restaurant sales, weather, reservation data and local events. In four weeks, they proved their developing data model could beat a four week rolling average, a common forecasting tool used by restaurants, in many cases significantly.

What they found:

- For the five restaurants participating in the research, Lineup was consistently 35% more accurate and in one case they were up to 65% more accurate.

- They also discovered a key breakthrough: every restaurant was affected differently by every one of these factors.

- It wasn't true that every time it rains, all restaurants would experience a decline in sales. Some might see an increase in demand, some might see a decrease.

BRIAN BEMILLER:

"The beauty of machine learning is that it can detect the changes and differences across all restaurant locations and adapt, but you need to ensure the data into your models is clean, accurate, and reliable."

After completing some hard steps, such as how to integrate these predictions into restaurant workflows, they needed to figure out how to make sure they were creating insights that were timely, accurate and actionable. A big problem to meet all three of these needs was event data. They had only collected raw local event data from a single conference center. How were they going to scale the collection of event data across the United States? They tried. It took only one week before they realized finding this data for the entire USA was going to take over every available hour.

PredictHQ provides meaningful, reliable demand intelligence to Lineup

Once they made the easy decision that they didn't want to spend their time collecting and cleaning event data, they needed to find who was already doing this. One team member discovered PredictHQ while exploring potential data sources, and they decided to give it a try. After a couple of quick tests they were able to find strong correlation between PredictHQ's demand intelligence data and a cohort of restaurants demand data.

PredictHQ's easy-to-use demand intelligence API gave Lineup direct access to real-world event data across the entire United States, verified from billions of data points every day.

Every event is cleansed, filtered, enriched, verified, and then ranked based on predicted impact with proprietary ranking technology. PredictHQ enabled the Lineup team and data scientists to scale their business quickly by building a robust, accurate, timely and reliable demand forecasting platform for small and medium sized restaurants. Not only are they using high quality data from PredictHQ without having to waste time validating, standardizing and cleaning data, they are also using many PredictHQ features and creating their own features to improve forecasting accuracy.

The Lineup team found PredicthQ has multiple layers of value. Not only does the demand intelligence API help Lineup improve prediction through accurate restaurant demand forecasting, they also leverage the data to simply present the most impactful events to the customers through their UI. They feel confident they are providing the best information possible to enable the best decisions possible. As PredictHQ's demand intelligence data is an integral part of their Lineup AI product, they need to have 100% confidence in PredictHQ's data quality. Their product relies solely on meaningful, reliable data.

PRODUCTS & FEATURES

API – Premium Plan

Our API subscription for those who want the full power of our demand intelligence in their analysis and demand forecasting models.

Ranking

Every PredictHQ event is assigned a numerical rank to help you filter between major and minor events.

Event Categories

PredictHQ covers 18 categories of events; these include scheduled events, such as conferences, and unscheduled events, such as severe weather.

PredictHQ

Results

Around 65% of restaurants expenses are spent on labor and food and these are the exact areas Lineup is helping customers better predict. Although early days, the traction Lineup has seen with restaurants is impressive. There is a clear need.

A lot of restaurants use same day, last year or a simple rolling average to forecast future sales. This method only gets you so far given the frequent peaks (incremental demand) and valleys (decremental demand) that occur in a given week, which the Lineup team calls "Extreme Days". This is especially true during the COVID-19 pandemic, where historical data is less useful, manager intuition is a thing of the past, and salesTe fluctuating greatly for many restaurants.

Lineup wants to enable small and medium sized restaurants to be more data driven and to create more accurate predictions -- especially for the extreme days. Even if they are able to be more accurate for the 33% of days that are extreme for an average restaurant location in a given month, this multiplies quickly in terms of cost savings and impact to a restaurant's bottom line. Brian learned that some restaurants were losing up to $100k in over scheduling per quarter. These are the exact types of costs that their customers can avoid with their forecasting and data insights.

"There are always going to be things you're not going to know ahead of time, especially with restaurant demand. The goal is to ensure they can help restaurants get the most accurate predictions possible, exactly when they need them to drive profitability," says Bemiller.

Finally and perhaps what is more exciting is what is to come. The Lineup team knows it doesn't just end at weather data, events and powerful feature engineering from PredictHQ. The prospect of other demand drivers is something that they hope to explore alongside the PredictHQ team to further increase their prediction quality.