

A person in a dark blue suit and light blue tie is holding a clear crystal ball with both hands. The crystal ball is resting on a wooden surface and contains a miniature, detailed model of a modern skyscraper. The background is blurred, showing an office environment.

SALES FORECAST

THE

POPUP

ECONOMIST

Agenda

1. **Recap of the brief:** What are our key objectives?
2. **Why a forecast:** How can having a forecast help your business?
3. **Forecast elements:** What factors were included in the model to get the best results?
4. **Forecast results:** An overview of predictions vs actuals and how much does each element contribute to sales?
5. **Forecast accuracy:** How accurate is this and should we worry if there is sometimes a big difference between actual and predicted

01.

Recap of Brief

Recap of the Brief

Create a forecast for total sales for Company A which can be created 12 months in advance and updated every quarter. This can then be used to sanity check the business plan and give better visibility to allow for better forward planning

02.

Why a forecast?

Why a Forecast?

A forecast helps your business save money and make more of it

- If sales are forecast to fall due to external market conditions you can save money by ordering less stock. This will avoid extra storage costs and prevent cash from being tied up in inventory when you might need it to keep the business going through the tough times.
- If market conditions are expected to improve it will help ensure you don't miss out on the opportunity to sell more and give you a heads up on how much stock you need
- If you are planning to grow by increasing marketing spend or activity it can help you decide how much you need to do in order to reach a certain level of sales
- It can be regularly updated so you are able to see if you are on track to meet your sales targets and business plan and take swift remedial action and proactive steps instead of being surprised and having to react after the event

03.

Forecast elements

Forecast Elements

These factors were found to have a strong relationship with sales

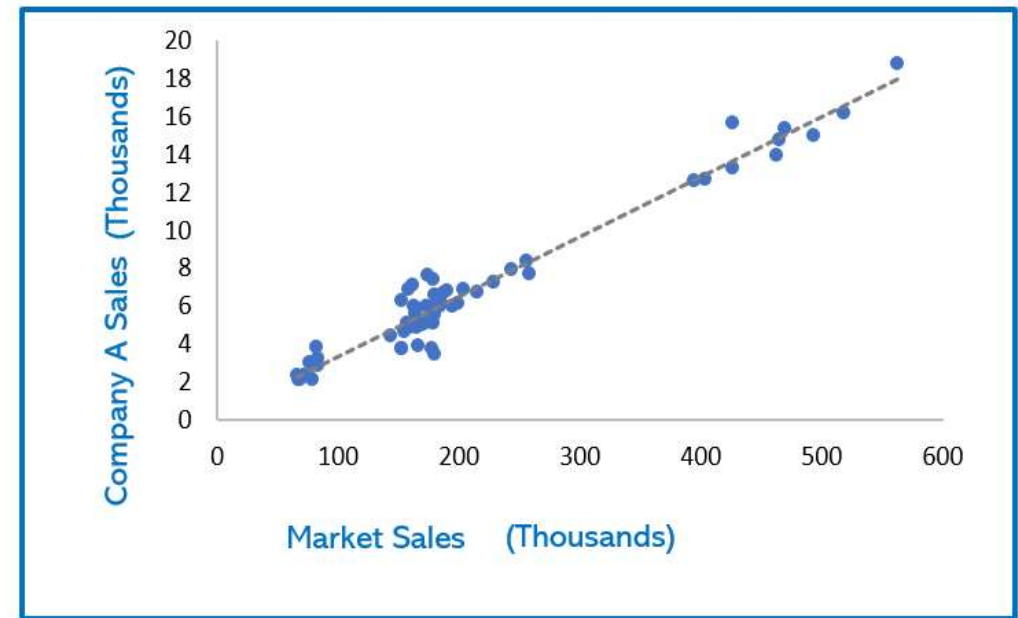
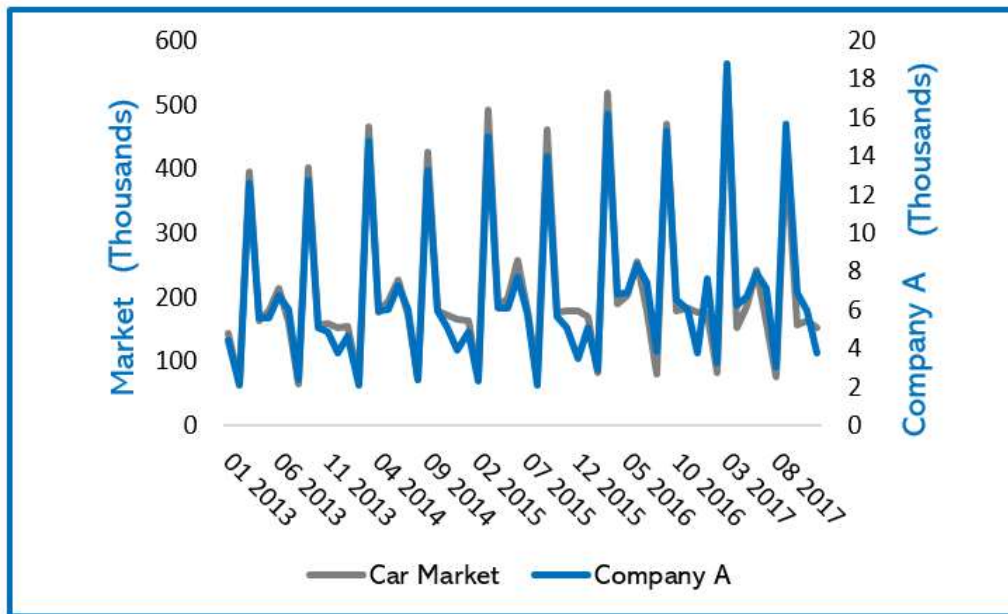
- Incentive spend: An amount of money given by head office to individual dealerships to enable them to offer discounts on the car. The higher the incentive spend, the lower the actual price the customer faces
- Market forecast: This is produced quarterly by the Society of Motor Manufacturers and Traders (SMMT) and provided to their subscribers

These factors are important for the business but were not included in the model

- Marketing: Whilst this is crucial for any business, it was found that marketing helped to maintain sales at a certain level but did not contribute significantly to the monthly fluctuations in sales
- Economic conditions: The effect of the economy is largely captured in the market already and so does not require separate measurement
- Prices: Direct prices are not included as they do not change often enough. However, a measure of price variability is captured in the incentive spend because it changes the price that the customer actually faces. This can also be called the effective price

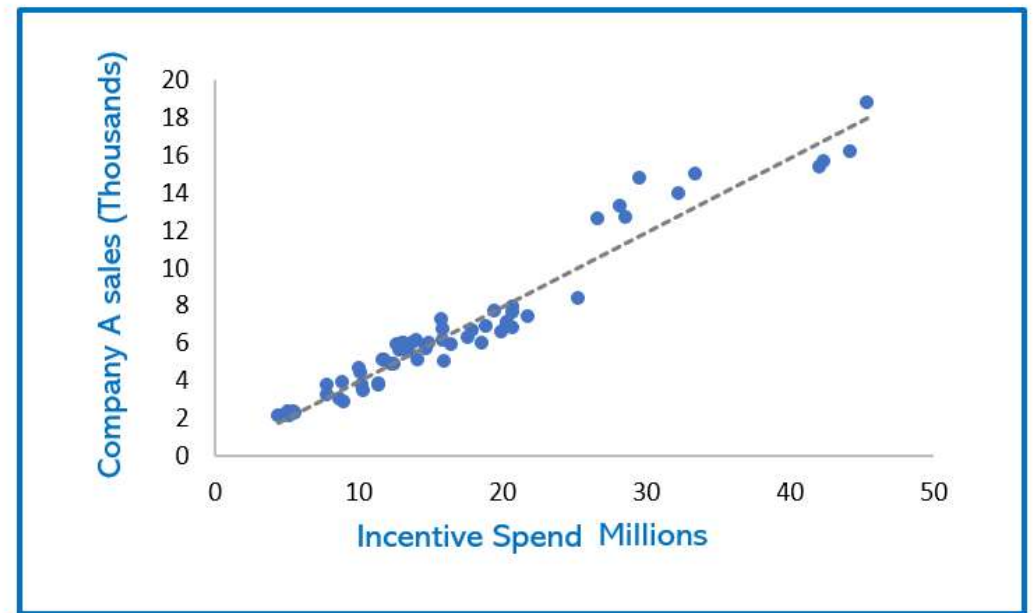
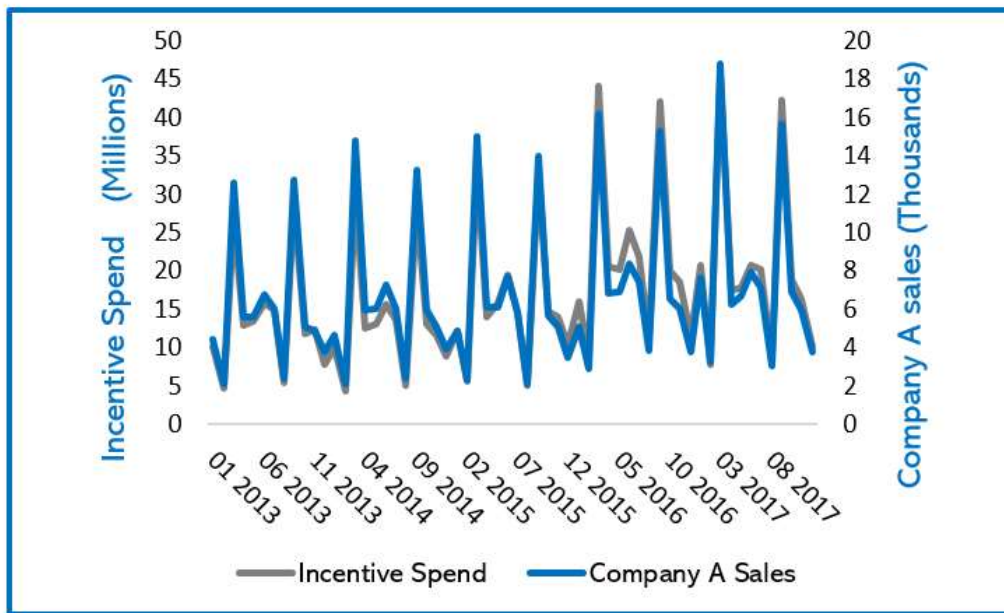
Forecast Elements

Company A sales and market sales are highly correlated, driven by a strong common seasonal element



Forecast Elements

Incentive spend is very reactionary and changes in response to market conditions. Planned spend is based on market forecast



Forecast Methodology

Data from 2013 to 2017 are used to estimate a model which explicitly shows the numerical relationship between incentive spend, market sales and company sales



Then the market forecast and planned incentive spend are plugged into this model to give a realistic forecast simulation to assess how the forecast performs when looking ahead

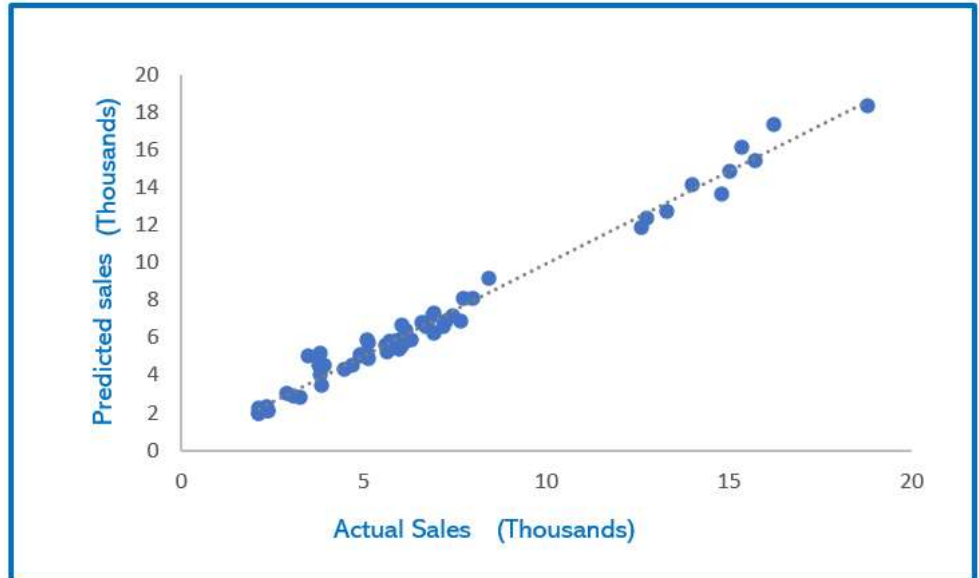
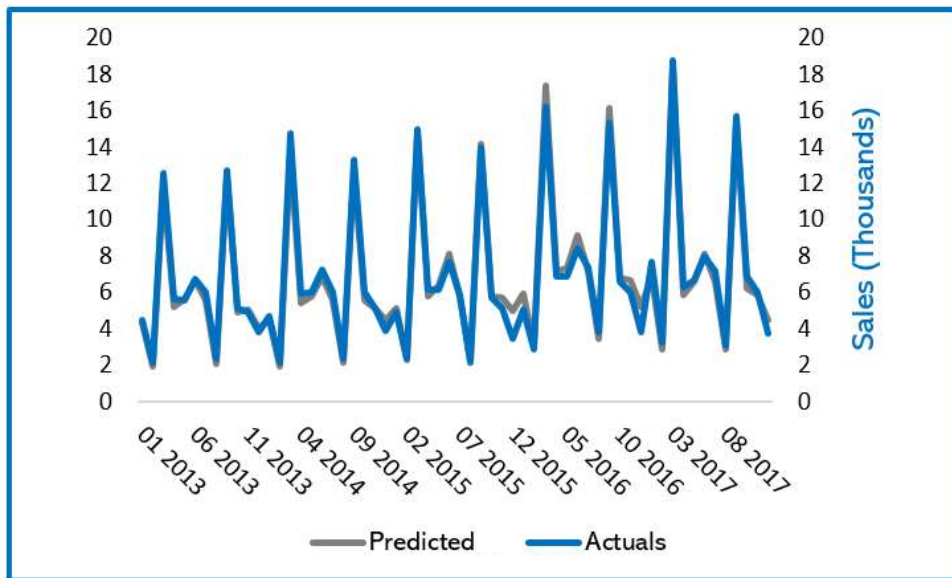
Seasonality isn't explicitly modelled in this version as all three exhibit strong seasonality. However, a further version could explore this in case there are differentials in size of effect

04.

Forecast results

Forecast Results

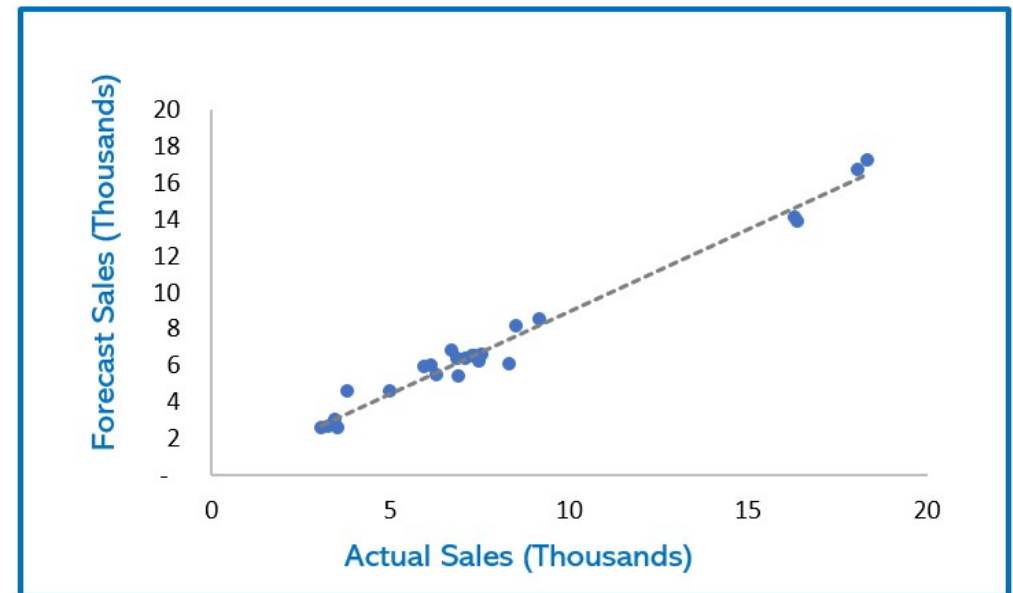
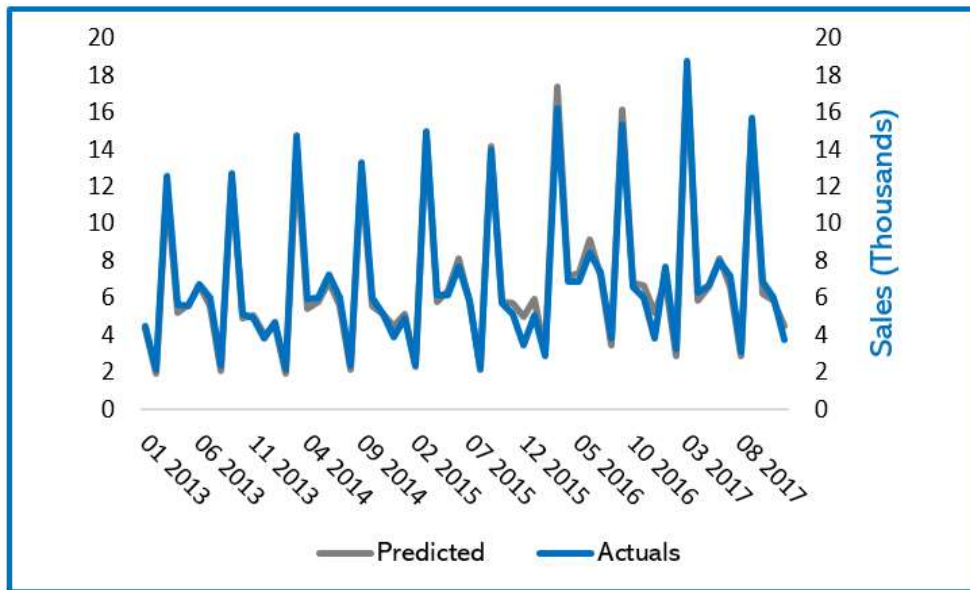
Due to the strong relationship between these factors and sales, the forecast is very accurate. The average forecast error is 7%, giving an accuracy rate of 93%. This only shows the forecast using past data



An error rate of 7% means that the average error is 7%

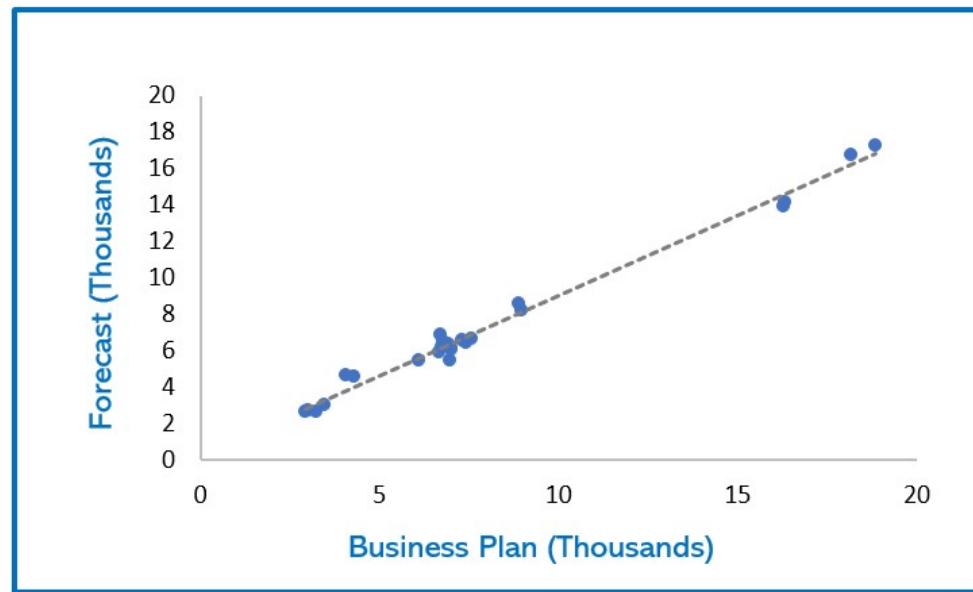
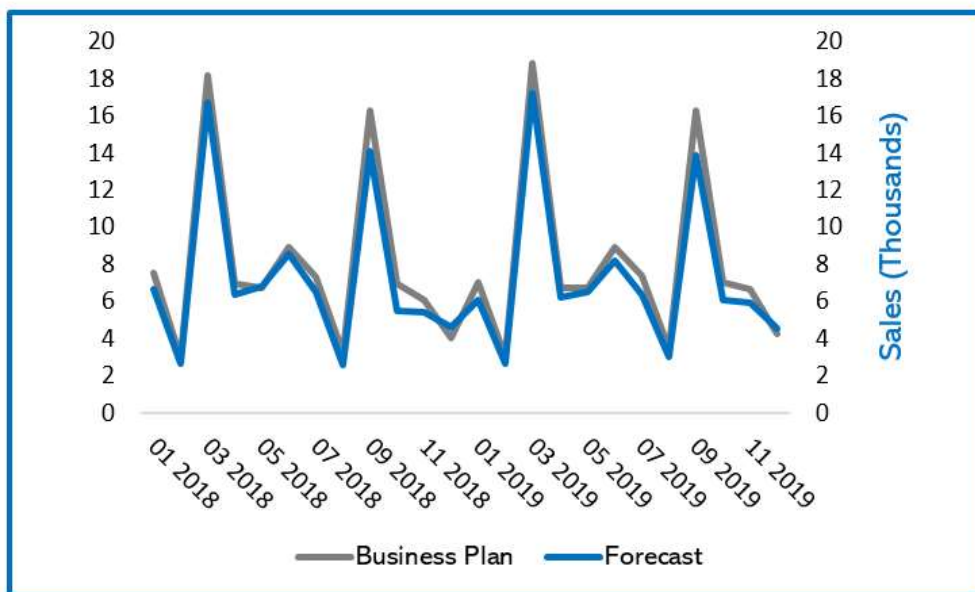
Forecast Results

The model still performs strongly when using planned incentive spend and market forecast, with an accuracy rate of 88%, the average error being 12%



Forecast Results-vs Business Plan

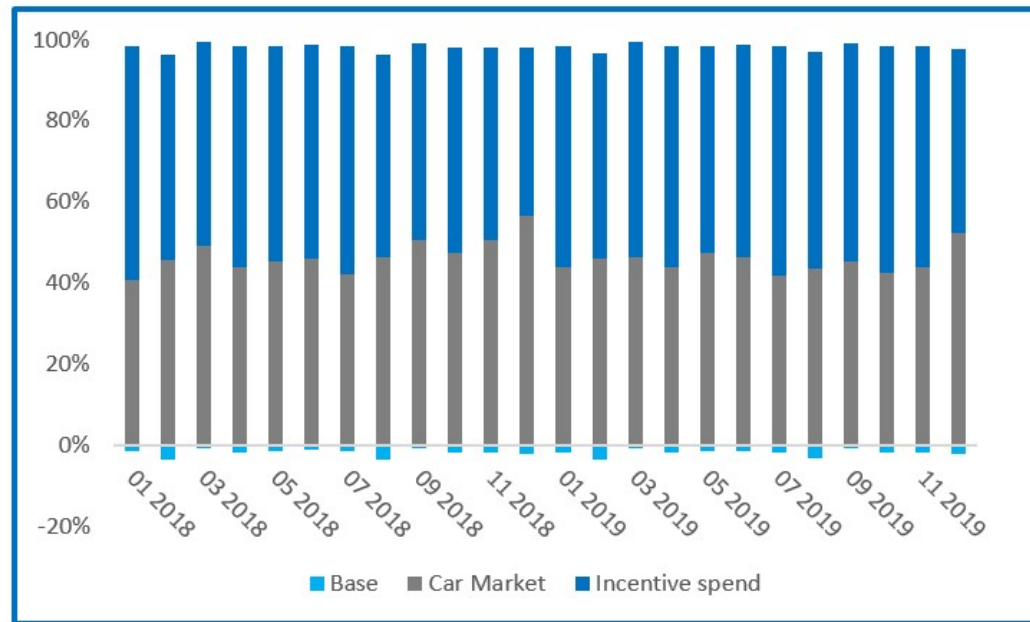
The forecast predicts the business plan with a high degree of accuracy of 89%, with an error rate of 11%



There is a strong correlation between sales and business plan due to the company strategy of actively increasing incentive spend when needed in order to hit targets

Forecast Results

The split between the effect of the market and incentive spend is roughly equal, with the market having a slightly stronger effect at 53% and incentive spend 49%.



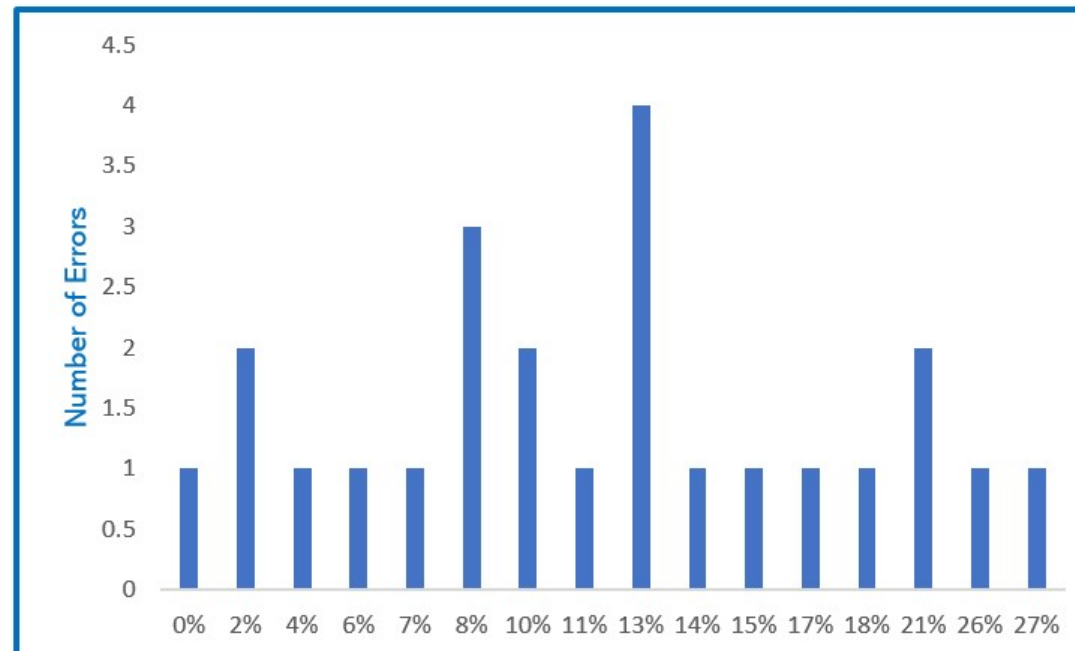
Remember that marketing plays a key role in the background and helps maintain sales at their current level, and then that level is split between market and incentive spend. Base shown here acts more like a 'balancing' factor in the model to tidy it up, but the effect is very small and so in this case it was felt not necessary to adjust to make it positive.

05.

Forecast accuracy

Forecast Error Analysis

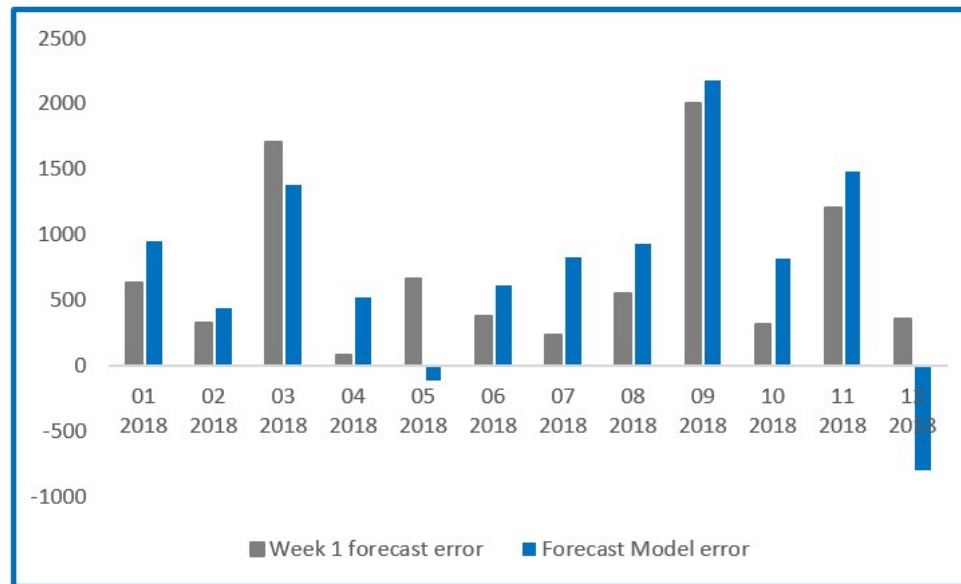
Most errors are 13% or below, with the average also being 13%



Some larger errors are due to stock not arriving in time to meet sales targets or market disruptions which meant that sales were pulled forward or pushed backwards away from their usual months

Forecast Error Analysis

The forecast made 12 months in advance performs well compared to the forecasts made within each month, with average errors for the weekly forecast being 8% (for week 1) and model forecast errors being 12%



The weekly forecasts were produced each week for a given month, within that month. For example, a forecast for June was made each week in June

Thank You