

Recruitment Challenge:

Q: How do you model spend carryover?

- I modelled spend carryover with a geometric Adstock transformation. Adstock with geometric decay assumes the ad effect peaks at the time of ad exposure. The cumulative effect is the weighted average of media spend up until that particular week. I have set 8 weeks max for the accumulation.

Q: Explain your choice of prior inputs to the model.

- I assume my intercept to be a normal distribution with a broad sigma so that the revenue baseline can be learned from the data
- I assume the channel contribution should be positive. I have used HalfNormal distribution as a prior. And the sigma per channel depends on the total spend on that channel. So, the higher the spend, the higher the sigma, so more flexibility to fit the data.
- Likelihood is modelled with Gaussian noise
- For the Fourier component, I chose Laplace, as it prevents overfitting and can shrink to zero with no seasonal factor.
- I also assume a logistic saturation on per-channel contribution.

Q: How are your model results based on prior sampling vs. posterior sampling?

- From the plots it shows that our prior selection is not informative enough. It cannot model the trend, seasonality and also the bands are larger, which increases uncertainty. And after posterior sampling, we can see a better overall fit. The trends and seasonality are modelled, and also the bands are now narrower.

Q: How good is your model performing? How do you measure it?

- We can measure our model performance by RMSE scores by calculating the mean from the posterior samples with the observed data.
- We can also measure the R2 score in the same way. By comparing the R2 score, we can decide if our model is performing better than a baseline mean prediction. Our model's R2 score is 47%, which is better than simple mean.

Q: What are your main insights in terms of channel performance/ effects?

- If we plot the channel contribution share per channel, we can see that channel 5 has the most share and also the model is fitted better as we have seen a narrower HDI. The highest expenditure was from channel 7, and that contribution is the second highest. But to know the best media channel we have take the expenditure on that channel also into account.

Q: Can you derive ROI (return on investment) estimates per channel? What is the best channel in terms of ROI?

- We can get the ROI by dividing the mean contribution per channel by the total spend on that channel. Channel 2 is the best in terms of ROI