

# Peak Choice: *The Ultimate Ski Trip*

**Team Datathon Crushers**



Malcolm Wong



Sean Wang



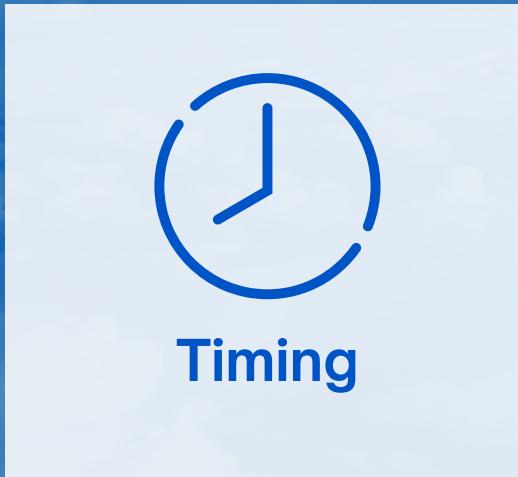
Margaret Zhao



Nathan Wong



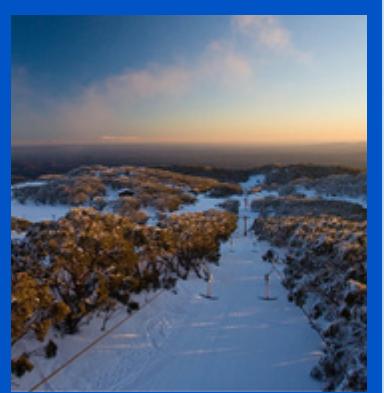
# Problem Statement



The perfect ski trip balances weather conditions, affordability and visitor numbers.

Our challenge is to find the one week and one resort in 2026 where all of these factors align for the ultimate holiday.

# Why Optimise a Ski Trip?



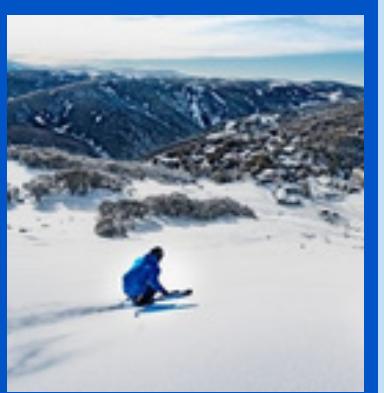
Mt Baw Baw



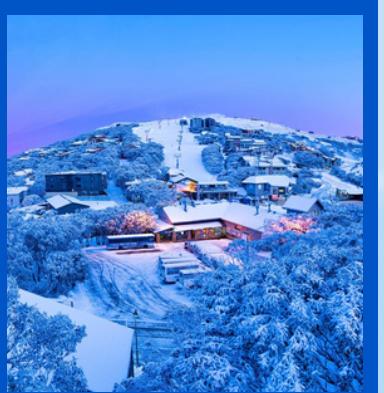
Mt Stirling



Mt Hotham



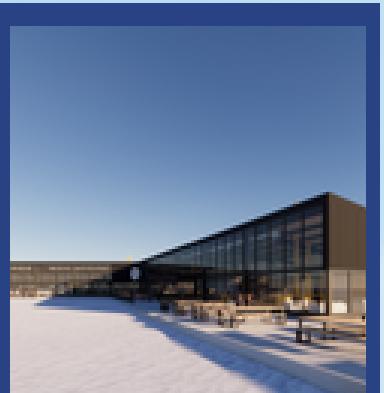
Falls Creek



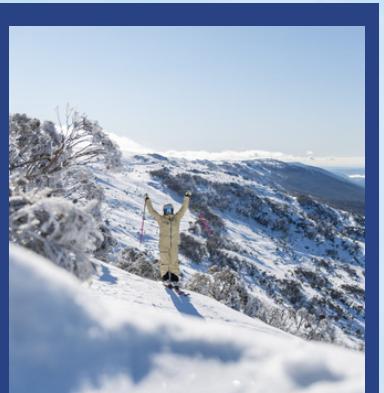
Mt Buller

*So many options...which to choose?*

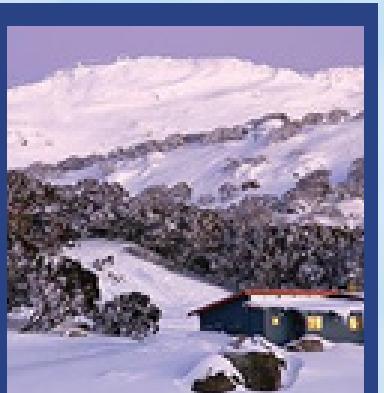
(VIC)



Selwyn



Thredbo



Perisher



Charlotte Pass

(NSW)

You only get so many chances to make memories with your friends whilst being hungover. This is one of them.

The ultimate ski experience!

# Our Pipeline

1



Data

2



Cleaning

3



Model Selection

4



Analysis

5



Prediction

6



Recommendation

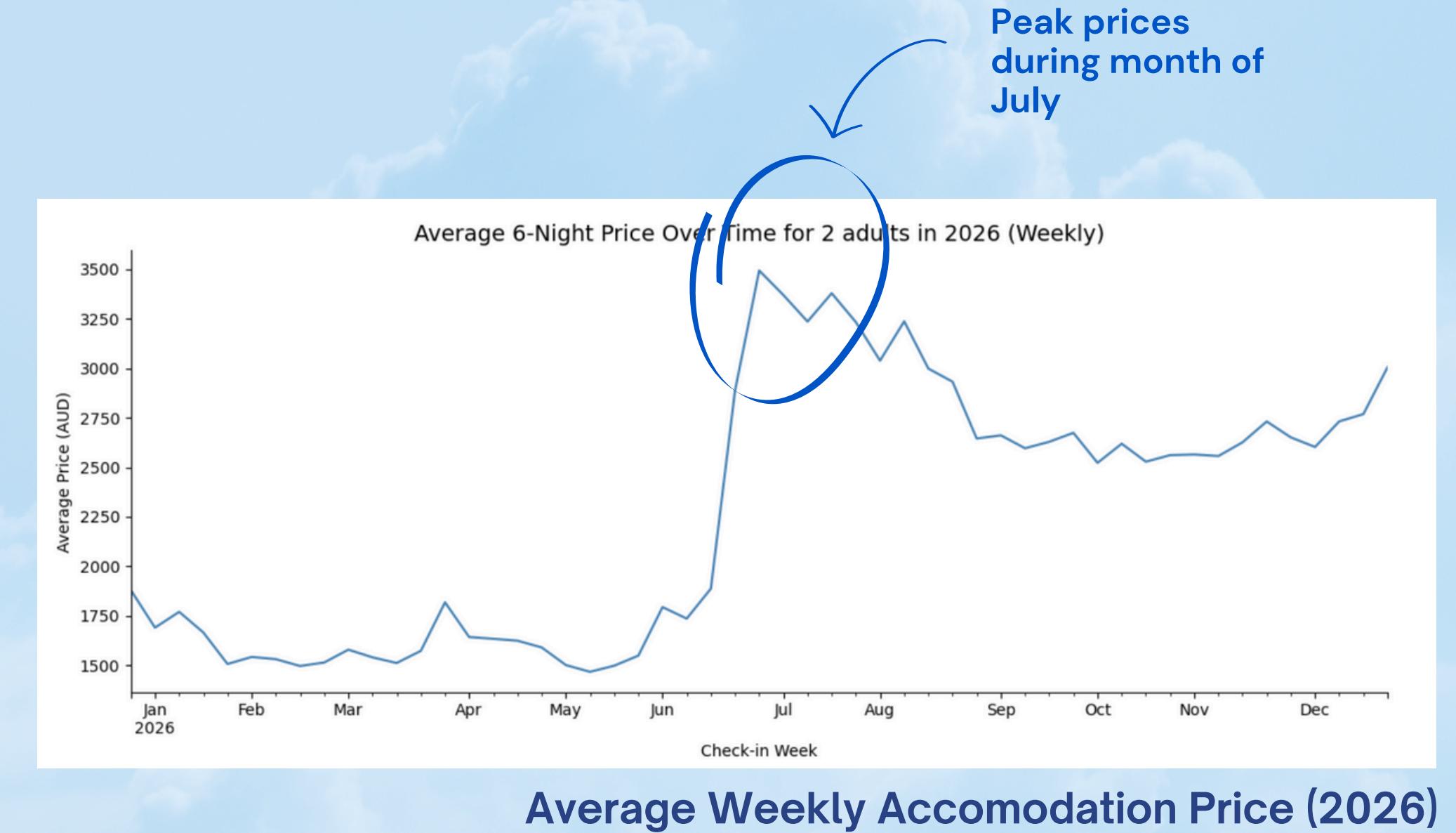
# When Are Ski Resorts Expensive?

## External Data Used

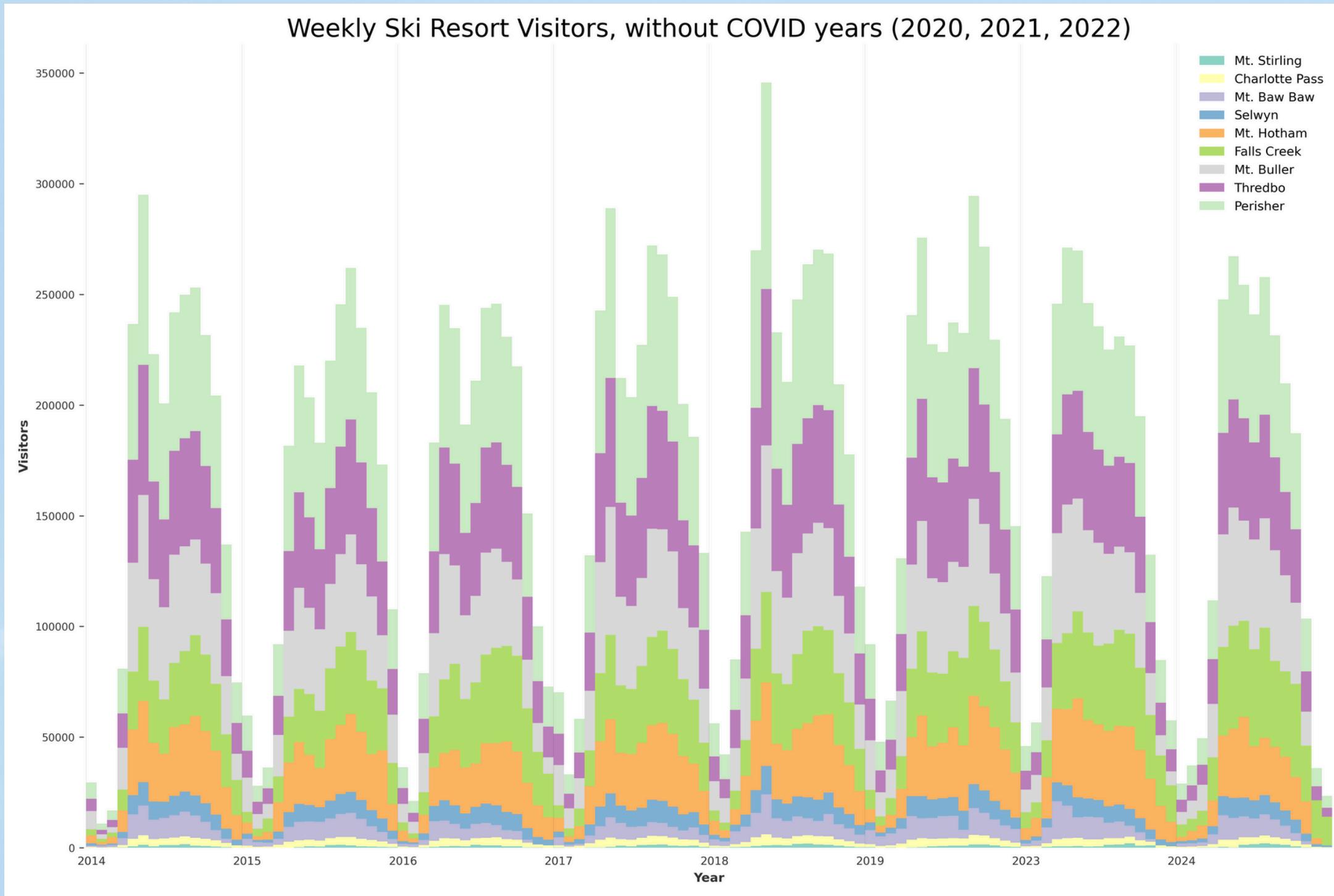
- Accomodation Price ([booking.com](#))
- School Holidays (NSW gov, VIC gov)

## Web Scraping

- Web-scraped each location's hotels and resorts on [booking.com](#)
- **Assumptions:** 2 people in 1 room for 1 week



# When Are Ski Resorts Busy?



Weekly Visitors to Different Resorts (2014 - 2025)

## Seasonality

- Lower visitor numbers at start of the snow season due to lighter natural snowfall, reliance on **artificial snow** and **overlap with school term**

## Double Peaks

- Week 6 peak reflects **family surge** from July school holidays
- Week 10 peak reflect **optimal snow conditions** in August

## Cleaning

- We dropped 2020–2022 due to COVID-related distortions and outliers, which would have had excessive leverage in the small dataset size.

# Visitation Model Selection



SARIMAX

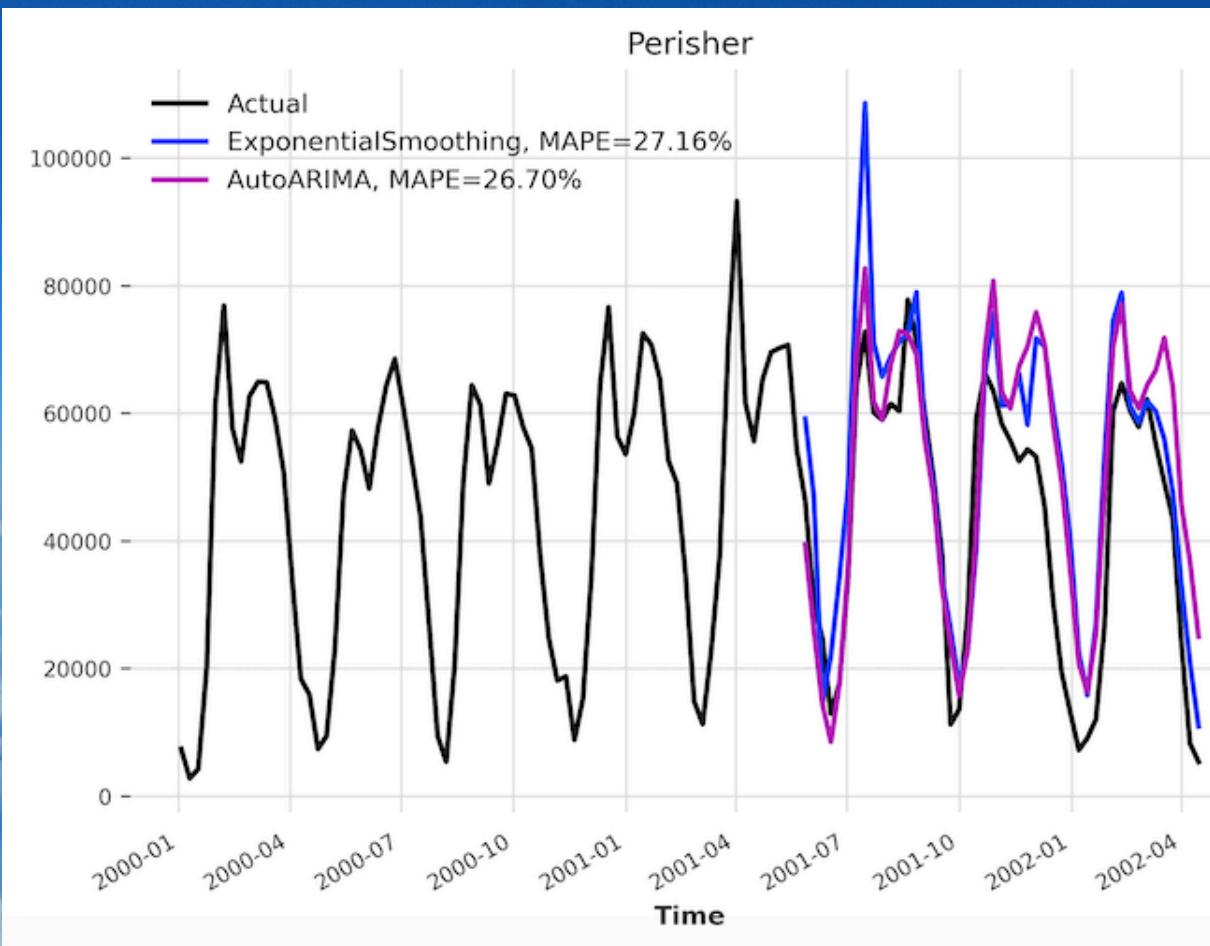
vs



SARIMA



Exponential Smoothing

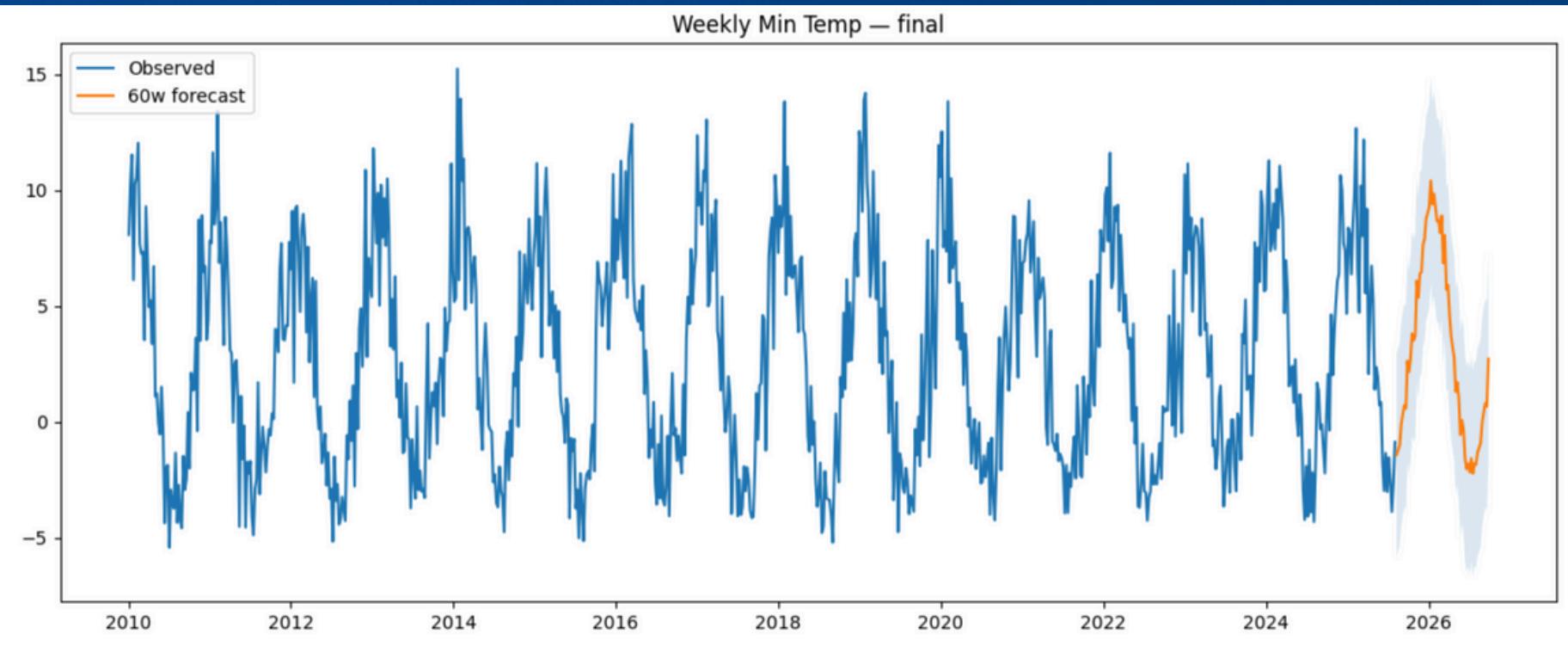


Model	SARIMA Error	Exp.S Error
Mt. Baw. Baw	46.83%	40.65%
Mt. Stirling	54.21%	67.70%
Mt. Hotham	39.16%	36.72%
Falls Creek	18.51%	19.39%
Mt. Buller	27.28%	25.71%
Selwyn	26.57%	25.45%
Thredbo	26.97%	25.39%
Perisher	26.70%	27.16%
Charlotte Pass	26.37%	24.30%

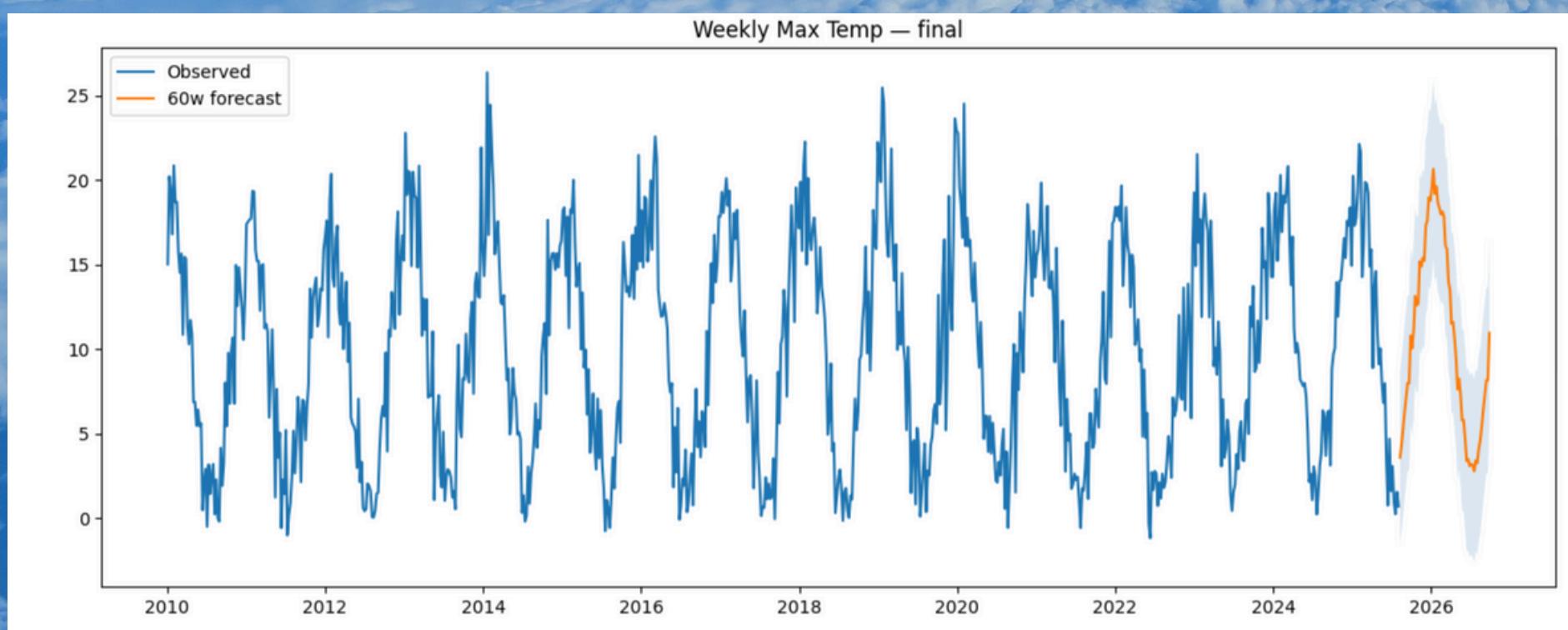
Key benefits of Exponential Smoothing over SARIMA:

- Stronger for **short term** forecasts (predicting next 15 data points)
- No stationarity requirement
- **Less parameters** needed to tune like we do in SARIMA

# Forecasting Temperatures for 2026



SARIMA Model (Min Temperature)



SARIMA Model (Max Temperature)

## Why SARIMA?

- Better for long term forecasting (52 time steps)
- Handles strong autocorrelation present in temperature.
- Handles sub-seasonal patterns inherent in weather

## Predictions

### Coldest Week (13<sup>th</sup> July - 19<sup>th</sup> July)

- Forecast: **-2.24 \*C**

### Hottest Week: (26<sup>th</sup> Oct - 1<sup>st</sup> Nov)

- Forecast: **20.64 \*C**

# Ultimate Ski Week

## Visitation Predictions

Highest Visitors: (29th June - 5<sup>th</sup> July)

- Forecast: **81318**

Optimal Visitors: (6th July - 12th July)

- Forecast: **60787**

## Temperature Predictions

Coldest Week (13<sup>th</sup> July - 19<sup>th</sup> July)

- Forecast: **-2.24 \*C**

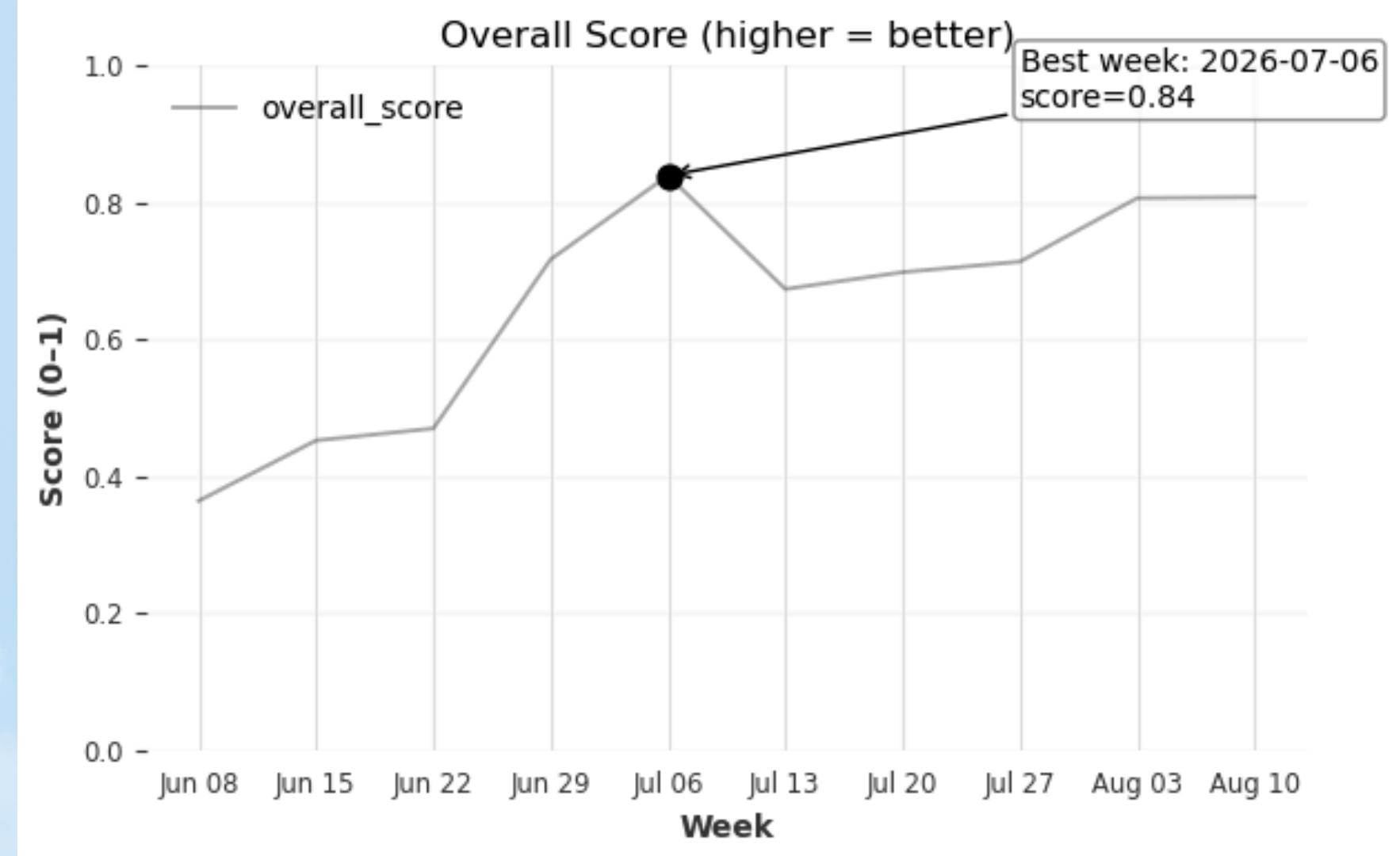
Hottest Week: (26<sup>th</sup> Oct - 1<sup>st</sup> Nov)

- Forecast: **20.64 \*C**

## Price Data

Optimal Week: (6<sup>th</sup> July - 12<sup>th</sup> July)

- Data: **\$ 3353.82**



$$\text{Score} = 0.5 * \text{Price} + 0.3 * \text{Visitor} + 0.2 * \text{Maximum Temperature}$$

After normalizing, we found the maximum forecasted score of all weeks, the maximum being **6<sup>th</sup> July**

# Which Resort To Visit?

1

We considered:

1. Distance from nearest major city (hours)
2. Alternate transport options (Yes/No)
3. Over-snow transport (Y/N)
4. Convenient Parking (Y/N)
5. Accessibility Roads (Y/N)

...to calculate a weighted accessibility index

2

Perisher	Thredbo
<b>525,476 visitors/km<sup>2</sup></b> Less crowded :)	<b>1,031,968 visitors/km<sup>2</sup></b> More crowded :(
<b>12.45km<sup>2</sup></b> Larger :)	<b>4.8km<sup>2</sup></b> Smaller :(
<b>WINNER !!</b>	

1. Perisher (0.83 score)
2. Thredbo (0.83)
3. Selwyn (0.50)

$$\text{Index} = 0.3 \times [1 - \text{normalized distance}] + 0.2 \times [\text{alternate}] - 0.2 \times [\text{Over-snow}] + 0.1 \times [\text{Parking}] + 0.1 \times [\text{Road}]$$



Perisher Ski Resort

*6<sup>th</sup>-12<sup>th</sup> July 2026 (Week 6)*