

Should We Do Morning Yoga or Go Surfing?

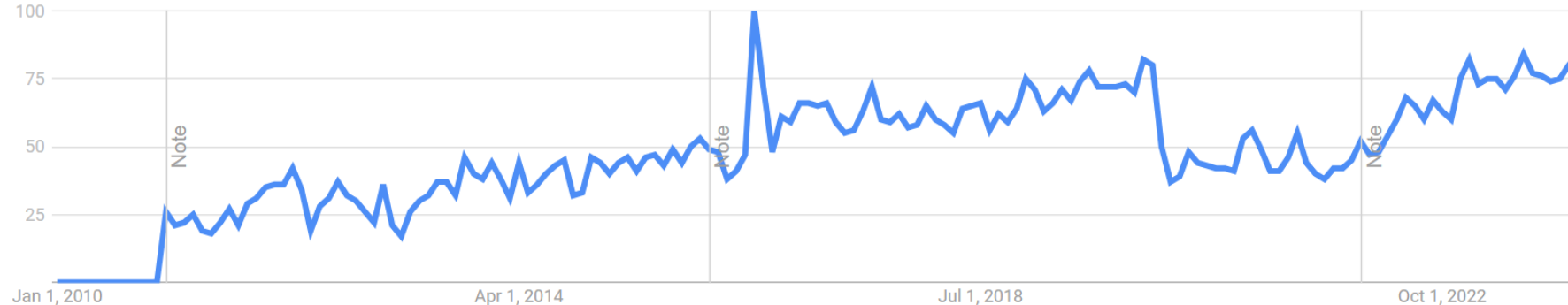
Decoupling Bali's Fitness and Wellness Popularity Though Google Trends

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Short Brief

Bali is the top tourism destination in Indonesia. The foreign visitors, combined with continuing tourism development, have introduced new lifestyle changes in Bali regarding diets, wellness, culture, and fitness. If we use the Google Trends' data on the "gym" search term as a proxy for fitness, we can see that there is an increasing trend of fitness popularity from 2010 to 2024.



This brings up an interesting question: **"How is the development of fitness and wellness activities' popularity in Bali?"**

Data

For this analysis, I'm going to use the Google Trends' relative search volume (RSV) data on key search terms. For this analysis, I will investigate 7 search terms limited to the Bali region:

- Gym
- Boxing
- Running
- Meditation
- Yoga
- Surfing
- Diving

I will also use monthly data from 2010 to 2019. I choose this period to avoid external (omitted) effects of Google Trends' data collection adjustment in January 2011 and the Covid-19 pandemic in 2020.

Method

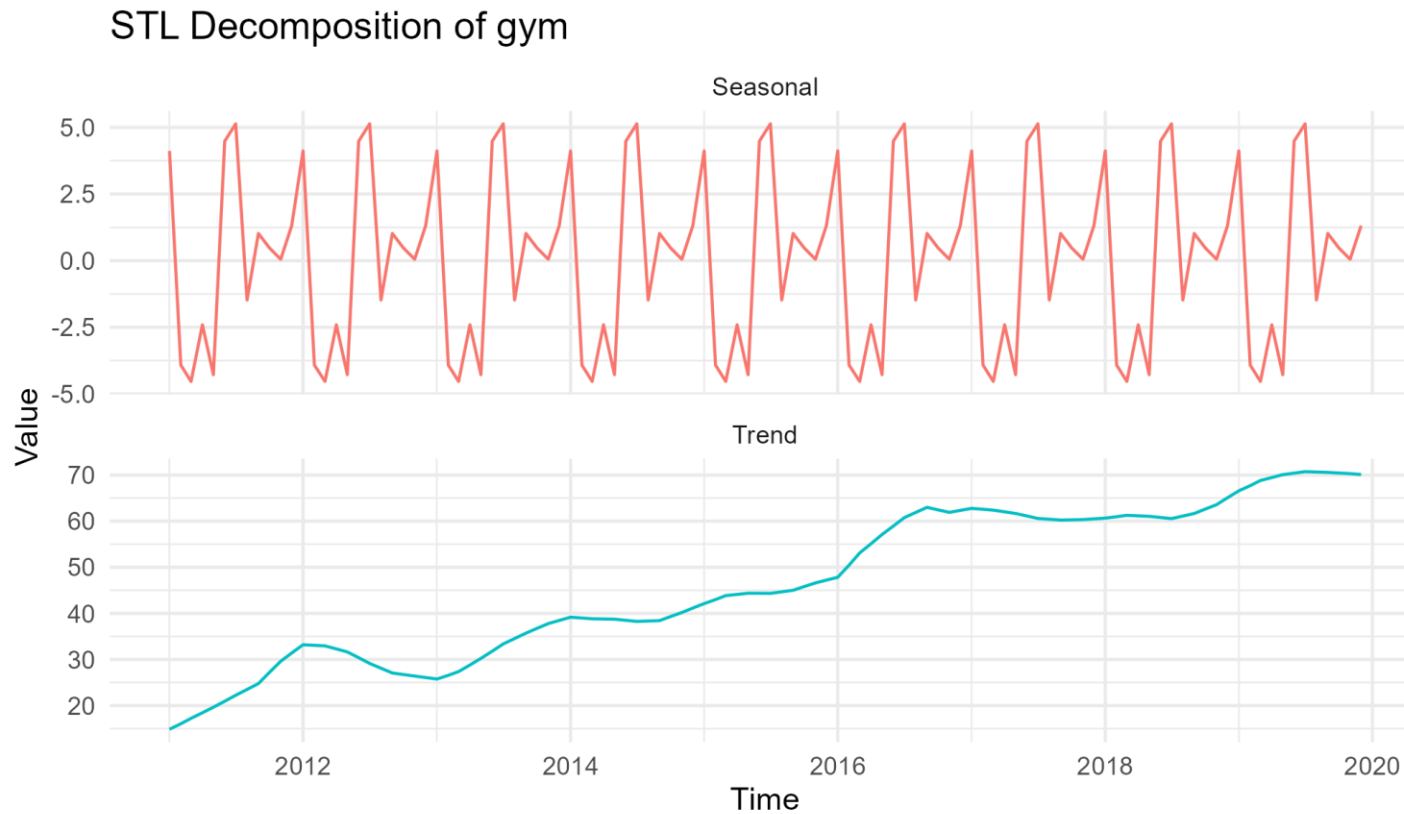
I'm going to process the data using R and focus on the trend aspect of secular and seasonal trends using statistical test describe below:

Trend	Definition	Data scope	Statistical test
Secular	Long term movement that is constant despite the seasonal fluctuations.	2011-2019	Seasonal Mann-Kendall test.
Seasonal	Recurring predictable fluctuation pattern based on a particular 'season' in a year.	Monthly	Trigonometric seasonality, Box-Cox transformation, ARMA errors, Trend, and Seasonal periods (TBATS).

Findings

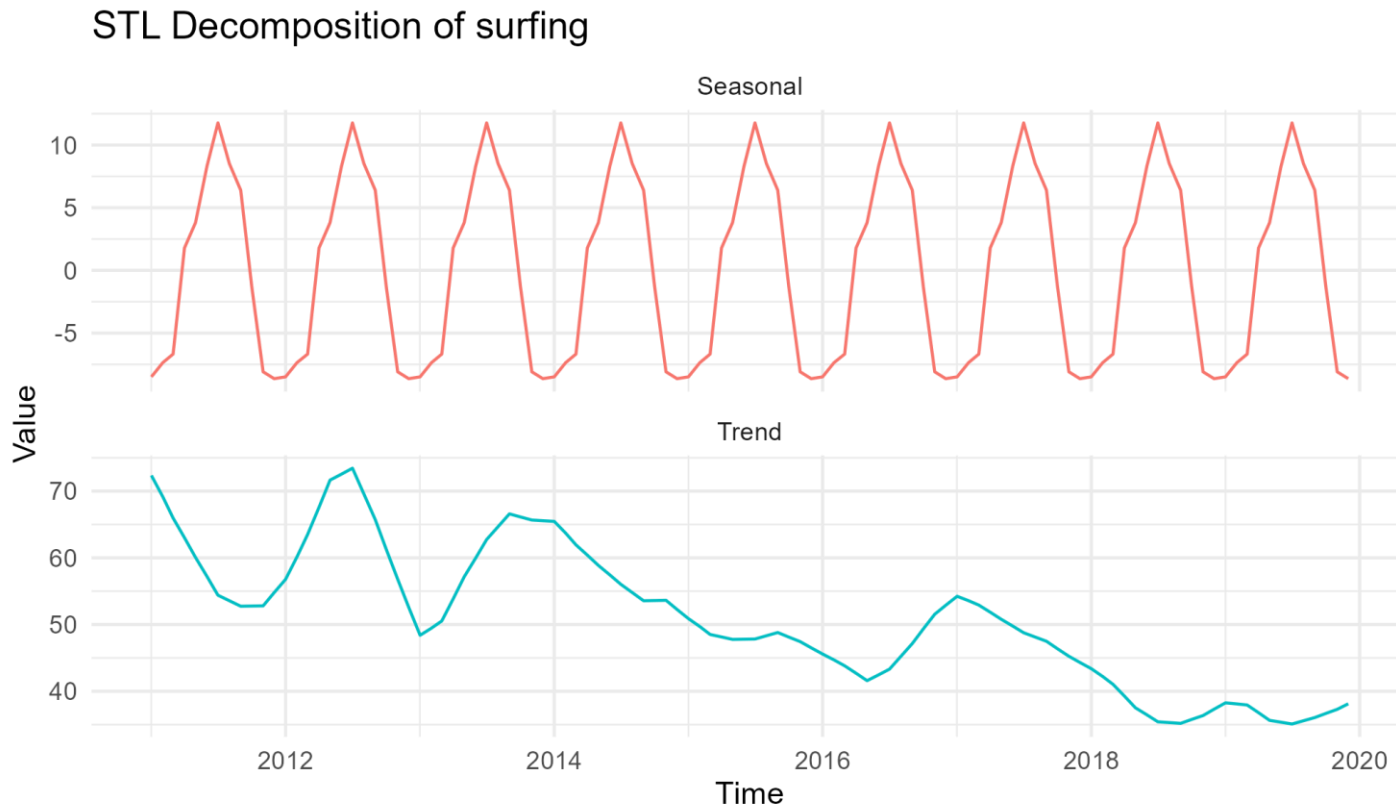
Search Terms	Secular Trend's Slope [Monthly]	Month with the Highest Seasonal Component [RSV]	Month with the Lowest Seasonal Component [RSV]	Seasonal Component Amplitude [RSV]
Gym	0.017	July [5.14]	March [4.53]	9.67
Boxing		December [30.85]	July [-8.25]	30.09
Running		June [10.44]	February [-5.67]	16.12
Diving	- 0.007	August [12.1]	June [-12.95]	25.95
Surfing	- 0.009	July [11.77]	December [-8.64]	20.4
Yoga	0.01	August [10.06]	December [-8.88]	18.94
Meditation				

Gym



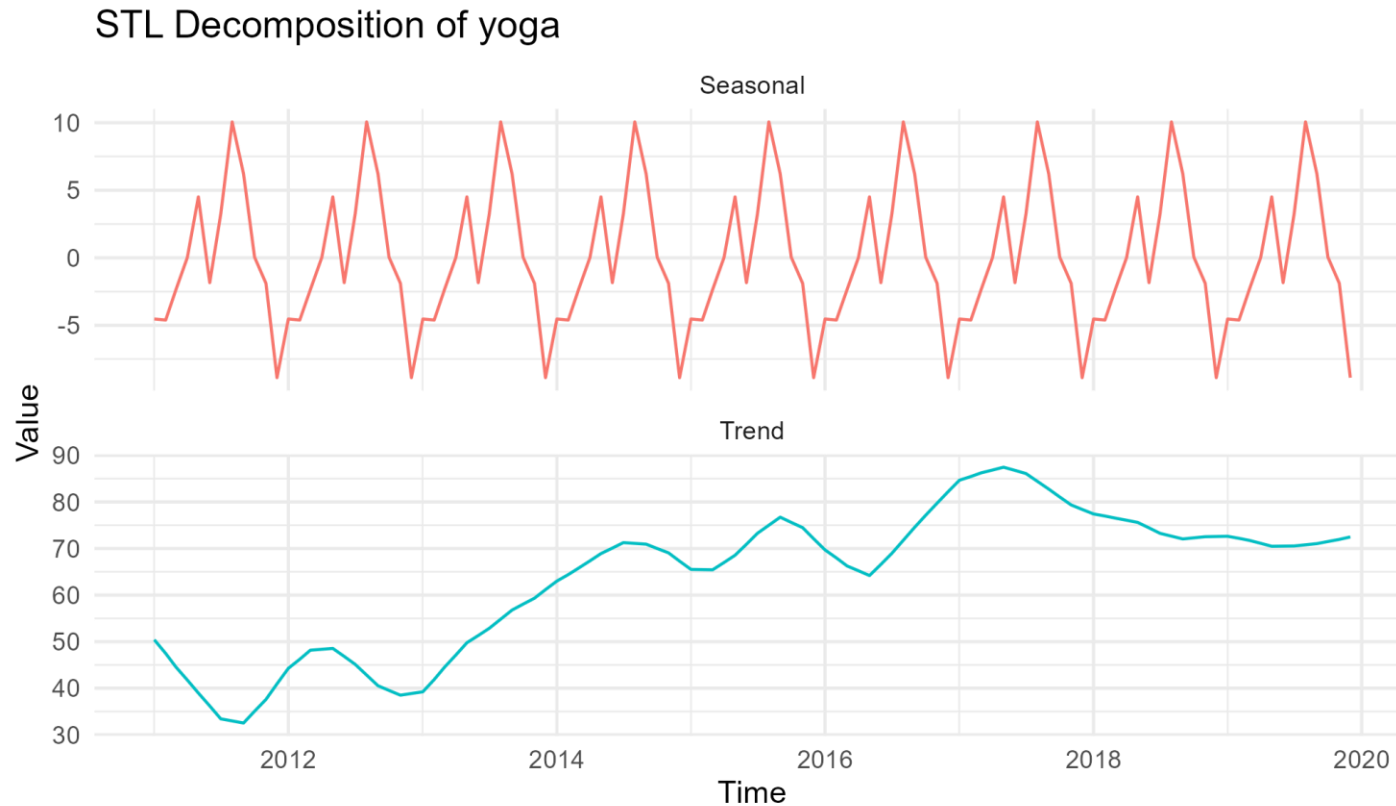
- Gym has a positive secular trend, which means that it keeps rising in popularity during the observed period.
- But other fitness activities (running and boxing) grow stagnant without any significant secular trend.

Surfing



- Surfing and diving, the water-based activities, are observed to be declining during the observed period.
- They both reached their peak during the holiday season (June to August) and their lowest during the end-of-the-year holiday (December and January).

Yoga



- Yoga popularity keeps rising in the observed period, while meditation doesn't have any secular or seasonal trend.
- Yoga's popularity seasonal trend also follows the holiday season pattern, with it reaching its peak in August and lowest in December.

Thank You

If you want to read more of my data analysis project:



<https://medium.com/@aldgadra>



https://github.com/AldoGadra/Data_analysis_portfolio

<https://www.linkedin.com/in/aldogadra/>