



# Library Checkouts & COVID

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# Question

- How do the popularity of different subject books vary over time, and how has COVID affected these trends?
  - ↳ Travel and Vacations
  - ↳ Cooking
  - ↳ Knitting, Crocheting, and Embroidery
  - ↳ Politics
  - ↳ Self-Improvement
  - ↳ Exercise and Fitness

# Methodology

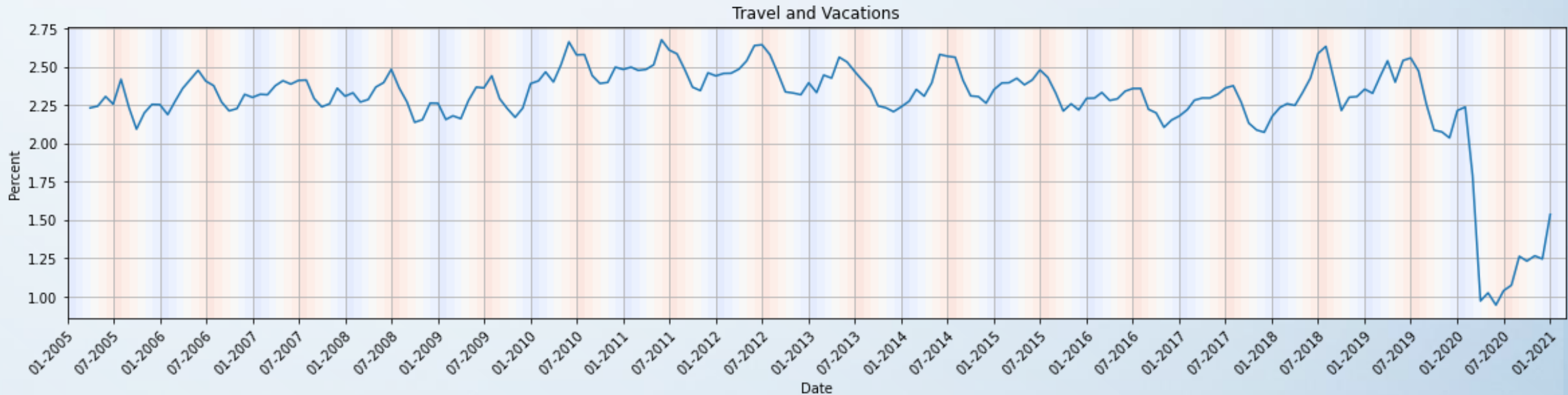
- Checkout data is available from the Seattle Public Library
- Using a list of keywords, the checkouts will be filtered by subject and aggregated by month
- The percent of the checkouts pertaining to that subject will be analyzed

# Dataset Summary

	UsageClass	CheckoutType	MaterialType	CheckoutYear	CheckoutMonth	Checkouts	Title	Creator	Subjects	Publisher	PublicationYear
0	Physical	Horizon	VIDEODISC	2009	10	6	A year in Provence [videorecording] / a BBC TV...	NaN	Mayle Peter Homes and haunts France Provence D...	A & E Television Networks : Distributed in the...	2001.
1	Physical	Horizon	BOOK	2009	10	1	Comic lives inside the world of American stand...	NaN	Stand up comedy, Comedians United States Biogr...	NaN	NaN
2	Physical	Horizon	BOOK	2009	10	3	Each peach pear plum : an "I spy" story / Jane...	Ahlberg, Janet	Stories in rhyme Juvenile fiction	Viking Press,	[1979] c1978.

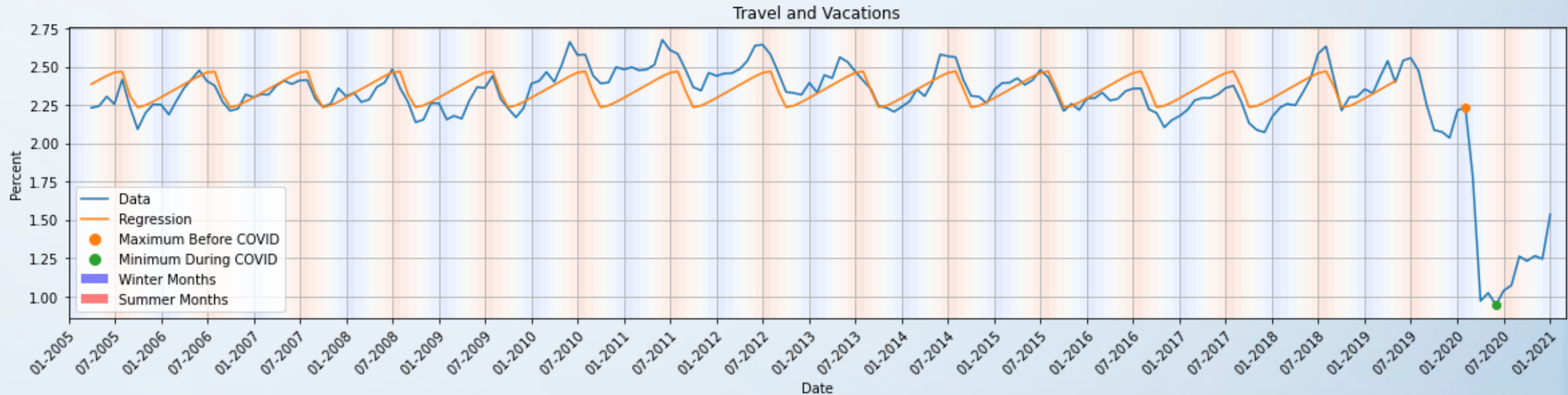
- Dates range from April 2005 to January 2021
- There are 27,463,624 entries

# Example Process: Travel & Vacations



- Filter the dataset to include only subjects with “travel” or “vacation”
- Sum the checkouts by month and divide by the total number of checkouts
- Plot the data

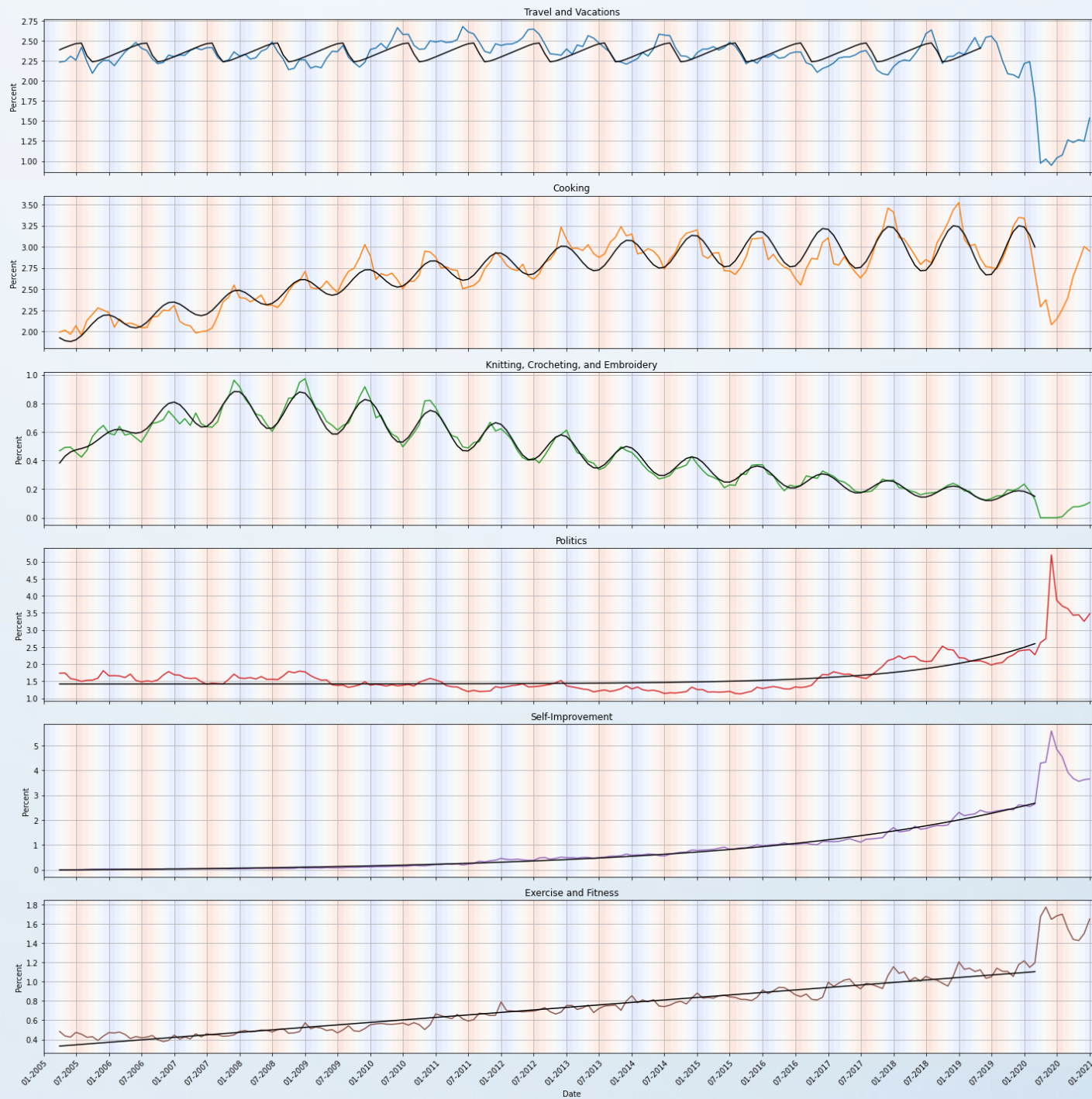
# Example Process: Travel & Vacations



- Use `curve_fit` to model the pre-covid trends

$$y = \frac{A}{E} \tan^{-1} \left( \frac{E \sin(Bx + C)}{1 - E \cos(Bx + C)} \right) + D$$

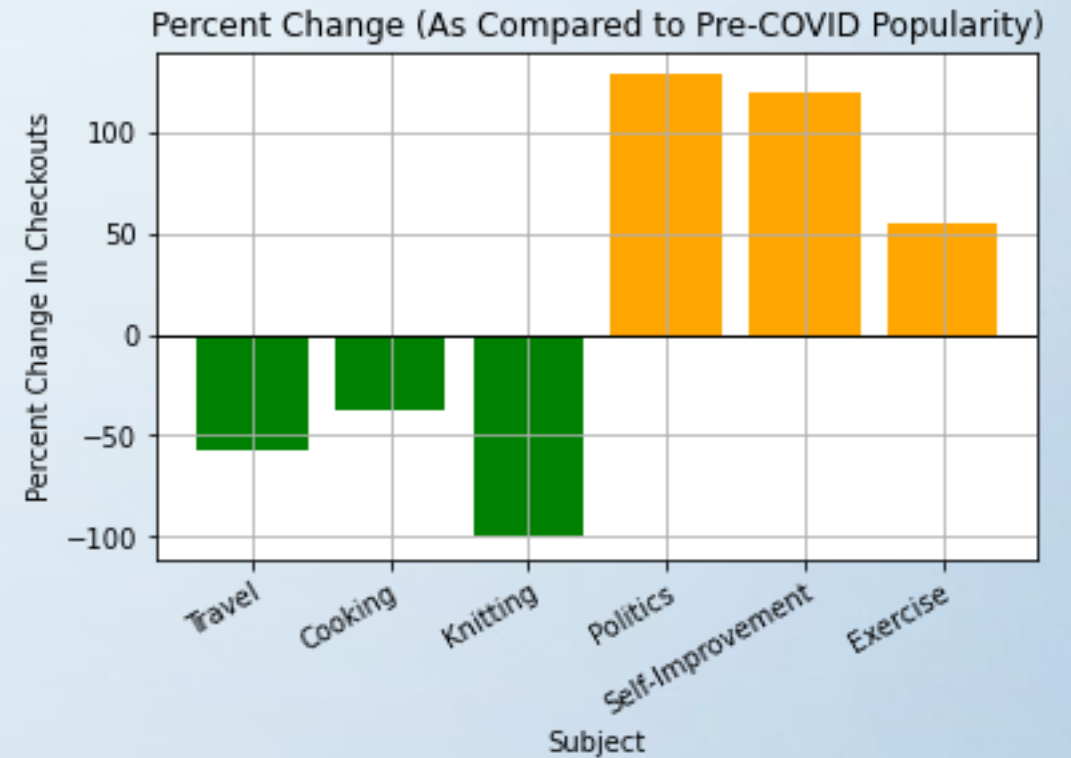
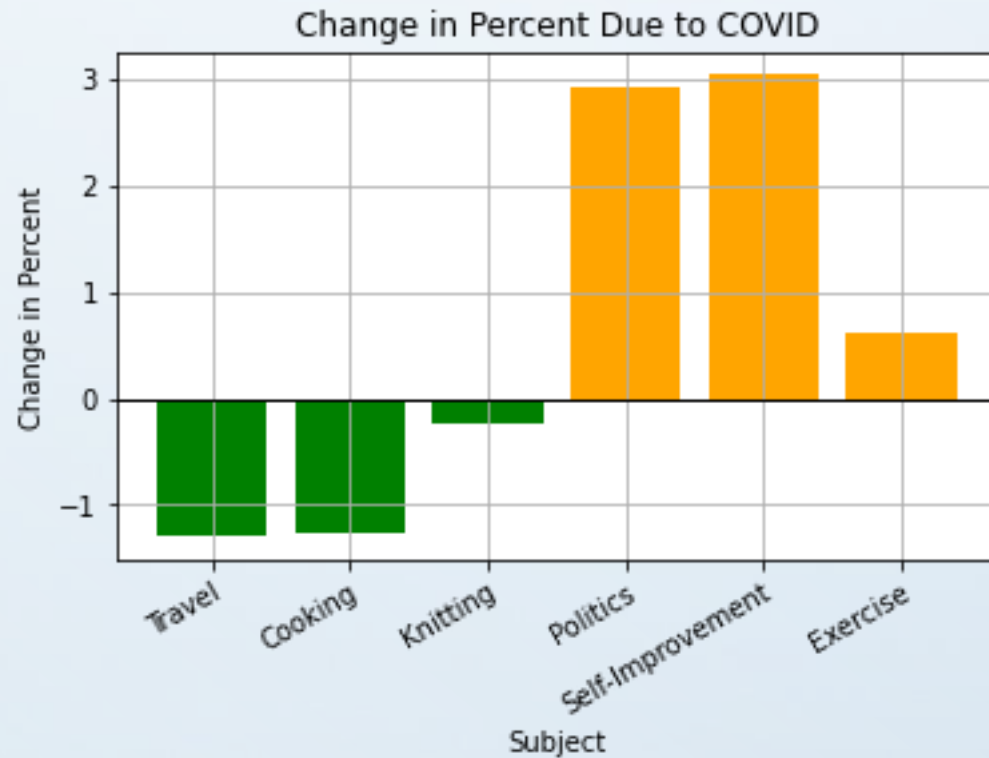
- Identify maximum before COVID and minimum during COVID (-1.29%)



- Travel remained constant on average
- Knitting decreased in popularity, asymptotic toward .03%
- Cooking increased quadratically, concave down
- Exercise increased linearly
- Politics increased after 2017 (fitted with exponential)
- Self-improvement increased exponentially
- Travel, cooking, and knitting had periodic trends



# Changes Due to COVID



# Analysis of Periodic Trends

