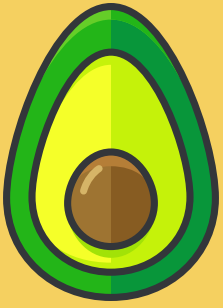


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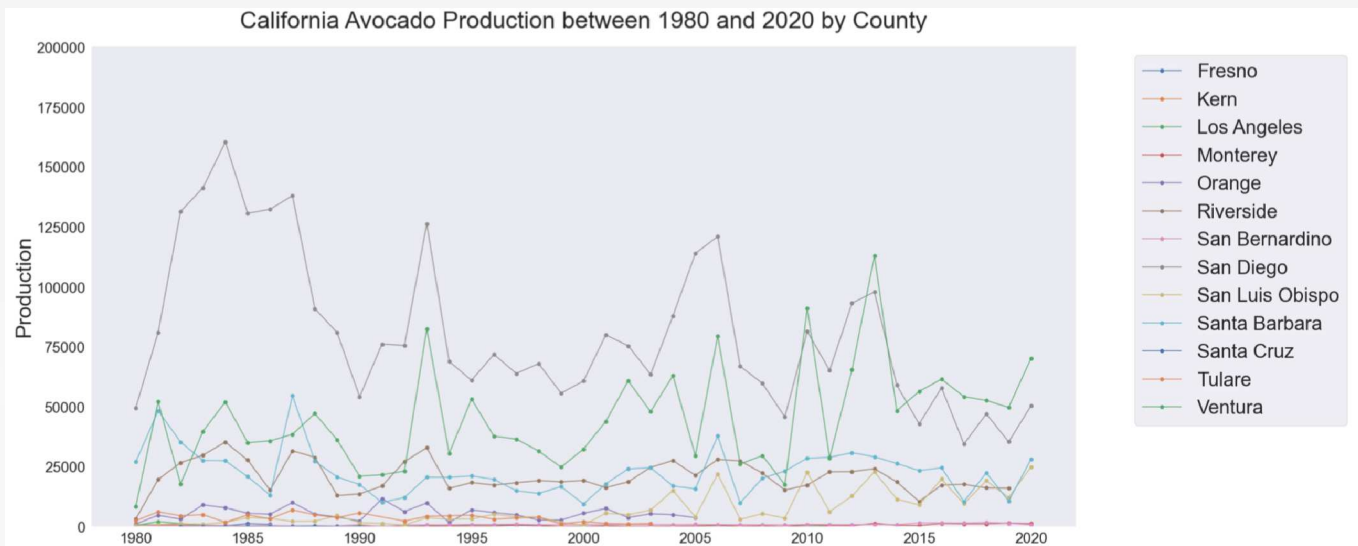


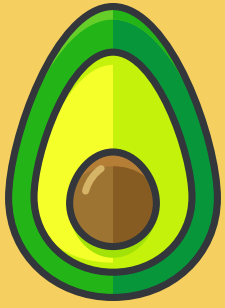
# How is the Californian Avocado Industry Expected to Change in the Future?



## Production Trends

San Diego and Riverside are the top avocado producers, while San Bernardino and Monterey produce the least. Complete 20-year records exist for five counties, San Luis Obispo, Santa Barbara, Ventura, San Bernardino and San Diego. Generally, avocado production has declined in recent years.





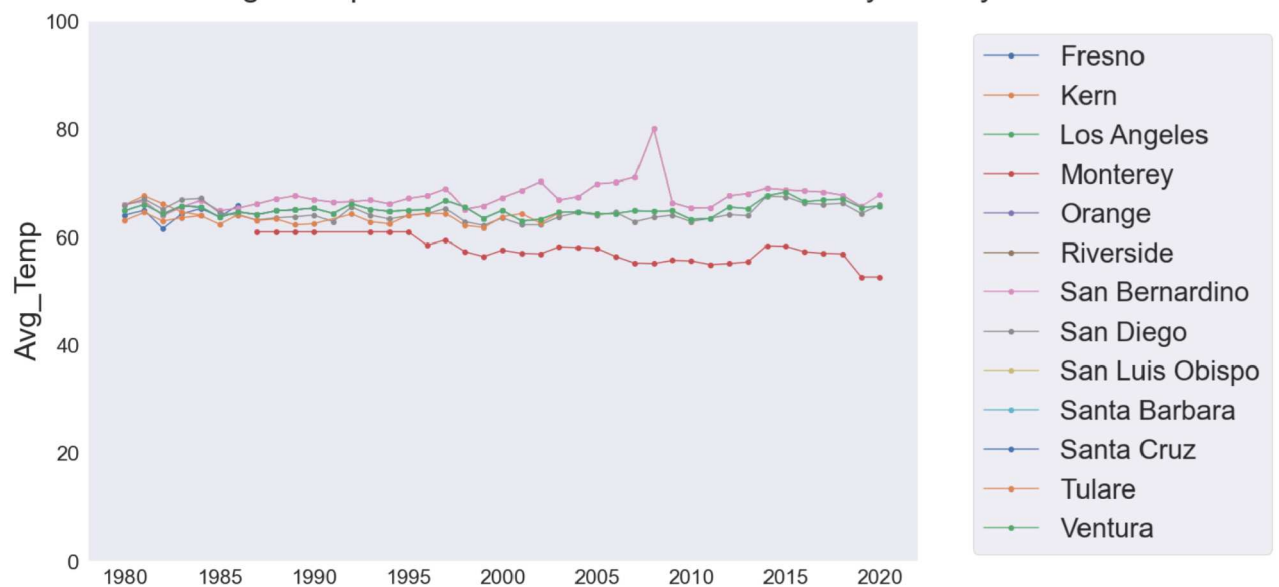
# How is the Californian Avocado Industry Expected to Change in the Future?

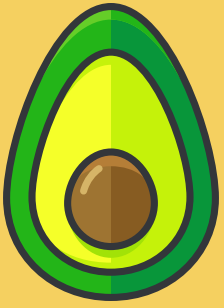


## Changes in Temperature

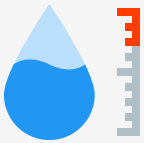
Los Angeles, Orange, Santa Barbara, San Luis Obispo, Ventura, and Santa Cruz were found to be in the Long Beach Area and have the same yearly average temperature levels. While San Bernardino had significant increases in temperature between 2006-2008, in recent years, it closely resembles the temperatures seen in the Long Beach counties and San Diego area. Significant temperature changes appear to have occurred for Monterey, where it has become noticeably cooler.

California Average Temperature between 1980 and 2020 by County





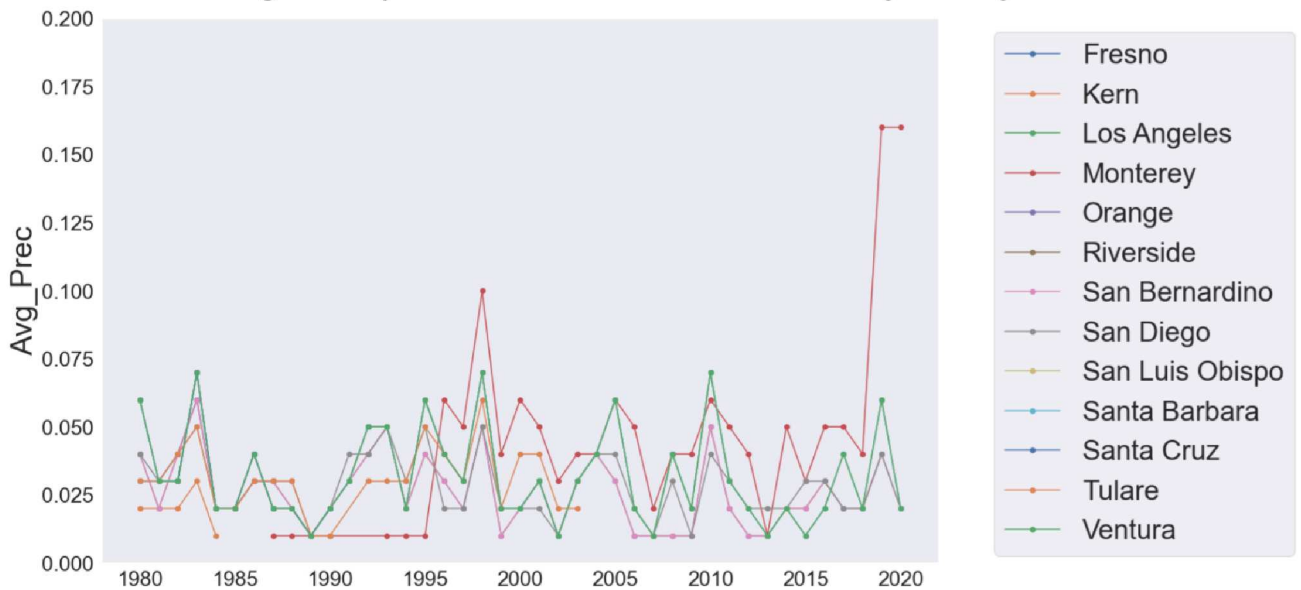
# How is the Californian Avocado Industry Expected to Change in the Future?



## Changes in Precipitation

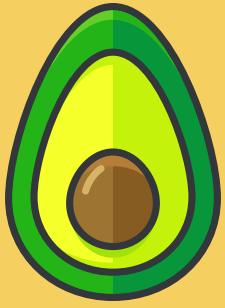
Monterey, one of the lowest avocado producing counties, has the highest precipitation levels. No other significant precipitation changes are evident in the data.

California Average Precipitation between 1980 and 2020 by County





## CHECKPOINT #2:



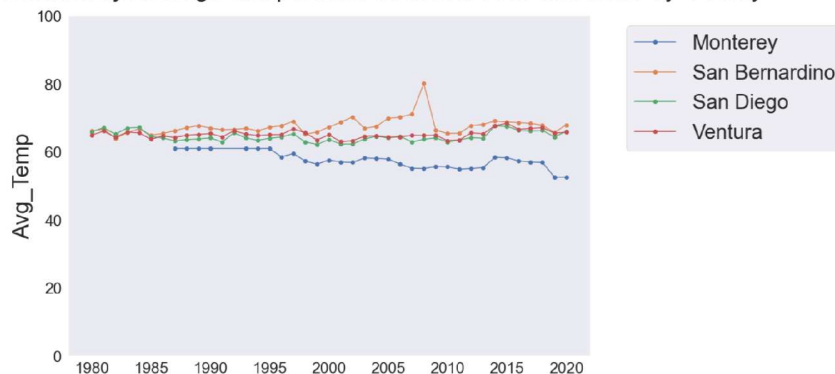
# How is the Californian Avocado Industry Expected to Change in the Future?

## Avocado Production, Temperature & Precipitation Levels

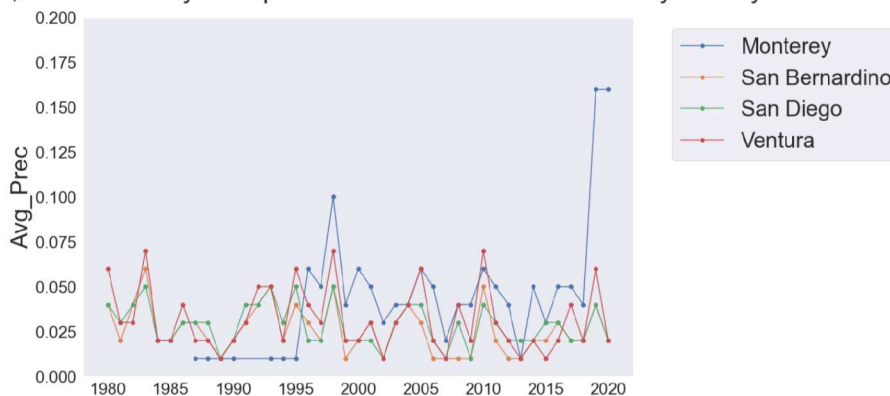
V,SD,SB & Monterey Production between 1980 and 2020 by County



V,SD,SB & Monterey Average Temperature between 1980 and 2020 by County

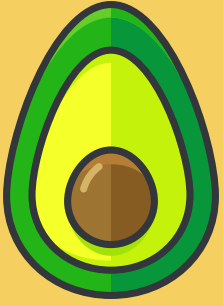


V,SD,SB & Monterey Precipitation between 1980 and 2020 by County



In recent years, Ventura has replaced San Diego as the highest avocado producer in CA. Though temperature its regional's temperature has not fluctuated significantly, it appears to have slightly warmer weather and higher levels of precipitation than San Diego. Though Monterey and San Bernardino are at the higher and lower bounds of temperature and precipitation range. However similar historical trends indicate other factors may be impacting avocado production.

## CHECKPOINT #2:



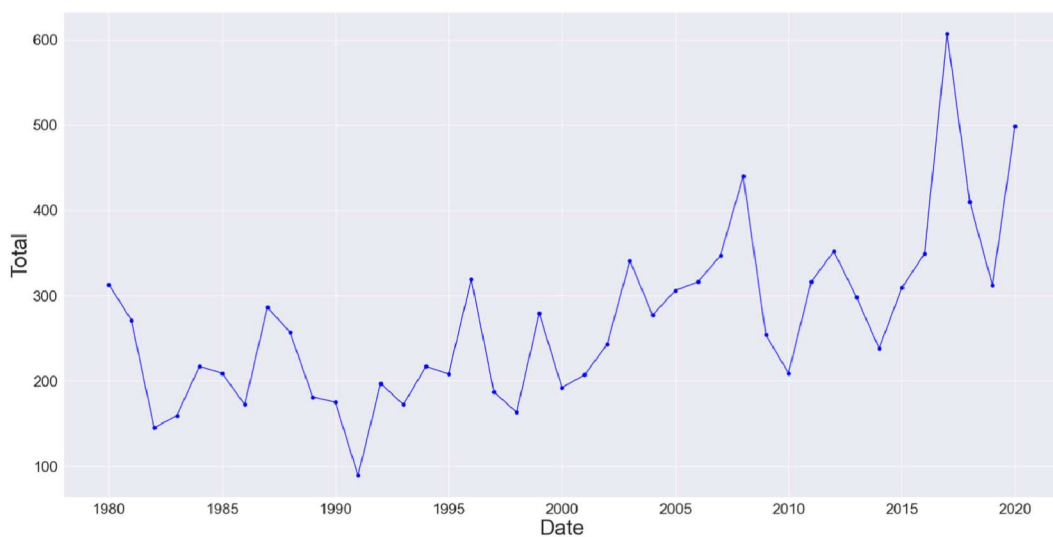
# How is the Californian Avocado Industry Expected to Change in the Future?



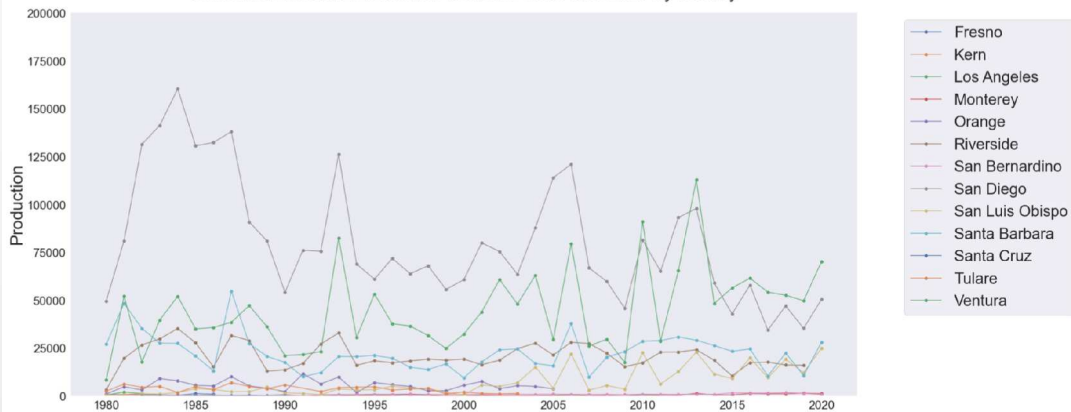
## California Wildfires

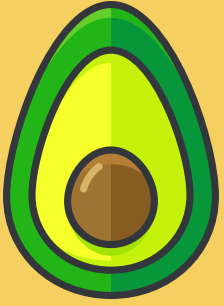
Wildfires in CA have been increasing over time. The Sacramento Bee reported Riverside, Los Angeles, San Bernardino, San Diego, and Kern as the top five counties most vulnerable to wildfires, meaning this may be the reason why Ventura has recently replaced San Diego as the highest avocado producer in CA. The increasing wildfire trends suggests it may have influenced the decrease in avocado production.

California Wild Fire Count between 1980 and 2020



California Avocado Production between 1980 and 2020 by County



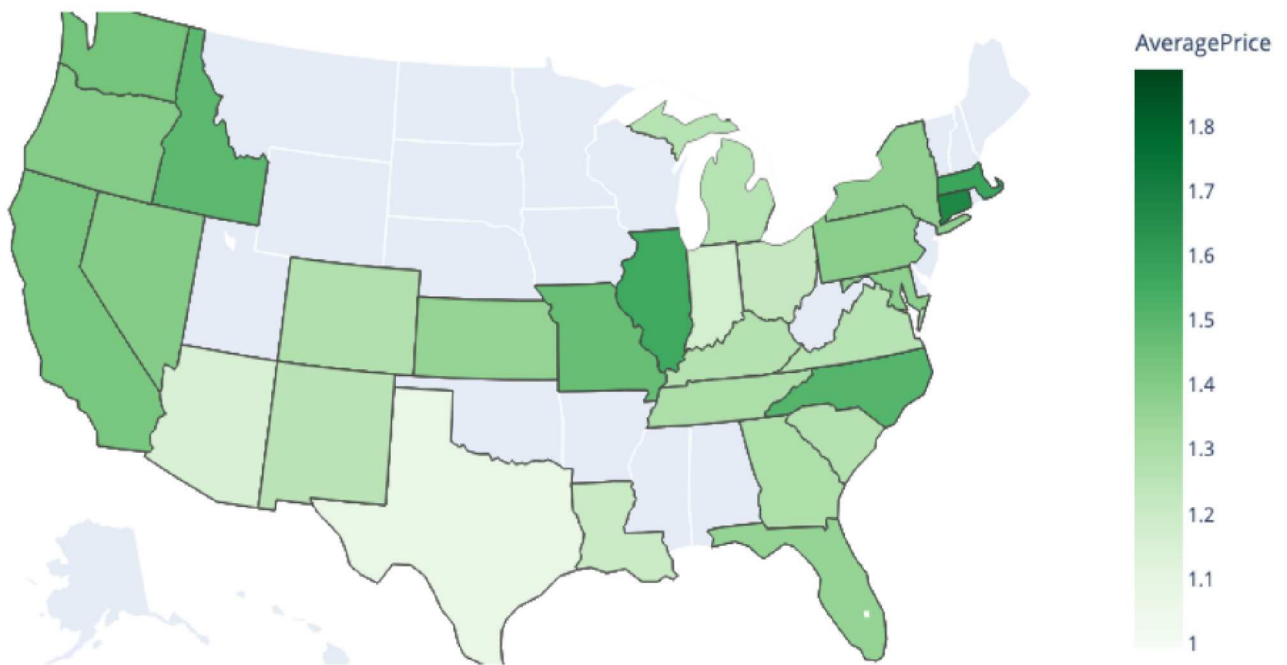


# How is the Californian Avocado Industry Expected to Change in the Future?

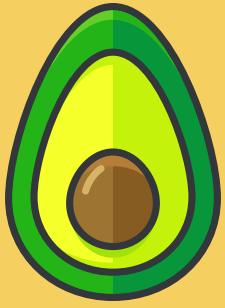
## Avocado Retail Trends



A statewide average price for avocados provided insight into how its value changed throughout 2015 – 2018 in the United States. The map visualizes these avocado prices and show that Texas, Colorado, Arizona, and Ohio have historically low prices for Avocados. Connecticut, North Carolina, Illinois, and Massachusetts have traditionally high prices for Avocados. The data suggests avocado prices increase for states located further away from the west coast.

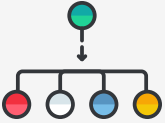






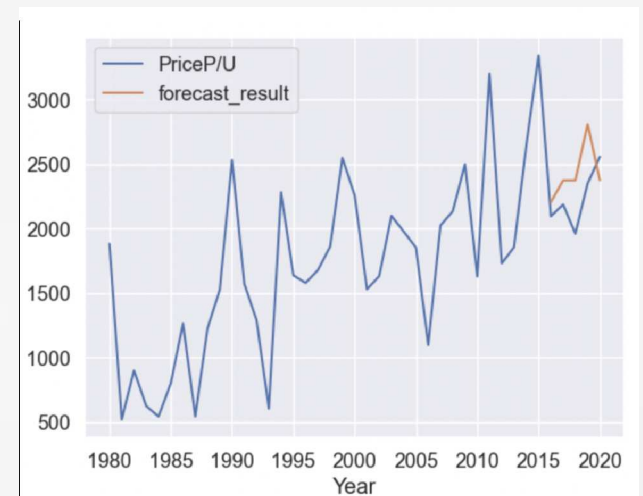
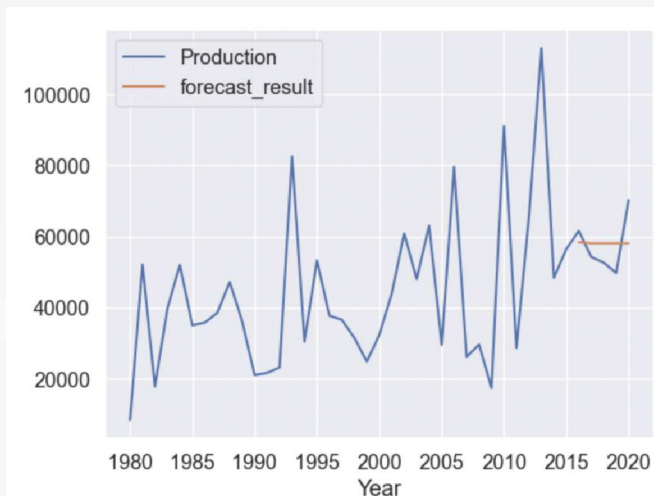
# How is the Californian Avocado Industry Expected to Change in the Future?

## Analysis



Linear regression and time series forecasting will be performed to provide insight on future California production and state-wide retail prices for avocados.

Initial time series analysis was performed for Ventura County. Predictions of data between 2016-2020 were made using historical data. The graphs below show production and price per unit results.



## Recommendation

- Attempt to gather transportation costs data to factor its role in retail avocado price by region.
- Determine counties we are going to use in our analysis, since only 5 have complete 20-year records.

