An Analysis of Expenditure on Food

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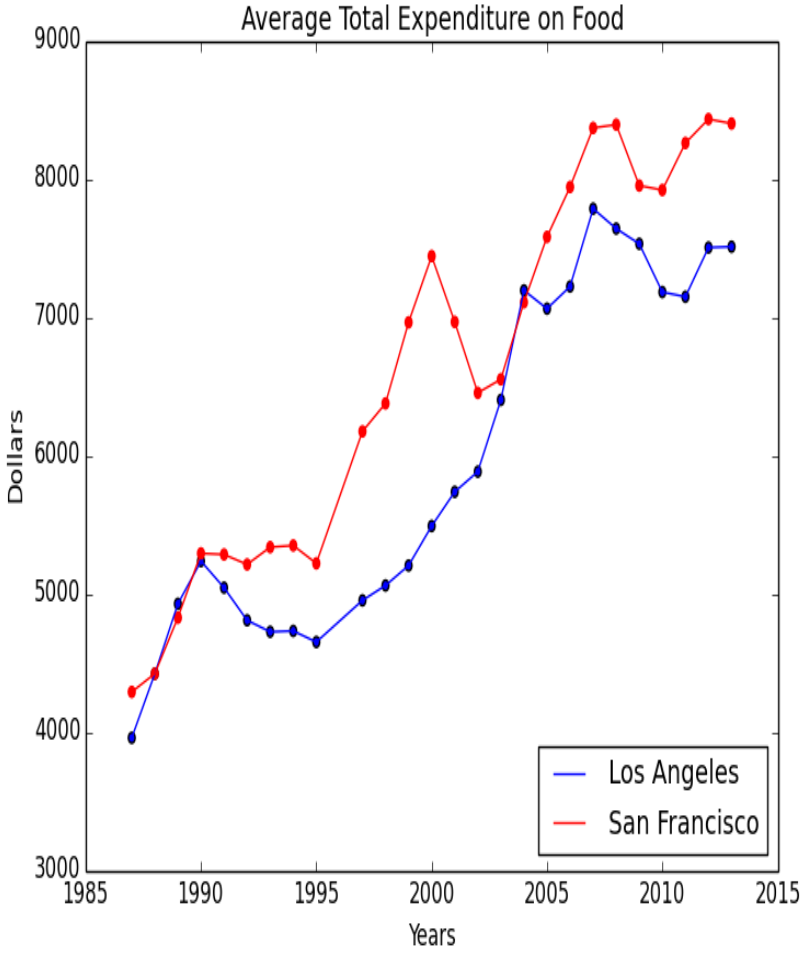
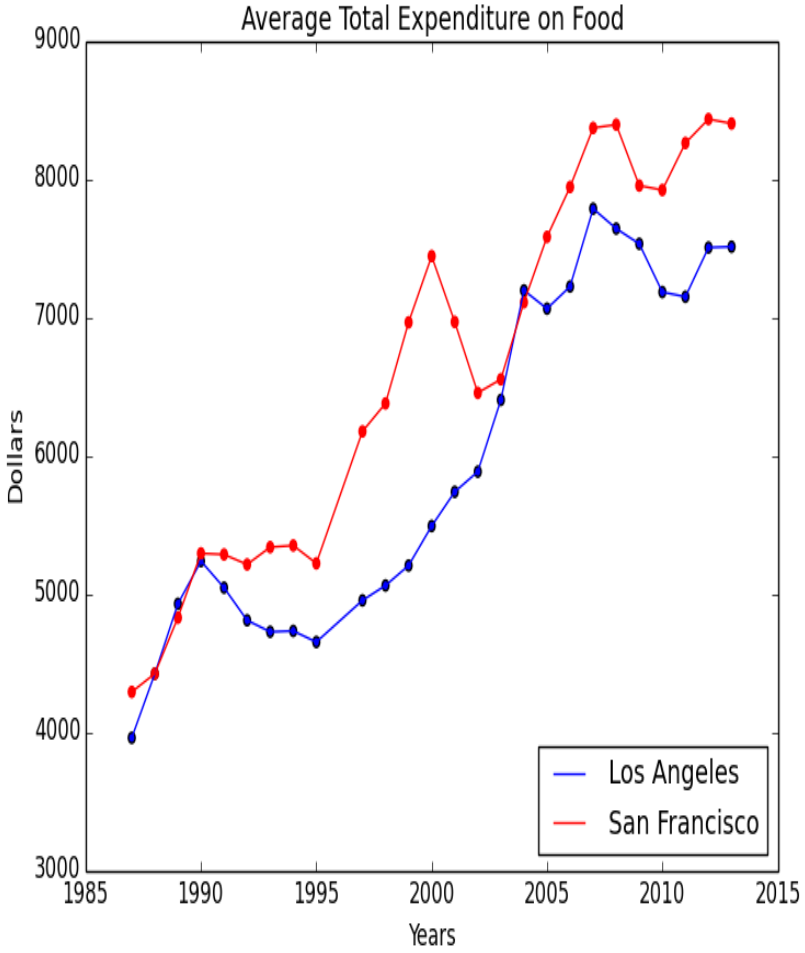
Introduction

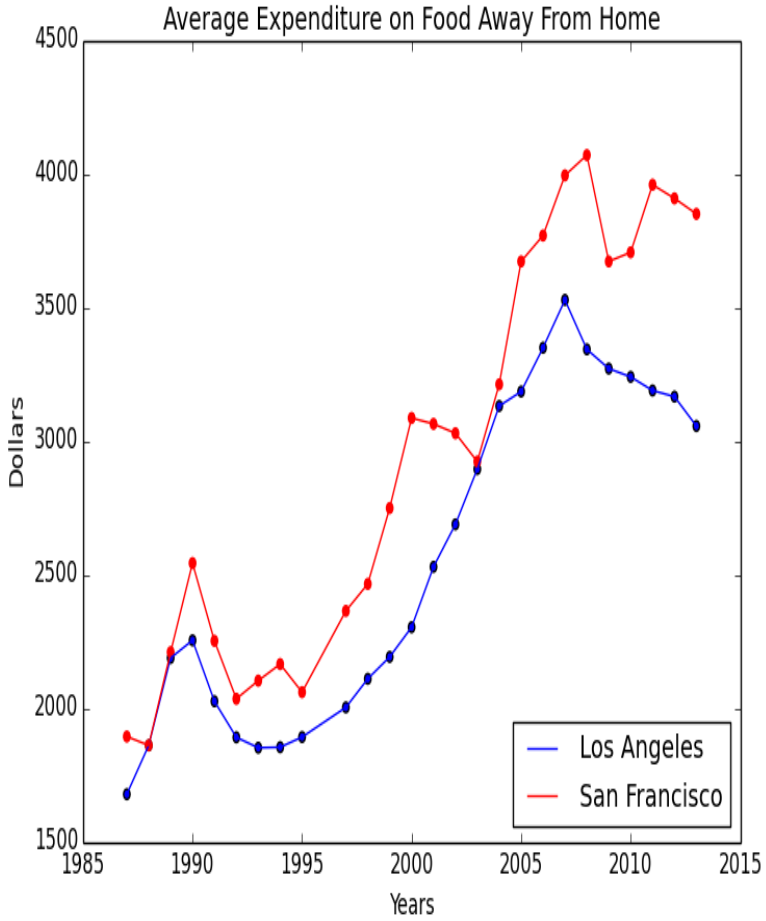
- The analysis in the following slides inspects the spending patterns on food and specifically on food away from home.
- The study focuses on two cities: Los Angeles and San Francisco.
- All data presented is from publicly available data at http://www.bls.gov/cex/csxmsa.htm , extending from 1987 – 2013 (with a break in 1996).



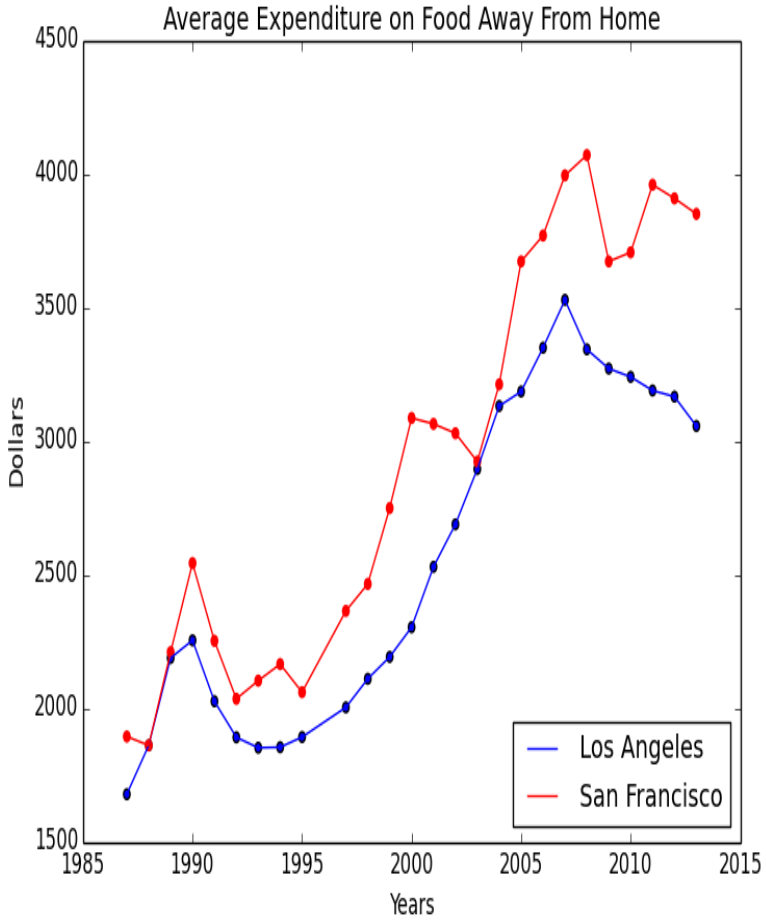
- The adjoining image shows the total spending on food in the two cities.
- Immediately, there are some interesting points to make note of in this image.



1. There is a remarkable rate of increase in spending on food in SF in the late ‘90s at the time of the dot-com bubble when Bay Area companies were doing incredibly well. This is followed by a drop in spending that is just as drastic at the time of the bursting of the dot-com bubble.
2. Both cities were adversely affected by the recession in 2008 – 2010 with spending dropping across those years.

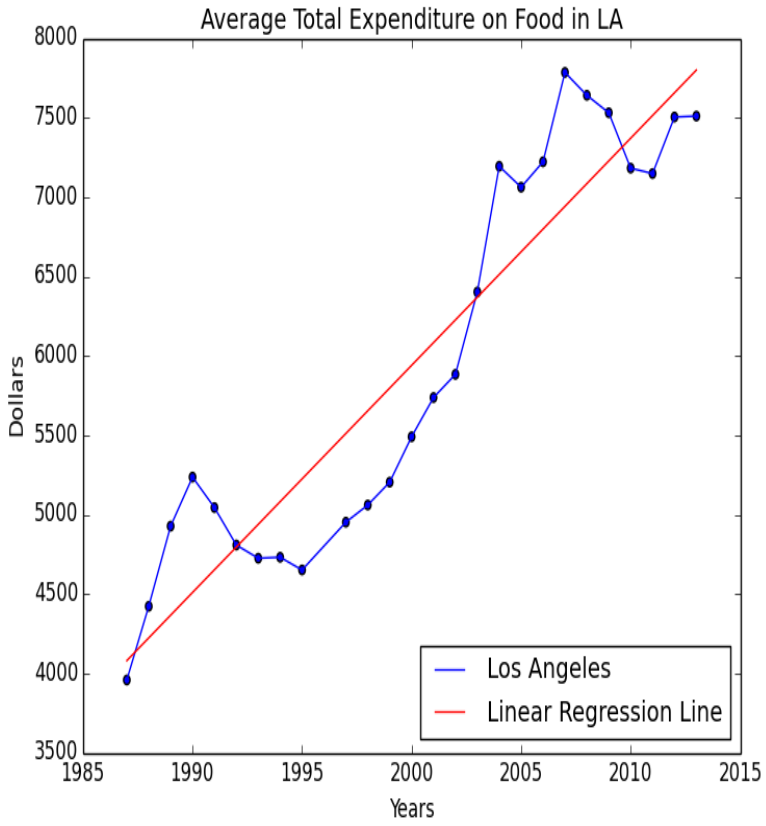


- This image shows the average amount of expenditure on food away from home in the two cities.
- Both lines are broadly very similar to the total expenditure lines, as would be expected.
- However, this graph shows the effects of the early ‘90s recession more clearly than the previous graph.
- This might help in ascertaining when we could expect the lines to start recovering from the decline they have been in since the last recession.



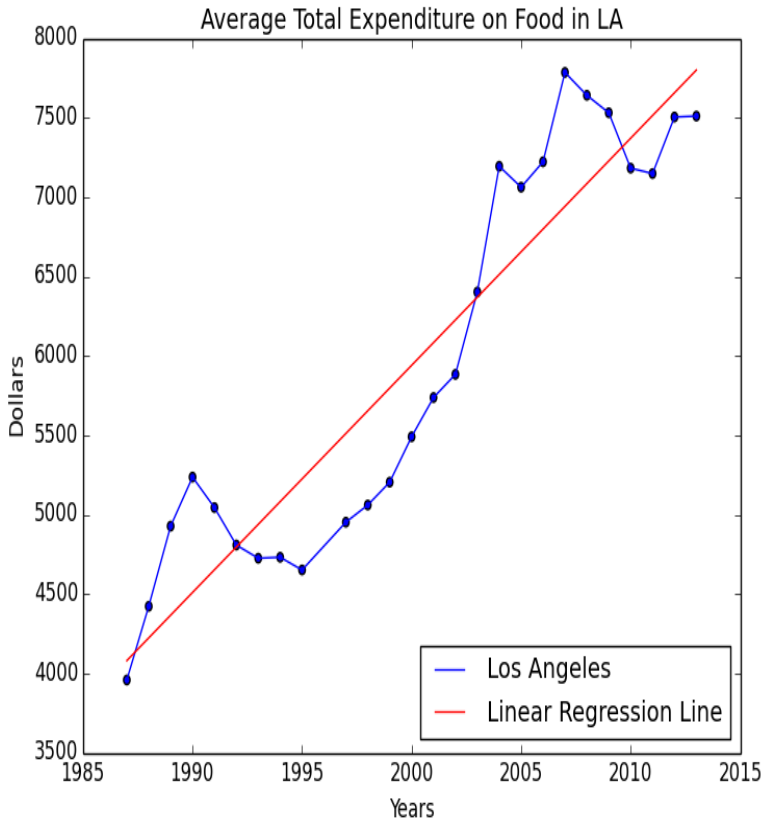
- In addition, the LA line seems to follow a steady line growth curve in the period between the two recessions while the SF line is a lot more volatile.
- The downturns are also a lot more steady in LA than SF.
- This would seem to be in line with the difference in the two cities' economies.
- Broadly, one associates SF and the Bay Area with start-ups and a high growth/high volatility environment which is also exhibited in this expenditure graph.

A More In-Depth Look at LA



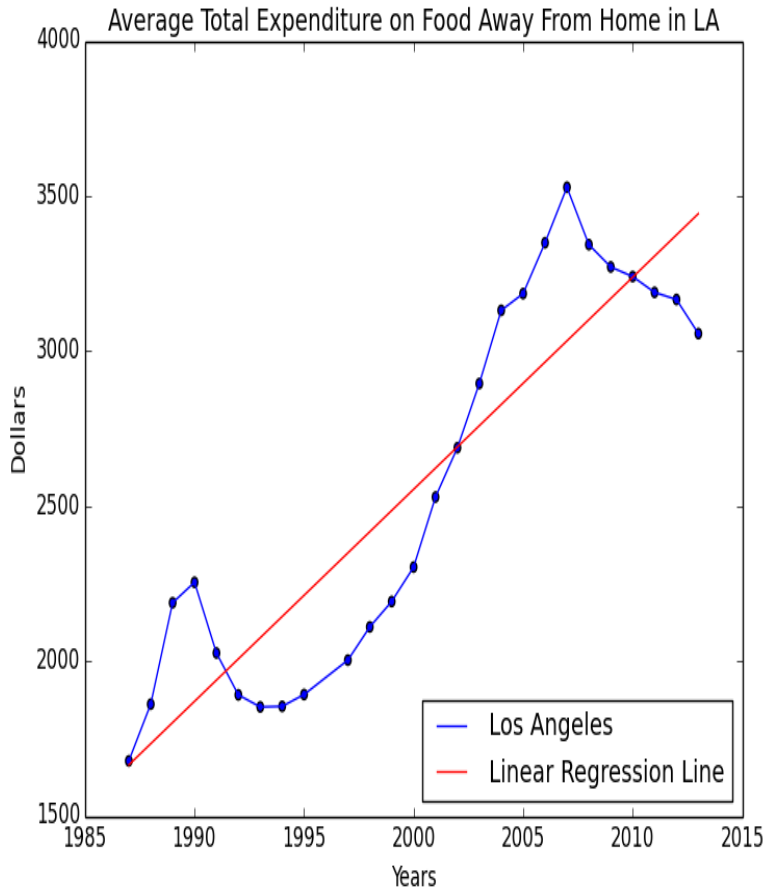
- This plot shows the linear regression line on total expenditure on food.
- Using this line, the expected expenditure on food in 2014 would be $7942.90.
- The square root of the average squared error over the years, is $447.44.

A More In-Depth Look at LA



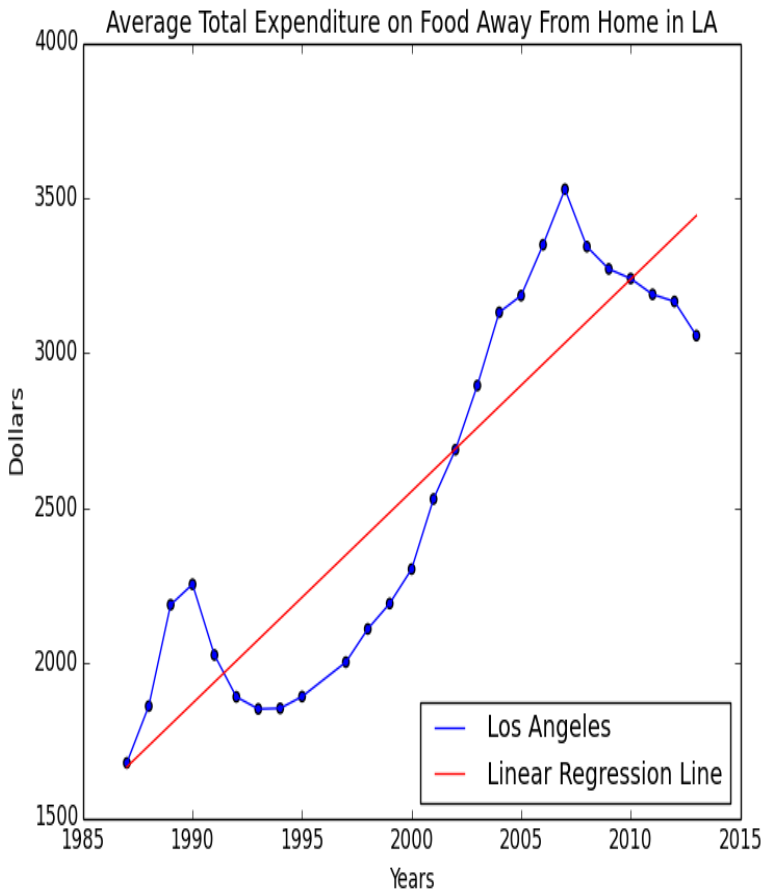
- Overall, the error exceeds the average error in 10 out of 26 years.
- Therefore, we can say that forecast shown previously will be within the average error with probability 0.615.
- Interestingly, the average error in the last 5 years is only $260, which is a positive trend and would give more confidence in the accuracy of the current forecast.

A More In-Depth Look at LA



- This plot shows the average expenditure on food away from home and the regression line.
- As mentioned before, this graph seems to indicate bad news for restaurant owners.
- The regression line implies that the spending in 2014 will be $3511.17.
- However, this estimate must be treated with caution as there is clearly a downward trend in the data while the regression line is strictly increasing.

A More In-Depth Look at LA

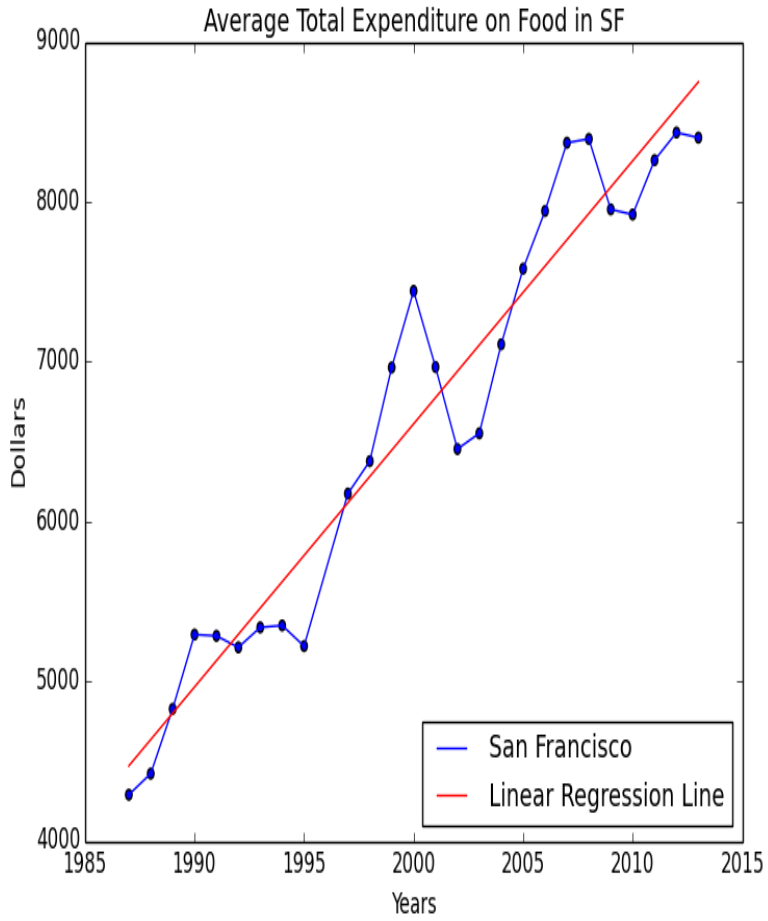


- In an attempt to gauge how much longer there will be a downturn on food away from expenditure, the effects of the early 90s recession is considered.
- The GDP contraction during the recession in the early 90s was 1.4%. This contraction of 1.4% resulted in three years of consecutively decreasing expenses away from home.
- The GDP contraction due to the 08-09 financial crisis was 4.3%.
- Assuming, a simplified linear relationship between the size of the recession and the period of time required for expenditure to start showing positive differences again, a decreasing period of around 9 years is implied.

A More In-Depth Look at LA

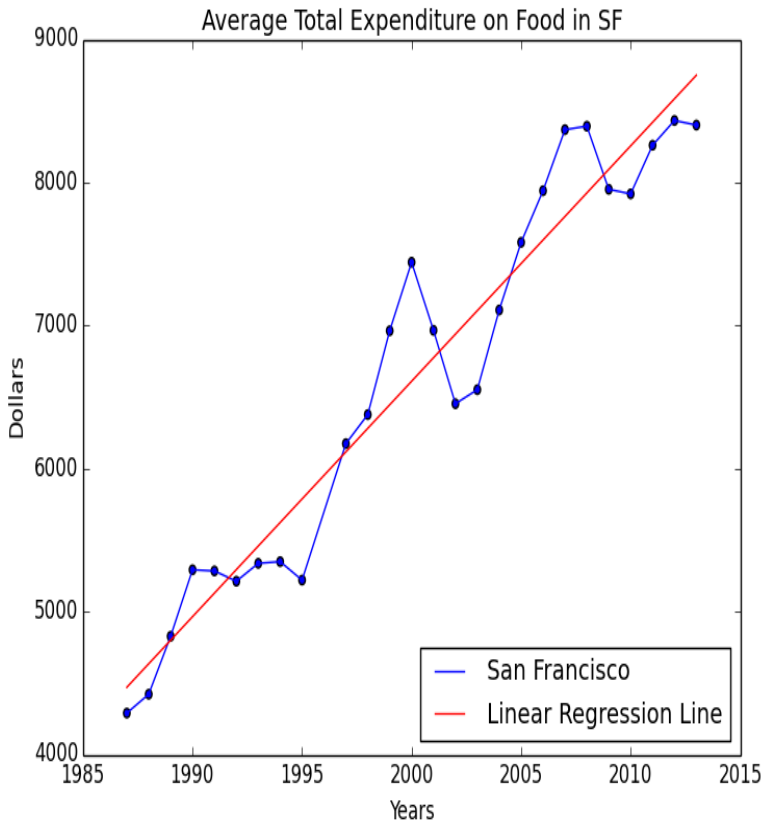
- Having already seen 6 years of decline in expenditure, these results would imply the period of negative year-to-year differences will come to a close in the next 2-3 years.

A More In-Depth Look at SF



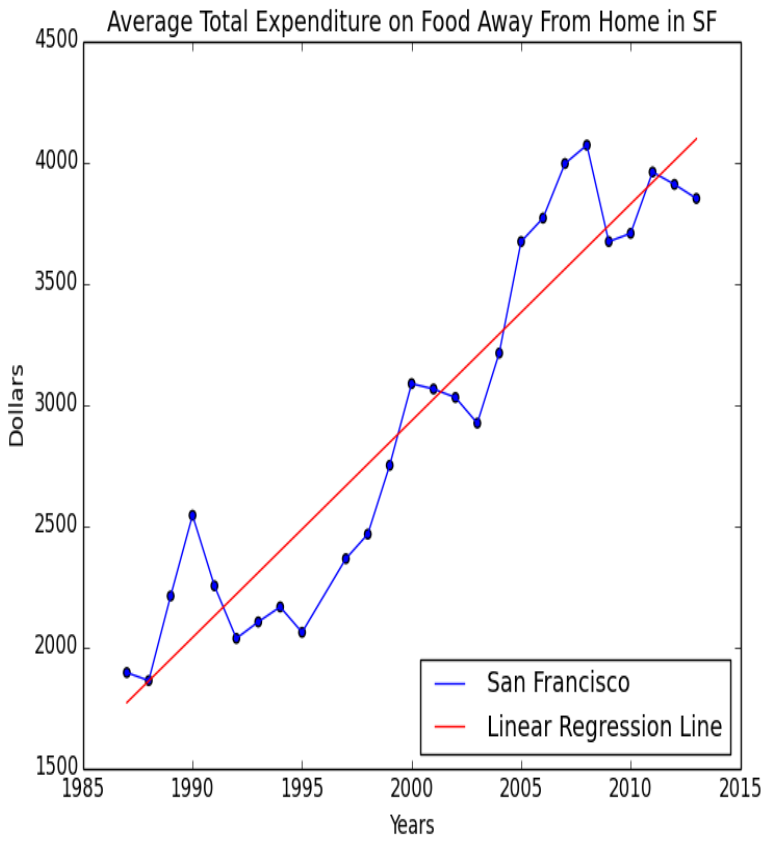
- This plot shows the linear regression line on total expenditure on food in SF.
- Using this line, the expected expenditure on food in 2014 would be $8914.06.
- The square root of the average squared error over the years, is $352.67.

A More In-Depth Look at SF



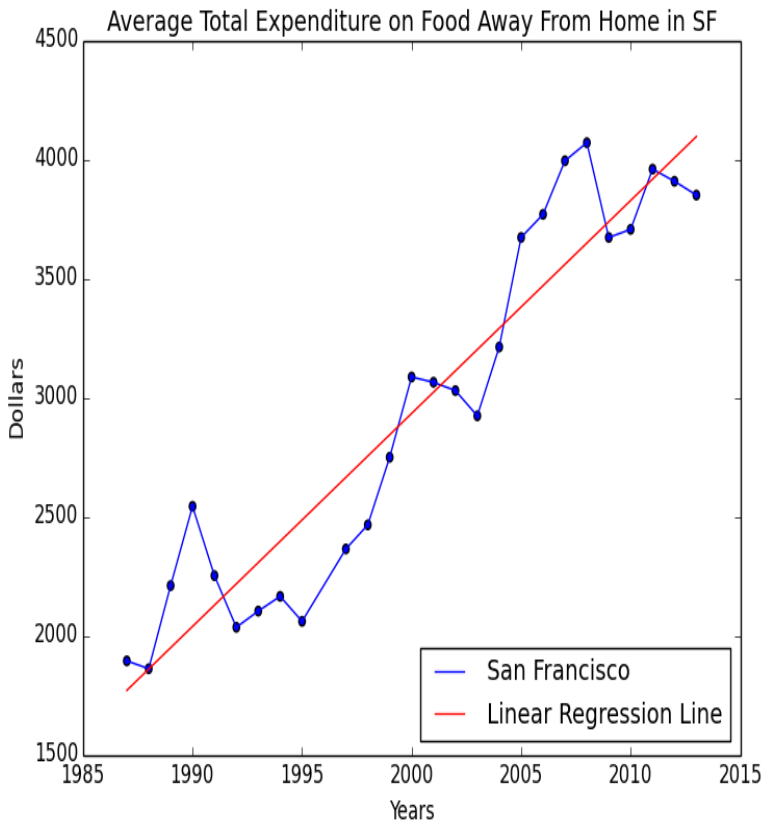
- Overall, the error exceeds the average error in 7 out of 26 years.
- Therefore, we can say that forecast shown previously will be within the average error with probability 0.731.
- Interestingly, the average error in the last 5 years is $227.13, which is a positive trend and would give more confidence in the accuracy of the current forecast.

A More In-Depth Look at SF



- This plot shows the average expenditure on food away from home and the regression line in SF.
- As mentioned before, this graph seems to indicate bad news for restaurant owners.
- This graph is slightly different from that of LA, where there was a decline in spending every year since the recession.
- Here there are a couple of years of increase in the middle before the negative differences resume.

A More In-Depth Look at SF

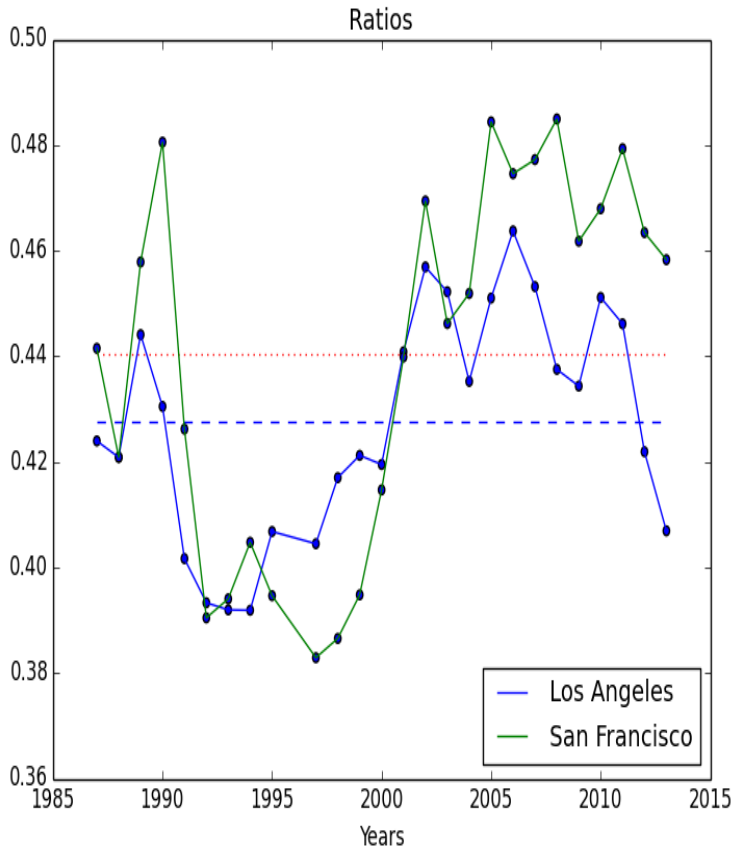


- The regression line implies average spending of $4185.19.
- Once again, this estimate should be treated with caution as the data is currently trending away from the estimate.
- Using the early 90s recession as a benchmark in a similar fashion as was done previously, one would expect the downward trends to end after about 6 – 7 years.

A More In-Depth Look at SF

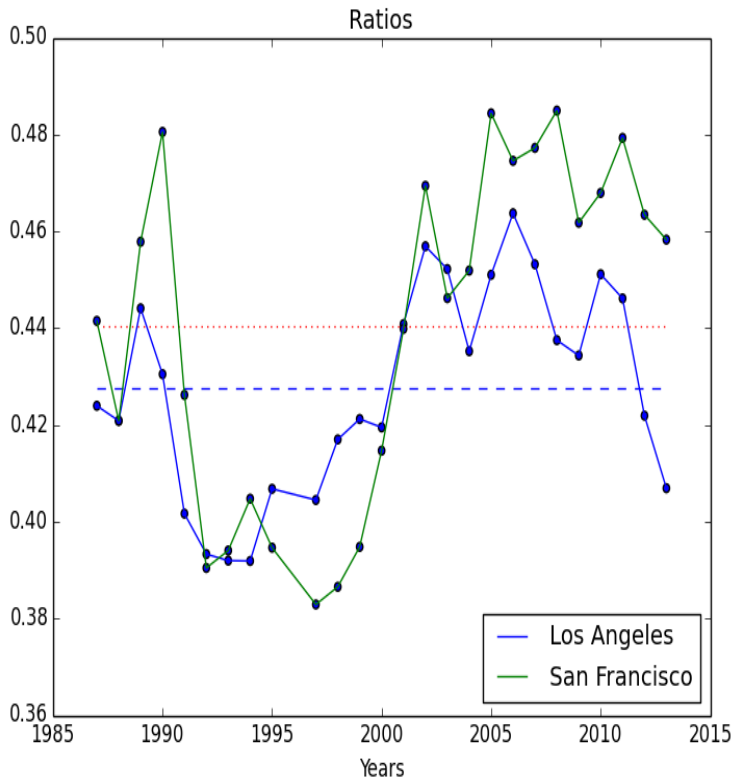
- Currently, there have been 5 years of overall decline in spending, however with a couple of years of moderate increases in spending, the relationship isn't quite as clear as it was in LA.

Ratios of Food Away From Home



- This plot shows the fraction of total expenditure on food that was spent on food away from home in the two cities (the dashed lines indicate the average).
- These plots give an indication of the culture of eating out in the two cities.
- Almost throughout the period under analysis, there was a higher fraction of spending on food away from home in SF.

Ratios of Food Away From Home



- In general, people in SF spent about 44% of their food expenditure on food away from home while that same number in LA was 42.7%.
- Both lines have very similar characteristics, with one particularly interesting feature.
- In the middle of each economic slowdown that occurred during this time period, this fraction spikes up before plunging in the aftermath of the slowdown.
- This would imply that in the immediacy of an economic downturn, people begin to eat out more before cutting costs once the realities of the slowdown hit.

Summary

- San Francisco and Los Angeles have both seen the average amount of money spent on food decline in the last few years since the recession.
- This decline has also been seen in the amount of money spent in restaurants and other eateries.
- In general, people in San Francisco spend a higher portion of their food budget away from home than people in Los Angeles.
- Finally, these results show that spending on food is an indicator of the health of the economy which definitively proves that food can do anything!