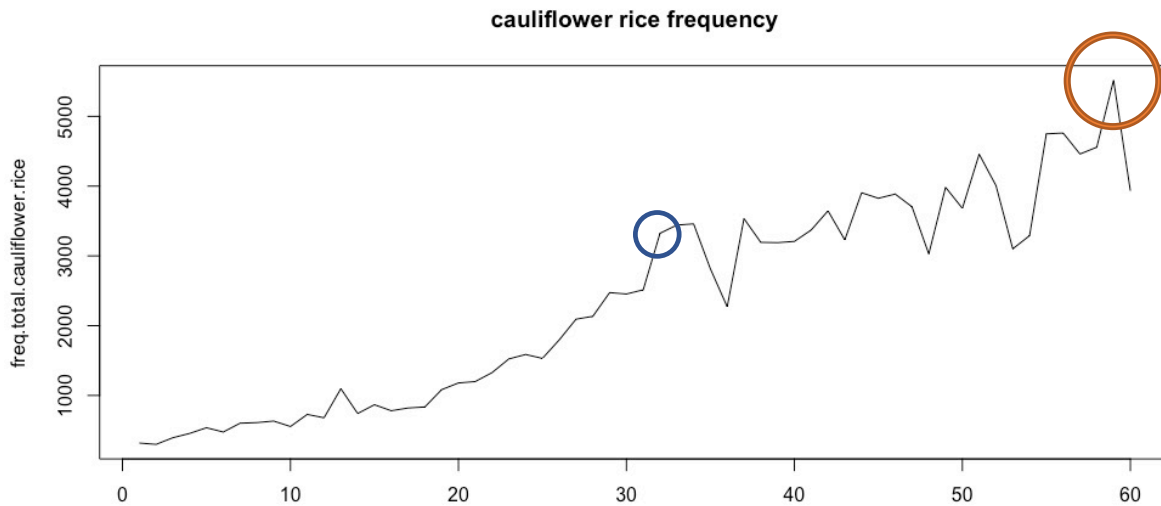


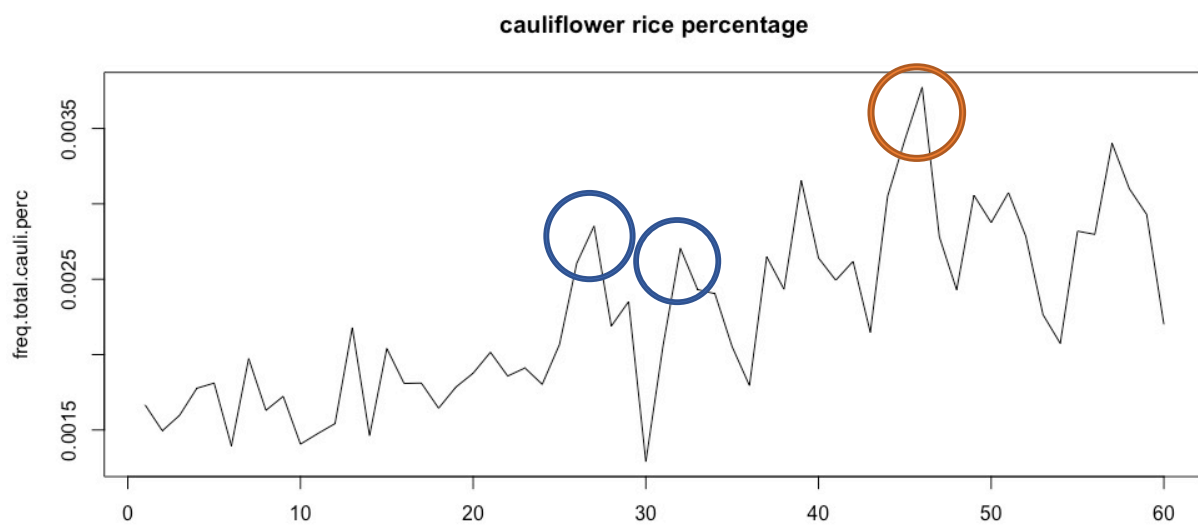
## Task B: Trend Detection

**# First solution: topic modeling. However, this method will take a long time for code running**  
**# Second solution: syntactic analysis, document term matrix, check the term frequency. This method is better and more practical.**

1. In order to find the earliest date when cauliflower rice and vegetable noodle got popular, I check the term frequency by month from 2011 to 2015. Here are results.

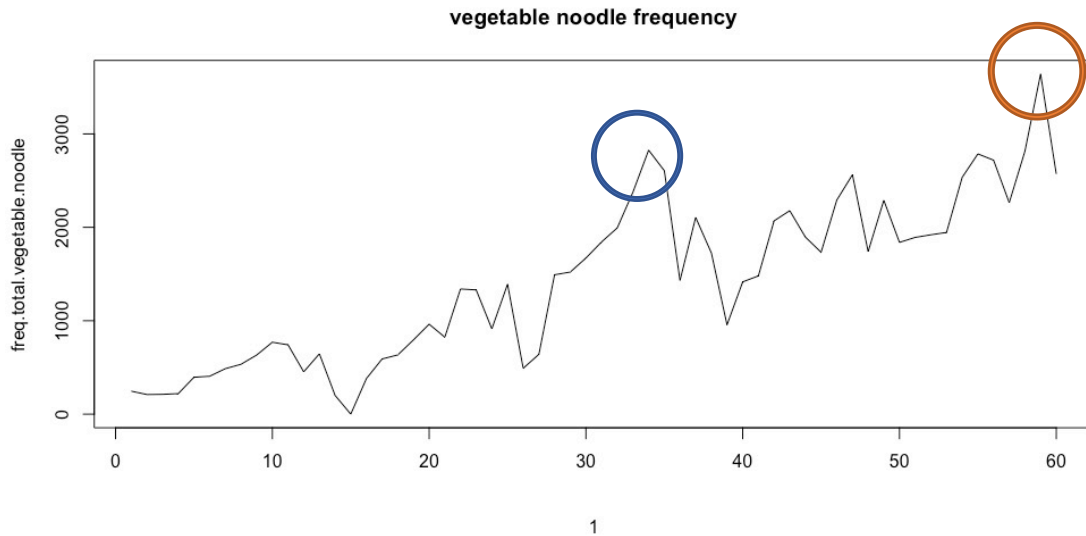


Cauliflower rice contains key words like cauliflower, rice, and low-carb. This is the sum of their monthly frequency. Cauliflower becomes popular around July and August, 2013 from the perspective of frequency mentioned. And it arrived at its peak in November, 2015.

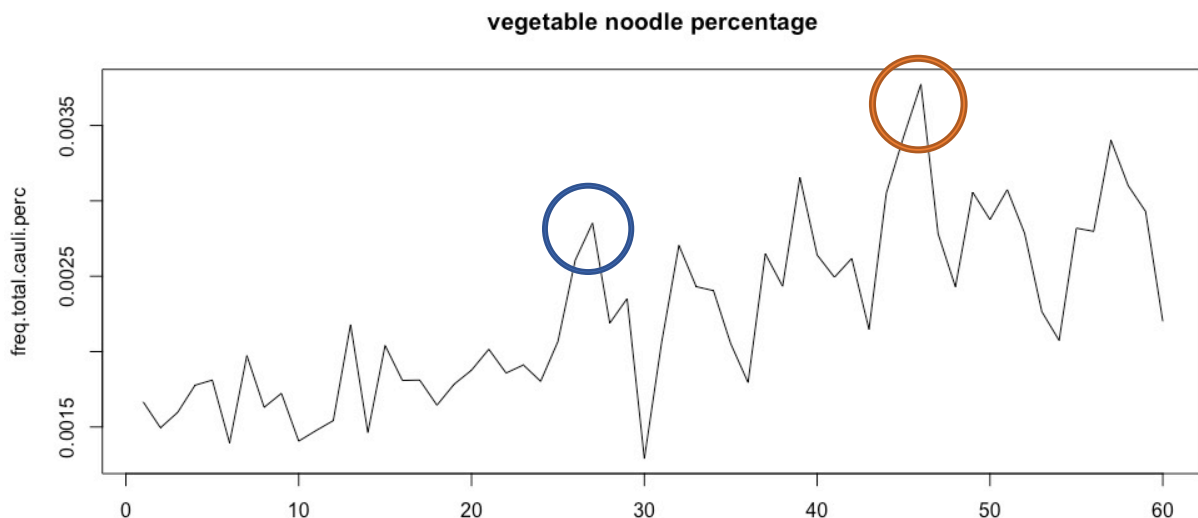


## Task B: Trend Detection

The plot of percentage Cauliflower rice accounts for total term frequency in each month indicates that cauliflower rice had a relatively higher percentage around February and March, 2013. It arrived its peak in December 2014.



Vegetable noodle contains key words like zucchini, squash, cucumber, and zoodle. This is the sum of their monthly frequency. Vegetable noodle becomes popular around October and November, 2013 from the perspective of frequency mentioned and it arrives at its peak in December, 2015



The plot of percentage Vegetable noodle accounts for total term frequency in each month indicates that vegetable noodle had a relatively higher percentage around March and April,

## Task B: Trend Detection

2013. It arrives at its peak in December, 2014 to January, 2015 from the perspective of percentage of total term frequency.

### 2. Methodology and other trends

After the import of fb data and ingredient lists, I compare the two dataset and check the term frequency. I check the intersections of these two datasets and pick top 20 from the perspective of term frequency. Then, I check the monthly increasing rate of term frequency. Finally, I find out those ingredients with higher increasing rate. Here are the results: # chicken, chocolate, cake, cream, butter, sugar, salad, beef, pepper, garlic, brill, chicory, cress, chapatis