Group9_Report

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Introduction:

In this Midtern project, our group want to explore the pesticide usage situation of straberries in Florida, Washington, New York State, California, North Carolina, and Oregon. There are mainly three parts of this projects: initial EDA, illustration of data using shiny, and final conclusion. The data set contain data from four different years, since most observations come from 2019 and 2016, we decide to only focus on those two years.

Data set:

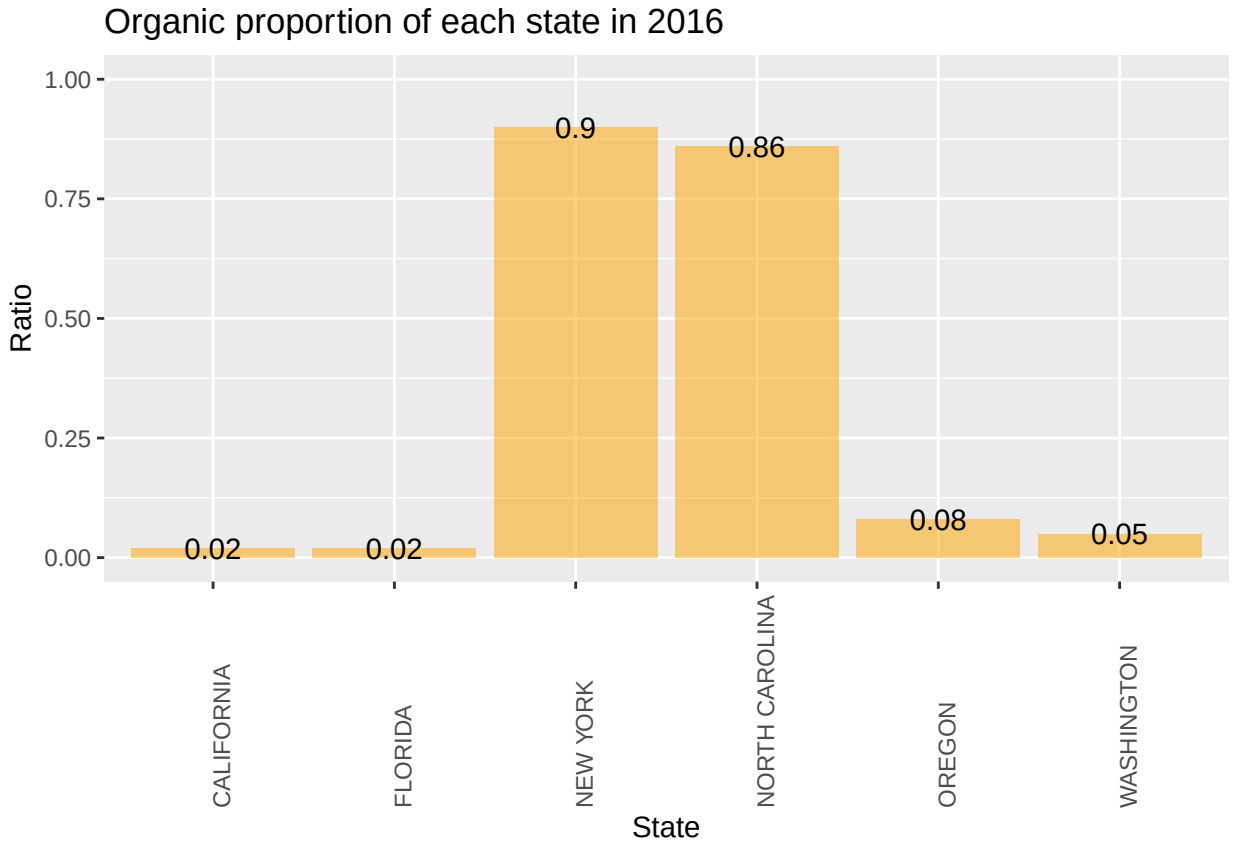
The three data sets we use are the USDA strawberry data set, the insectisides data set, and the herbicides-hungicide-other data set.

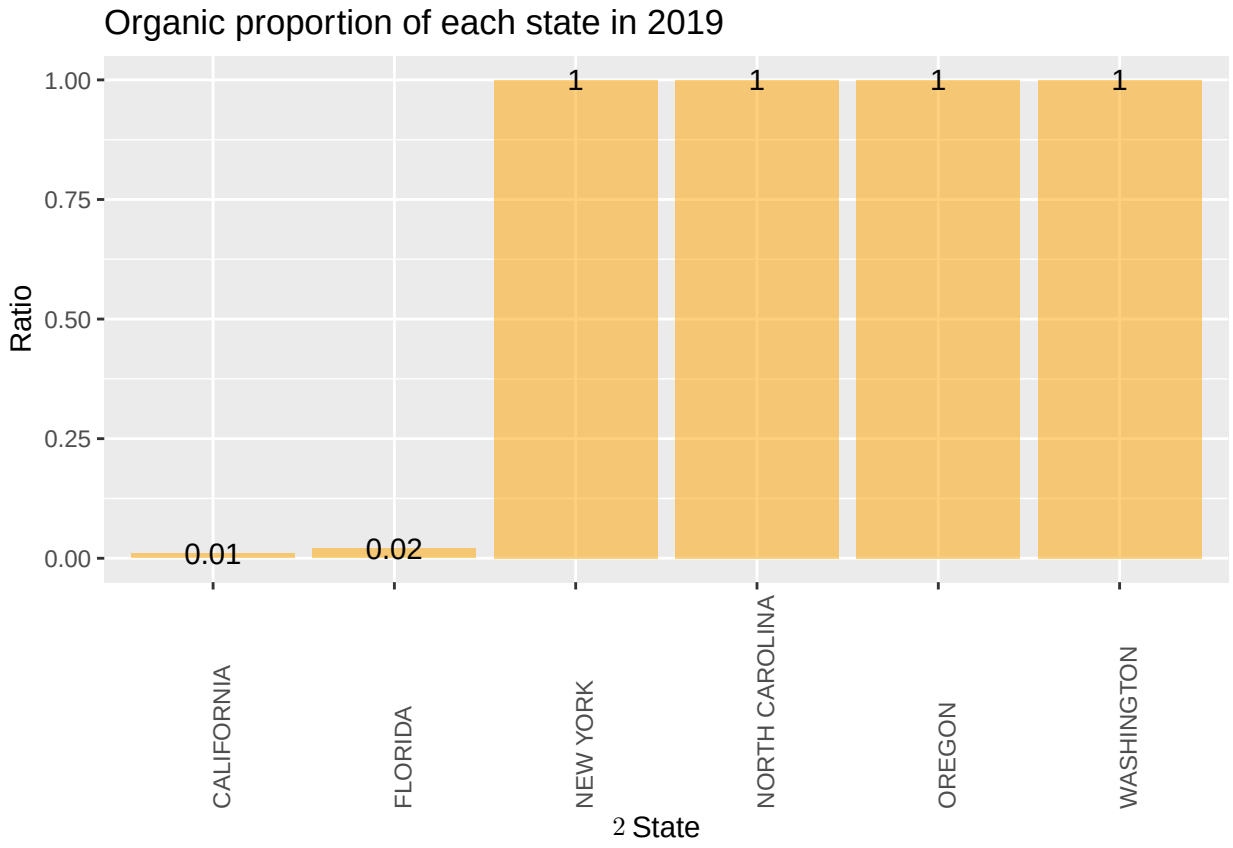
Two Main questions we want to ask and answer:

1. What is the pesticide usage in planting straberries in each state? which one is prefered and what is the organic proportion in each state in 2019 and 2016?
2. Which kind of toxicity is potentially more possible to encounter in each state in 2019 and 2016?

EDA:

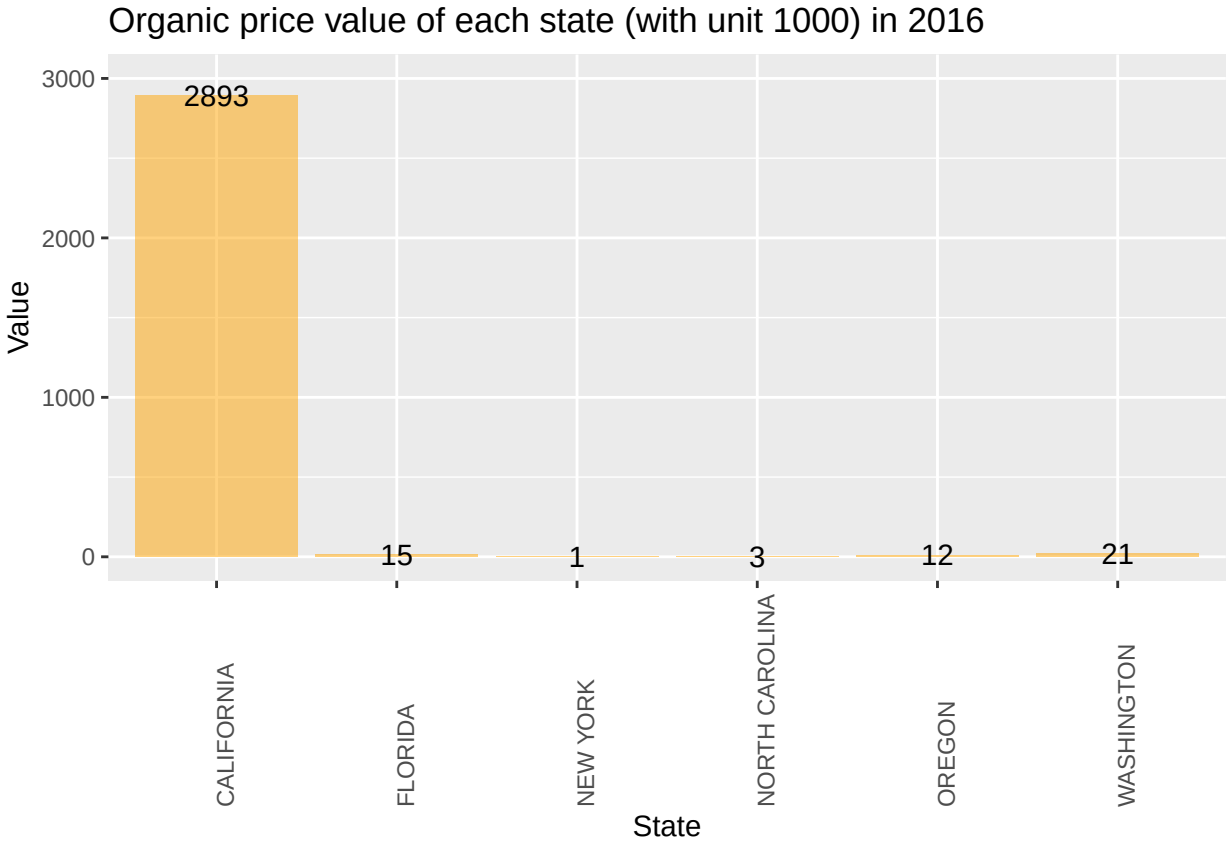
The two images below indicate the Organic Proprotion of each state in 2016 and 2019.



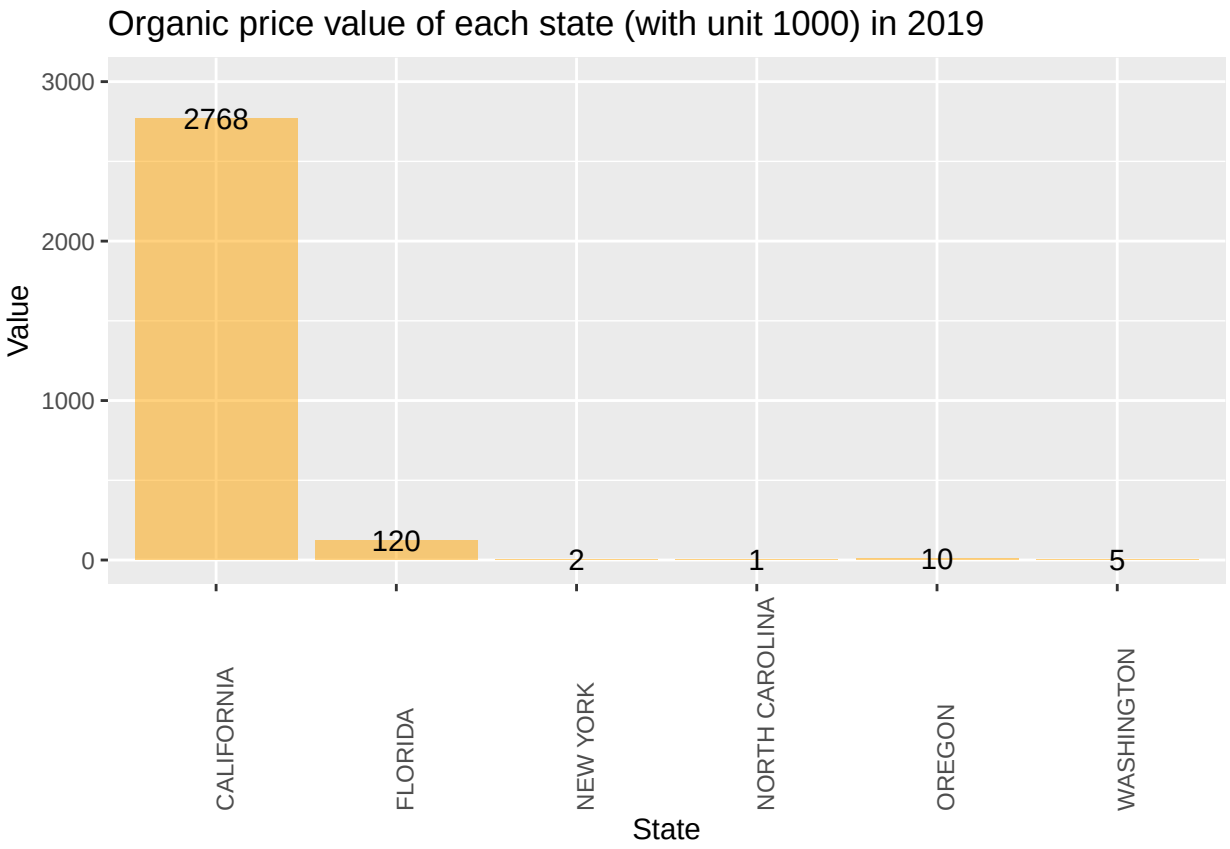


Since there are two measurement scales: in dollar$ and in CWT score, We show the organice value in two measurment scales seperately.

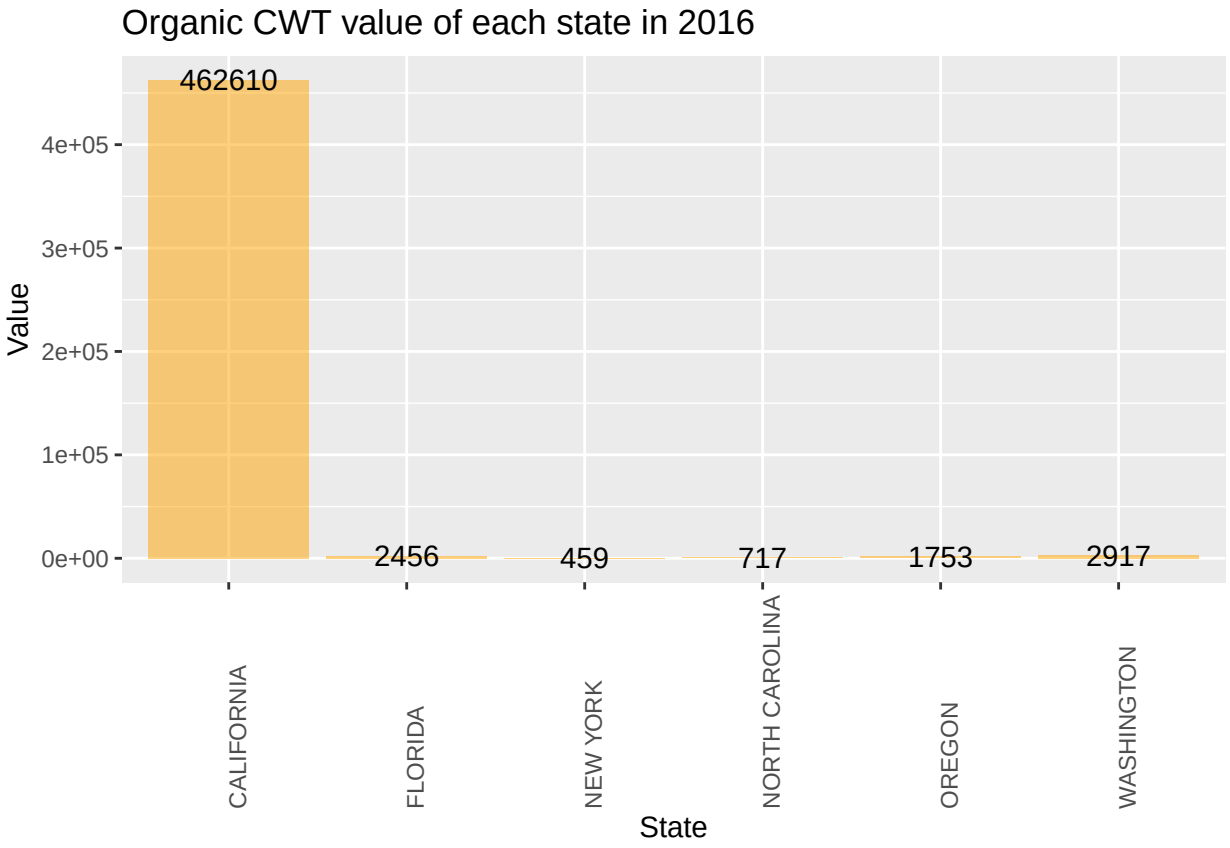
The two images below indicate the Organic Value (measure in dollar, unit is 1000$) of each state in 2016 and

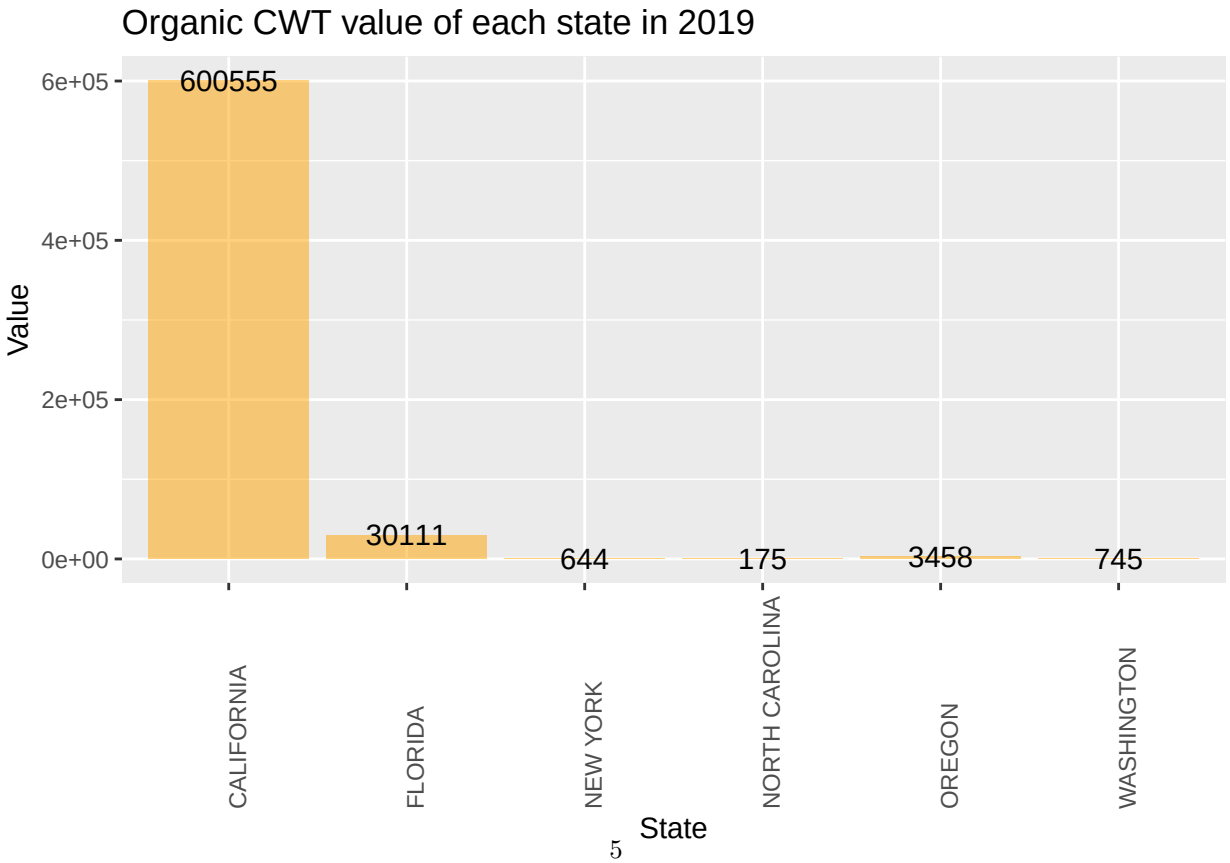


2019.

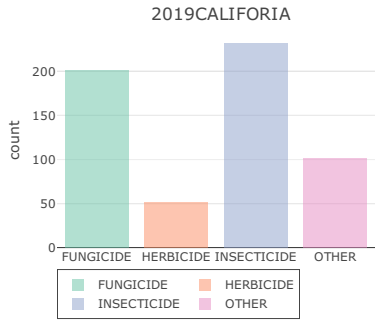

Organic price value of each state (with unit 1000) in 2019
Value
3000
2000
1000
0
2768
120
2
1
10
5
CALIFORNIA
FLORIDA
NEW YORK
NORTH CAROLINA
OREGON
WASHINGTON
State

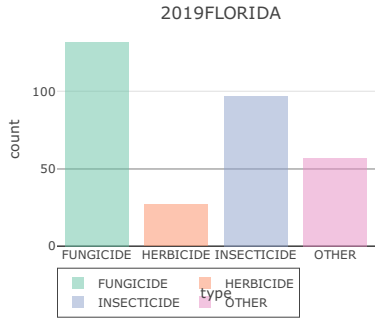
The two images below indicate the Organic Value (measure in CWT) of each state in 2016 and 2019.





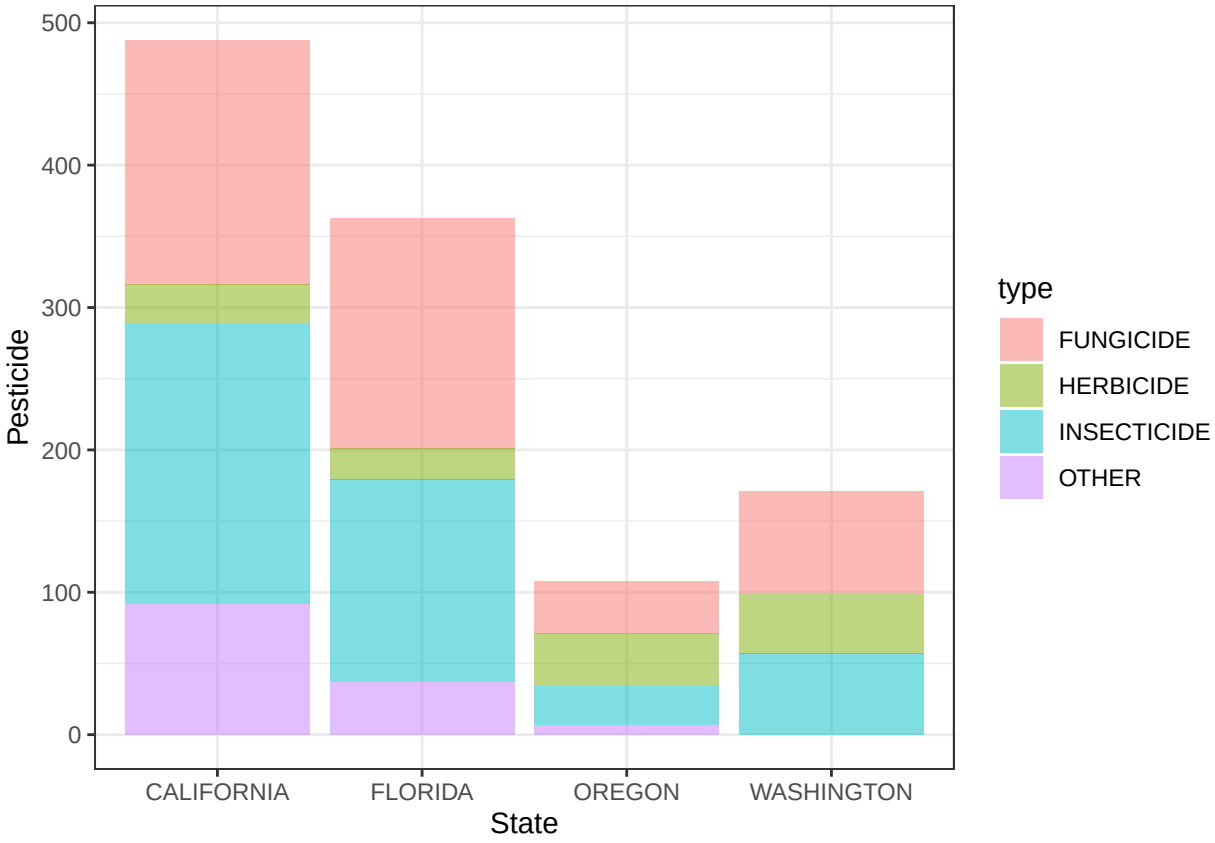
Then we explored the usage of different kinds of chemical in each state in 2019.



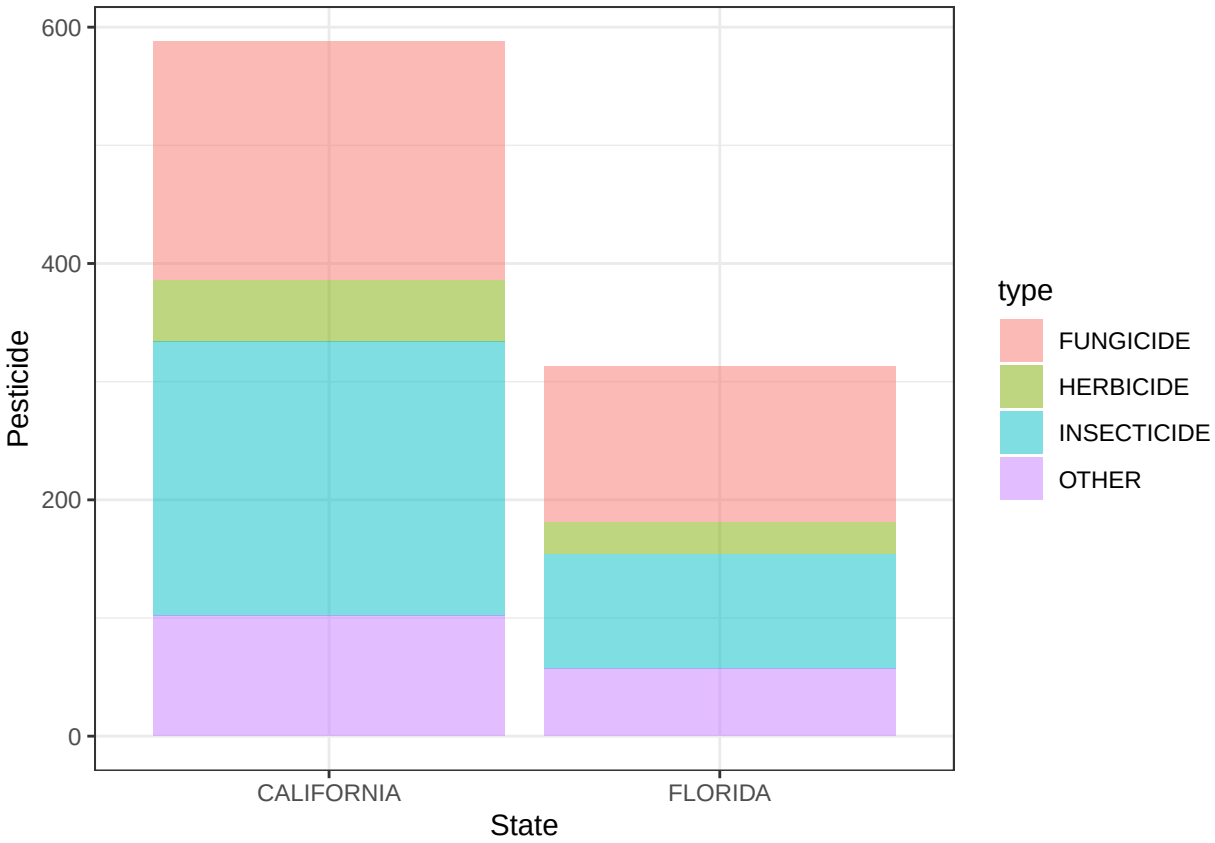


The two images below indicate the count of Chemical (Grouped by chemical type) of each state in 2016 and 2019.

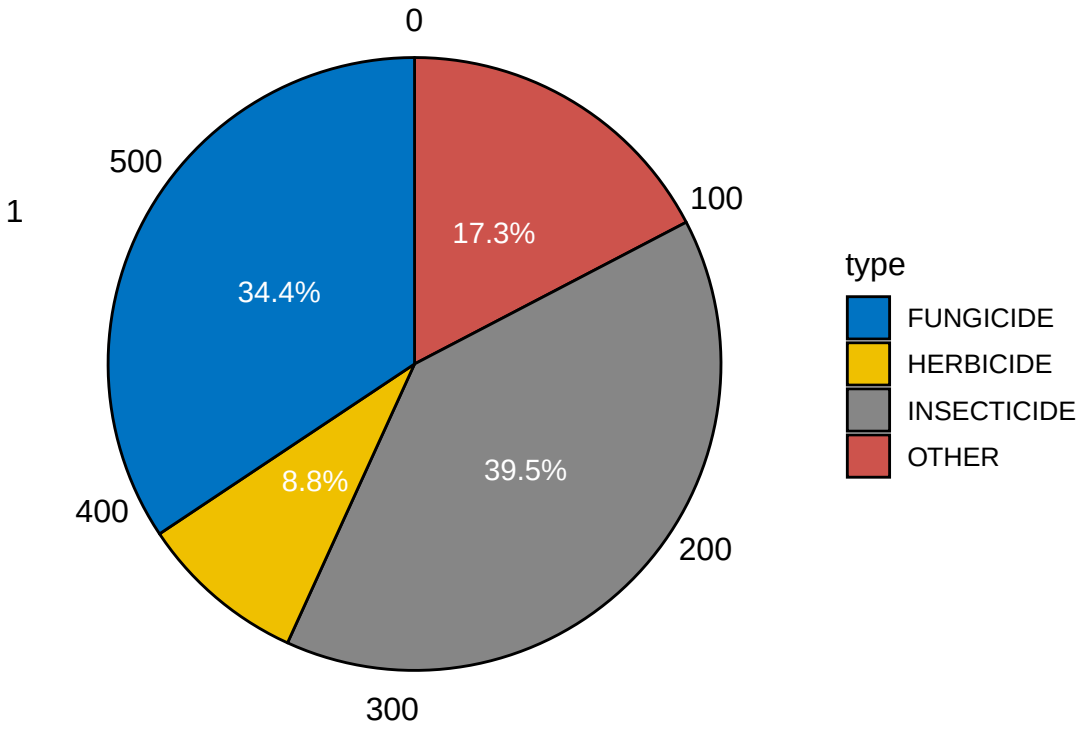
Count of Chemical (Grouped by chemical type) of each state in 2016

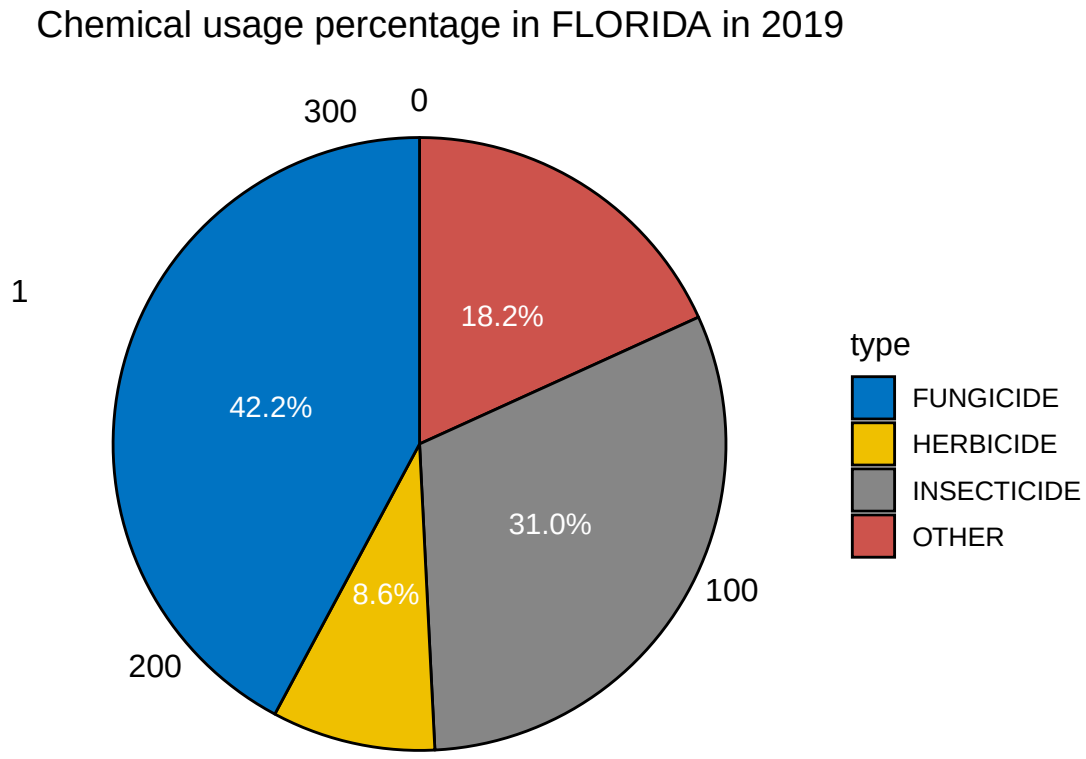


Count of Chemical (Grouped by chemical type) of each state in 2019



We can take a quick look at the percentage of Chemical usage (Grouped by chemical type) in each state in 2019


Chemical usage percentage in CALIFORNIA in 2019
0
100
200
300
400
500
1
17.3%
34.4%
8.8%
39.5%
type
FUNGICIDE
HERBICIDE
INSECTICIDE
OTHER



At last, we explore the toxins each state is possible to encounter in 2019 and 2018:.

Shiny:

We build a simple shiny interface here: https://yulijin.shinyapps.io/midterm/

Final Conclusion:

1. Since the dataset in imbalanced, most observations are from California, thus it is almost meaningless to compare the sum of organic value. And since all observations from New York State, North Carolina, Oregon and Washington are organic in 2019, it is meaningless to compare the Organic proportions in 2016 and 2019 as well.
2. Chemical substances affect both humans and bees. Among the above-mentioned chemical substances, there are 53 species that have greater side effects on bees. Most of these chemicals contain Carcinogen and Hormone Disruptor, which can cause harm to humans. Therefore, we call for reducing the use of chemical.

3.3. According to the bar plot, we can see most observations come from California and Florida and these 2 states frequently use chemicals for strawberries. Moreover, The domain chemicals are fungicides and insecticides in 2 states, and about 80% of chemicals they use are these two types.