ECON 6760 - Assignment 1

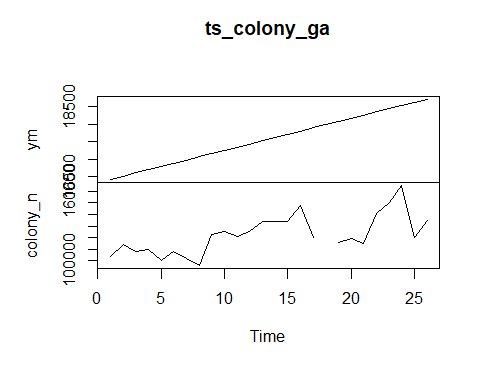
Joe Martin

1/17/2022

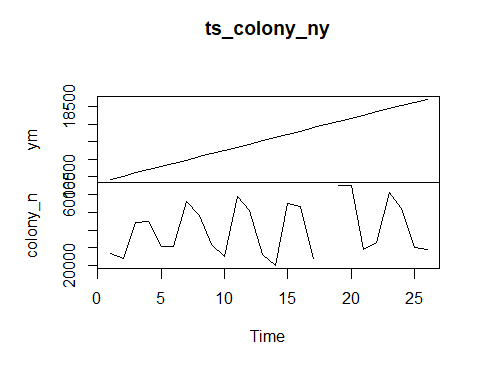
Explore the data. For reference, this is the meaning for variables:

colony\_n: Number of colonies colony\_max: Maximum colonies colony\_lost: Colonies lost colony\_lost\_pct: Percent of total colonies lost colony\_added: Colonies added colony\_reno: Colonies renovated colony\_reno\_pct: Percent of colonies renovated

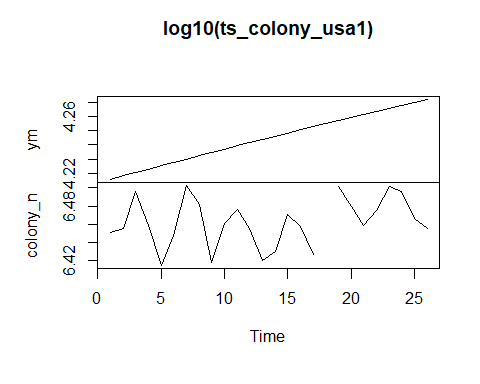
# How many colonies were lost over time in Georgia  
ts\_colony\_ny <- colony %>%  
 filter(state == "New York") %>%  
 select(ym,colony\_n)  
  
ts\_colony\_ga <- colony %>%  
 filter(state == "Georgia") %>%  
 select(ym,colony\_n)  
  
ts\_colony\_ny <- ts(ts\_colony\_ny)  
ts\_colony\_ga <- ts(ts\_colony\_ga)  
  
plot(ts\_colony\_ga)



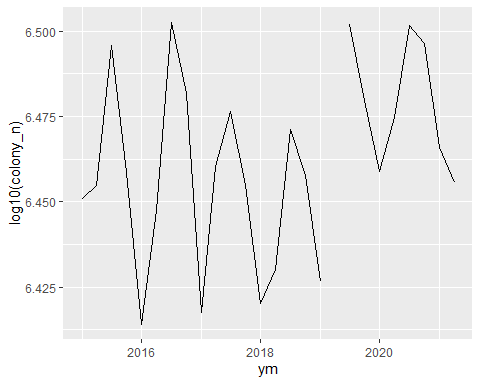
plot(ts\_colony\_ny)

 Although this is not economic data, this dataset is recorded quarterly. This is interesting because it is possible to see seasonal population trends. For example, filtering for colony numbers in Georgia, it is less clear how colony numbers are affected by weather, likely due to milder autumns and winters. However, when filtering for a state like New York where there are more dramatic changes in seasonal temperatures, it is clear that populations increase and decrease depending on the season.

#All of US  
  
ts\_colony\_usa <- colony %>%   
 filter(state == "United States") %>%  
 select(ym,colony\_n)  
  
ts\_colony\_usa1 <- ts(ts\_colony\_usa)  
  
plot(log10(ts\_colony\_usa1))



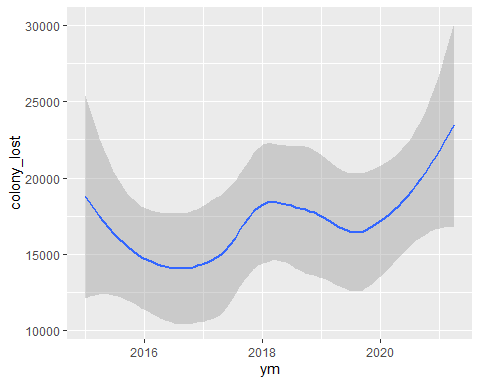
#using ggplot  
ts\_colony\_usa %>%  
 ggplot(aes(x = ym, y = log10(colony\_n)))+  
 geom\_line()



colony %>%  
 filter(state == "Georgia") %>%  
 ggplot(aes(x=ym, y = colony\_lost))+  
 geom\_smooth()

## `geom\_smooth()` using method = 'loess' and formula 'y ~ x'

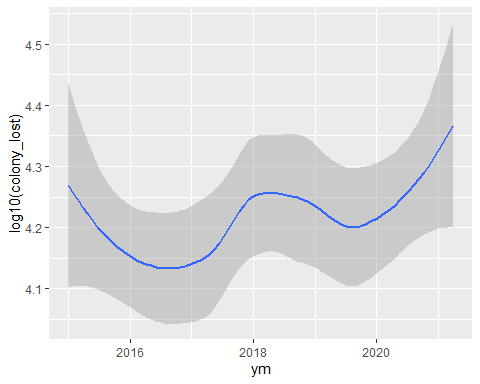
## Warning: Removed 1 rows containing non-finite values (stat\_smooth).



# Try using a natural log scale   
colony %>%  
 filter(state == "Georgia") %>%  
 ggplot(aes(x = ym, y = log10(colony\_lost)))+  
 geom\_smooth()

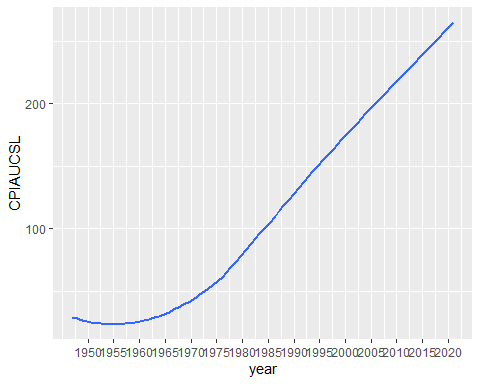
## `geom\_smooth()` using method = 'loess' and formula 'y ~ x'

## Warning: Removed 1 rows containing non-finite values (stat\_smooth).



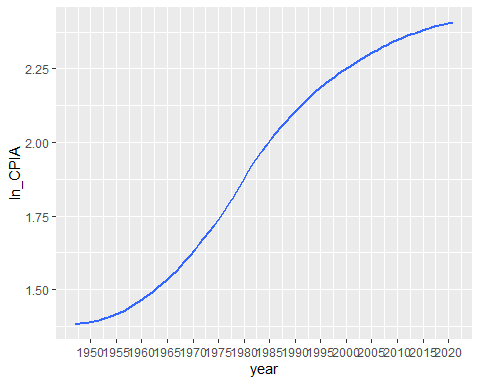
# Show plot as it appears on FRED website (https://fred.stlouisfed.org/series/CPIAUCSL)  
cpia %>%  
 ggplot(aes(x = year, y = CPIAUCSL))+  
 geom\_smooth(se = FALSE)+  
 scale\_x\_continuous(breaks = seq(1950,2021, by = 5))

## `geom\_smooth()` using method = 'loess' and formula 'y ~ x'



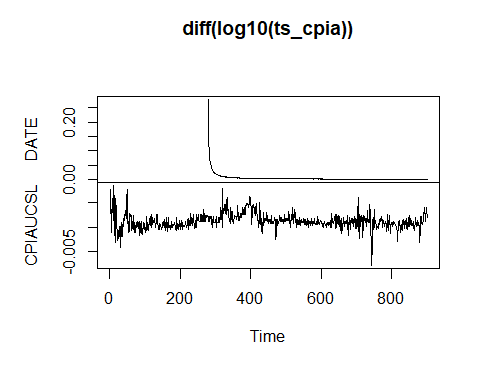
# natural log scale  
cpia %>%  
 ggplot(aes(x = year, y = ln\_CPIA))+  
 geom\_smooth(se = FALSE)+  
 scale\_x\_continuous(breaks = seq(1950,2021, by = 5))

## `geom\_smooth()` using method = 'loess' and formula 'y ~ x'



ts\_cpia <- cpia %>%  
 select(DATE,CPIAUCSL)  
  
ts\_cpia <- ts(ts\_cpia)  
  
plot(diff(log10(ts\_cpia)))

## Warning in diff(log10(ts\_cpia)): NaNs produced



plot(ts\_cpia)

