Question 1

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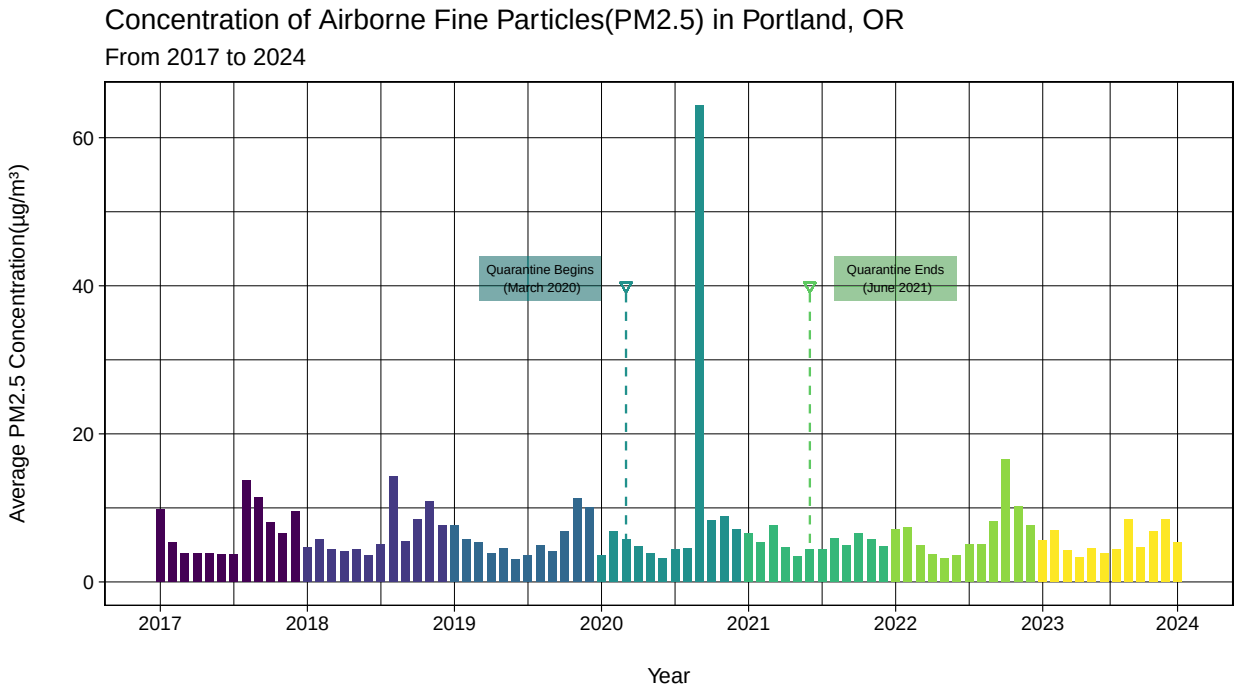
2024-03-06




```
#KIANNA's FIRST GRAPH


ggplot(avgAll,aes(x =month, y = avg_co, fill=year)) +
  geom_col(width=.7, show.legend = FALSE)+
  scale_fill_manual(values =c("#33302E", "#320a5e", "#781c6d", "#bc3754", "#ed6925","#fbb61a","#fcffa4"
 scale_x_continuous(breaks = c(1, 13, 25, 37, 49,61,73, 84), labels = c("1"="2017","13"="2018","25"="20

  theme_linedraw()+


  labs(title = "Concentration of Carbon Monoxide(CO) in Portland, OR",
       subtitle="From 2017 to 2024",
       x = "Year",
       y = "Average CO Concentration(ppbv)") +

  guides(color = "none")+
  theme(axis.title.y = element_text(size=10,margin=margin(r=20)),
        axis.title.x = element_text(size=10,margin=margin(t=15)))+
```

```
  theme(
    panel.background = element_rect(fill = "black"),  # Background color
    plot.background = element_rect(fill = "black"),  # Plot area color
    text = element_text(color = "white"),
    axis.text = element_text(color = "white"),         # Axis text color
    axis.line = element_line(color = "white"),         # Axis line color
    panel.grid.major = element_line(color = "white"), # Major grid line color
    panel.grid.minor = element_line(color = "white"))  +

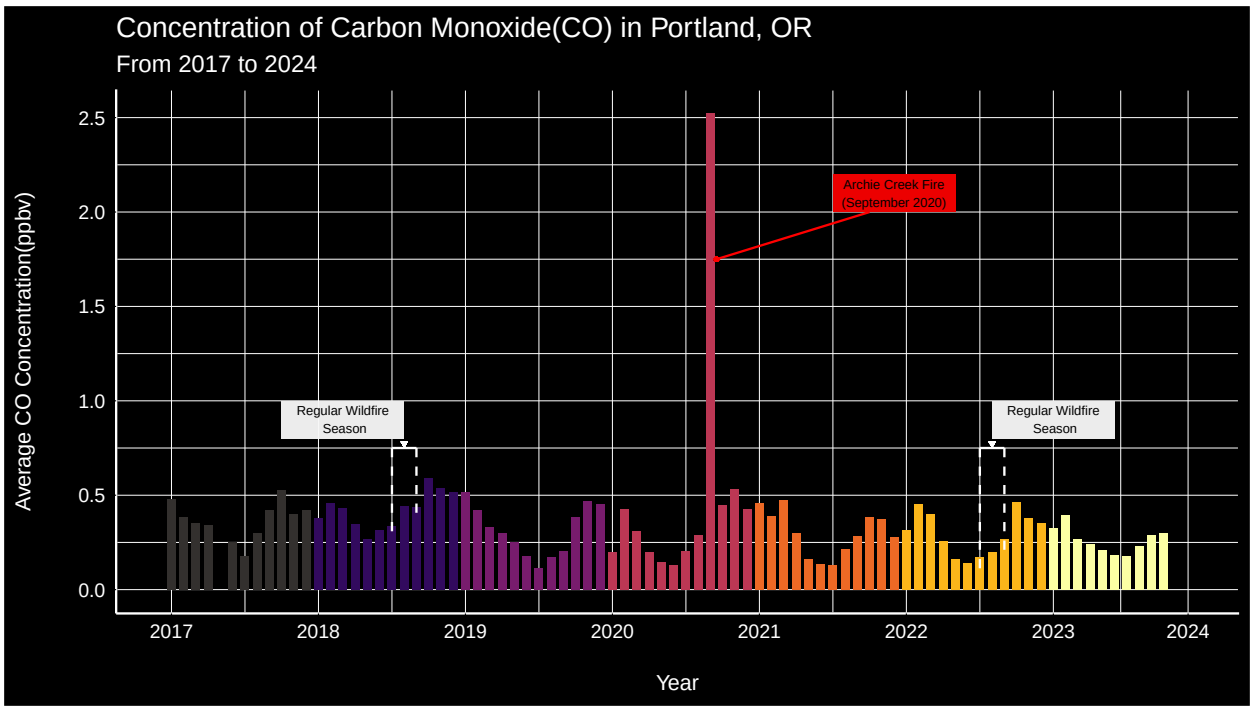



  annotate("segment", x = 19, xend = 19, y = .75, yend = 0.3, color = "white", linewidth = .5, linetype=
  annotate("segment", x = 21, xend = 21, y = .75, yend = 0.4, color = "white", linewidth = .5, linetype=
  annotate("segment", x = 19, xend = 21, y = .75, yend = 0.75, color = "white", linewidth = .5) +
  geom_rect(aes(xmin=10, xmax=20, ymin=.8, ymax=1 ), fill="white", alpha=0.05)+
  annotate("text", x = 15, y = .9, label = "Regular Wildfire\n Season", size=2)+
  geom_point(aes(x=20,y=.775), show.legend = FALSE, color="white", shape=6, size=.5)+

  annotate("segment", x = 67, xend = 67, y = .75, yend = 0.1, color = "white", linewidth = .5, linetype=
  annotate("segment", x = 69, xend = 69, y = .75, yend = 0.2, color = "white", linewidth = .5, linetype=
  annotate("segment", x = 67, xend = 69, y = .75, yend = 0.75, color = "white", linewidth = .5) +
  geom_rect(aes(xmin=68, xmax=78, ymin=.8, ymax=1 ), fill="white", alpha=0.05)+
  annotate("text", x = 73, y = .9, label = "Regular Wildfire\n Season", size=2)+
  geom_point(aes(x=68,y=.775), show.legend = FALSE, color="white", shape=6, size=.5)+

  annotate("segment", x = 45.5, xend = 58, y = 1.75, yend = 2, color = "red", linewidth = .5) +
  geom_rect(aes(xmin=55, xmax=65, ymin=2, ymax=2.2 ), fill="red", alpha=0.05)+
  annotate("text", x = 60, y = 2.1, label = "Archie Creek Fire\n(September 2020)", size=2)+
  geom_point(aes(x=45.5,y=1.75), show.legend = FALSE, color="red", size=.5)
```

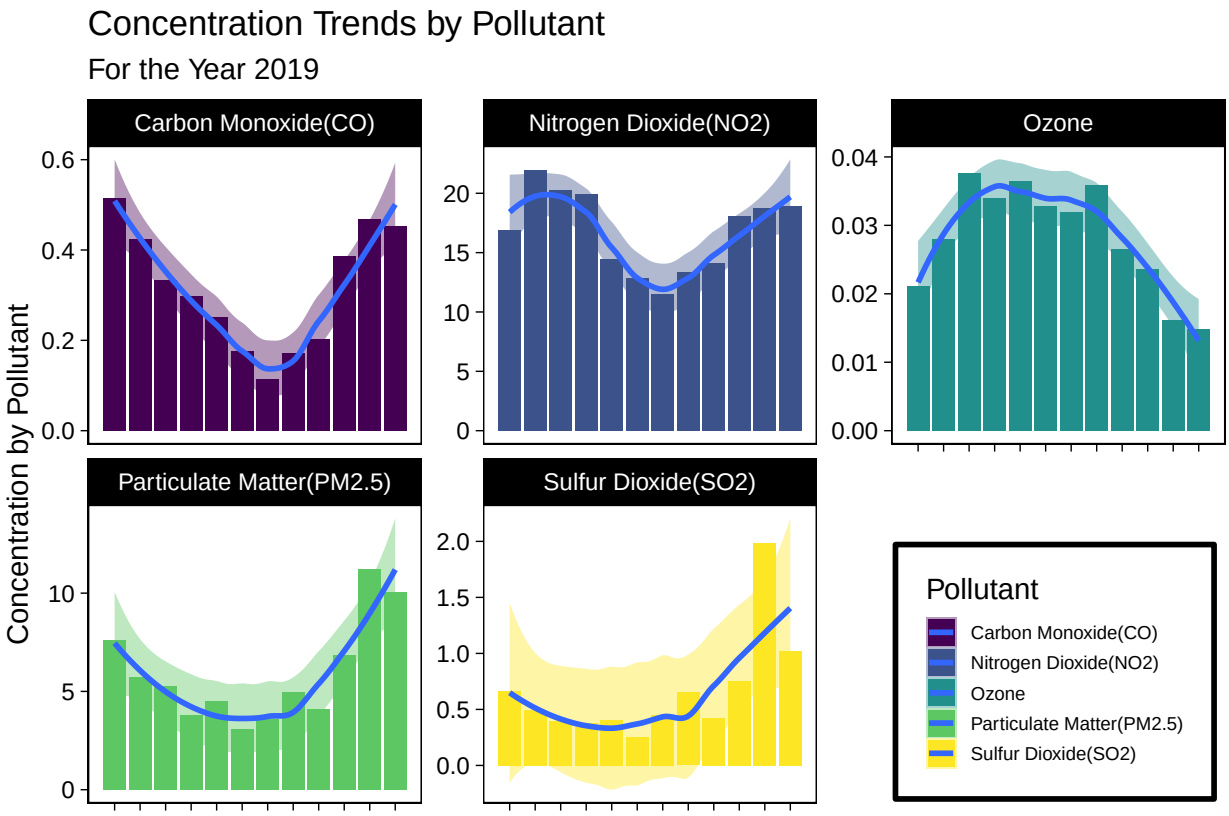
```
## Warning: Removed 3 rows containing missing values or values outside the scale range
## (`geom_col()`).
```




```
## Warning: The ‘size‘ argument of ‘element_rect()‘ is deprecated as of ggplot2 3.4.0.
## i Please use the ‘linewidth‘ argument instead.
## This warning is displayed once every 8 hours.
## Call ‘lifecycle::last_lifecycle_warnings()‘ to see where this warning was
## generated.
```

```
## Warning: A numeric ‘legend.position‘ argument in ‘theme()‘ was deprecated in ggplot2
## 3.5.0.
## i Please use the ‘legend.position.inside‘ argument of ‘theme()‘ instead.
## This warning is displayed once every 8 hours.
## Call ‘lifecycle::last_lifecycle_warnings()‘ to see where this warning was
## generated.
```

```
## ‘geom_smooth()‘ using method = ’loess’ and formula = ’y ~ x’
```




```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
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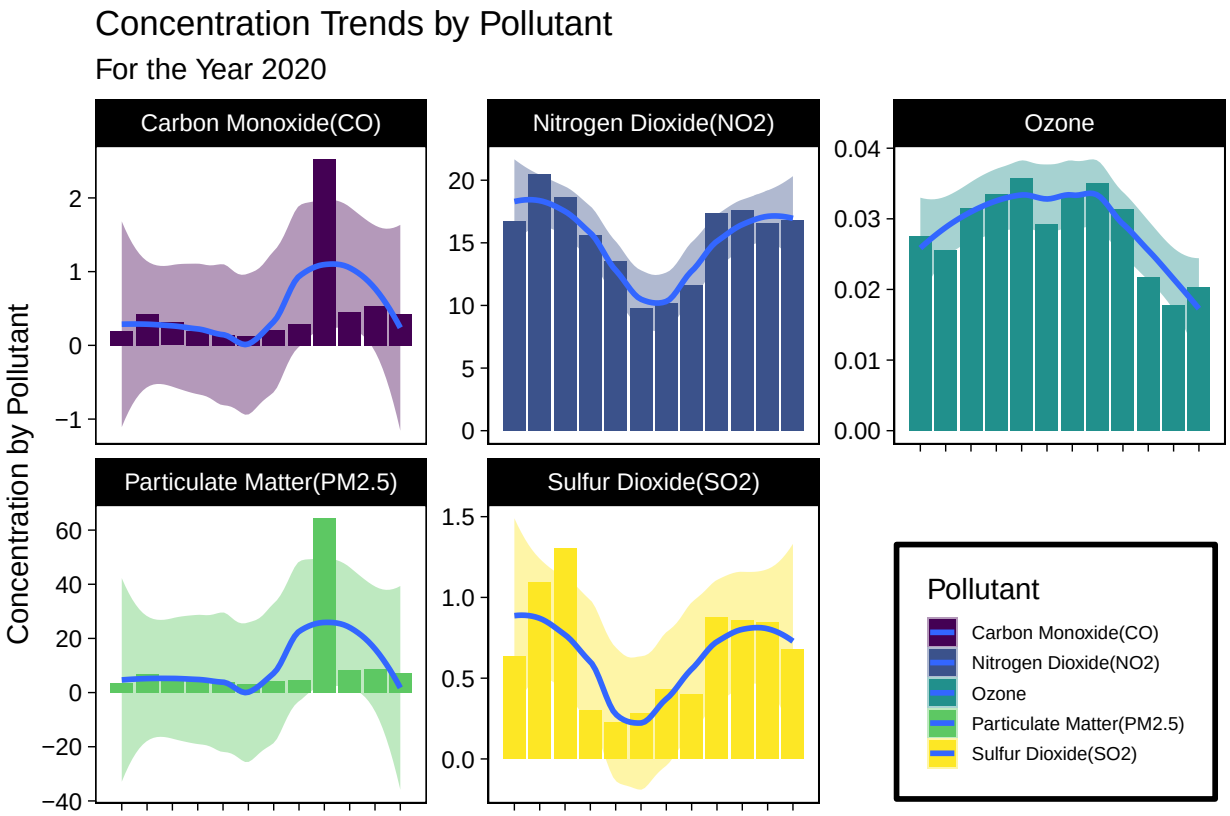


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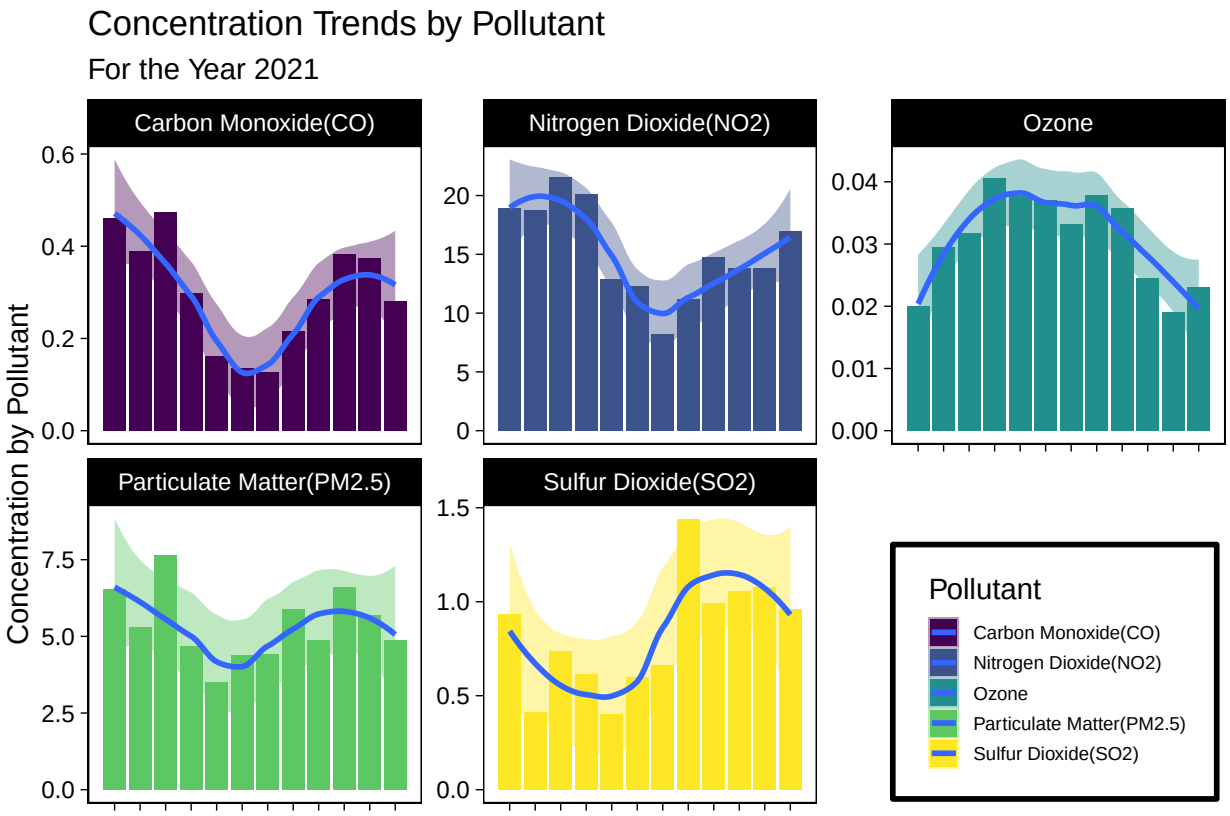


```
avgAll%>%
  group_by(year)%>%
  summarize(AVGPM = mean(avg_pm2.5), AVGCO = mean(avg_co, na.rm=T),AVGNO = mean(avg_no2,na.rm=T),AVGSO =
```

```
## # A tibble: 7 x 5
##   year  AVGPM AVGCO AVGNO AVGSO
##   <chr> <dbl> <dbl> <dbl> <dbl>
## 1 2017   6.95 0.369  19.6 0.803
## 2 2018   6.55 0.421  19.6 0.883
## 3 2019   5.89 0.316  16.7 0.656
## 4 2020  10.5  0.485  15.4 0.661
## 5 2021   5.37 0.299  15.3 0.824
## 6 2022   6.87 0.296  16.2 0.907
## 7 2023   5.53 0.261  15.0 0.737
```