

Salinity Concentration & Temperatures of Oceans in the Past Decade

Importing libraries:

```
In [ ]: import pandas as pd
import seaborn as sns
import plotly.express as px
```

Cleaning the dataframe:

```
In [ ]: # Creating the raw dataframe of all unorganized data
df = pd.read_csv('Global_Oxygen18.csv')

# Removing '**' values in dataframe
df = df[df['Salinity']!= '**']
df = df[df['Year']!= '**']
df = df[df['Month']!= '**']
df = df[df['pTemperature']!= '**']
df = df[df['Depth']!= '**']

# Converting all 'Years', 'Salinity', and 'Months' to type:str to type:int
df['Salinity'] = pd.to_numeric(df['Salinity'])
df['Year'] = pd.to_numeric(df['Year'])
df['Month'] = pd.to_numeric(df['Month'])
df['pTemperature'] = pd.to_numeric(df['pTemperature'])
# df['Depth'] = pd.to_numeric(df['Depth'])

# Renaming columns
df = df.rename(columns={'Salinity': 'Salinity (ppt)'})
```

```
In [ ]: # Creating new data set for 2nd plot of depth change in 2008
dfd = df
dfd = df[df['Year']==2008]

dfd = dfd.replace(1, 'January')
dfd = dfd.replace(2, 'February')
dfd = dfd.replace(3, 'March')
dfd = dfd.replace(4, 'April')
dfd = dfd.replace(5, 'May')
dfd = dfd.replace(6, 'June')
dfd = dfd.replace(7, 'July')
dfd = dfd.replace(8, 'August')
dfd = dfd.replace(9, 'September')
dfd = dfd.replace(10, 'October')
dfd = dfd.replace(11, 'November')
dfd = dfd.replace(12, 'December')
```

Creating visualization:

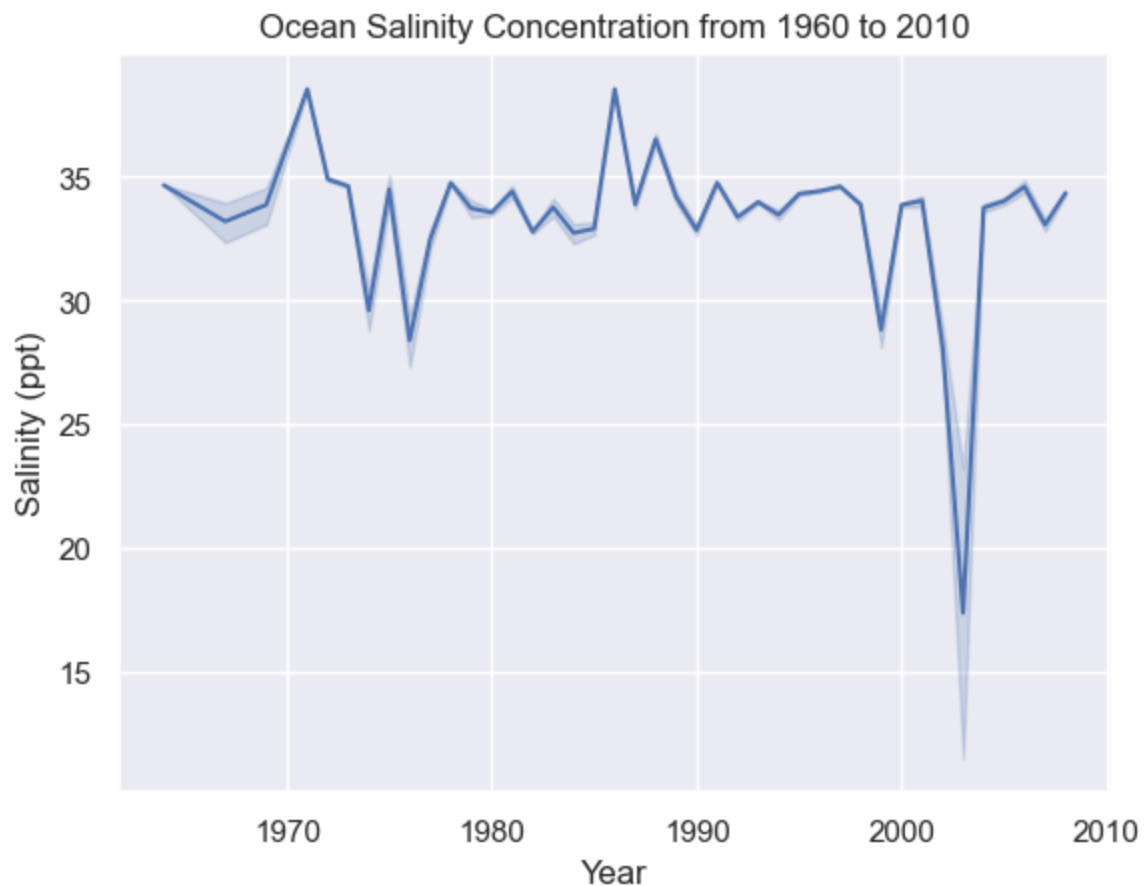
```
In [ ]: fig = px.density_mapbox(df,
                                lat='Latitude', lon='Longitude',
                                z='Salinity (ppt)',
                                radius=3,
                                center=dict(lat=0, lon=180),
                                zoom=0,
                                mapbox_style='open-street-map',
                                title='Salinity Concentration of Oceans from 1994 to

fig.show()
```

```
In [ ]: sns.set_theme(style='darkgrid')

sns.lineplot(data=df,
              x='Year', y='Salinity (ppt)',
              ).set_title('Ocean Salinity Concentration from 1960 to 2010')
```

Out[]: Text(0.5, 1.0, 'Ocean Salinity Concentration from 1960 to 2010')



In []: