```
import pandas as pd
pmi = pd.read_csv('ISM-MAN_PMI.csv') # download from quandl.com
pmi = pmi[pmi.Date>='1981-01-01']
pmi
```

	Date	PMI
0	2022-03-01	57.1
1	2022-02-01	58.6
2	2022-01-01	57.6
3	2021-12-01	58.8
4	2021-11-01	60.6
...	...	...
490	1981-05-01	53.5
491	1981-04-01	51.6
492	1981-03-01	49.6
493	1981-02-01	48.8
494	1981-01-01	49.2

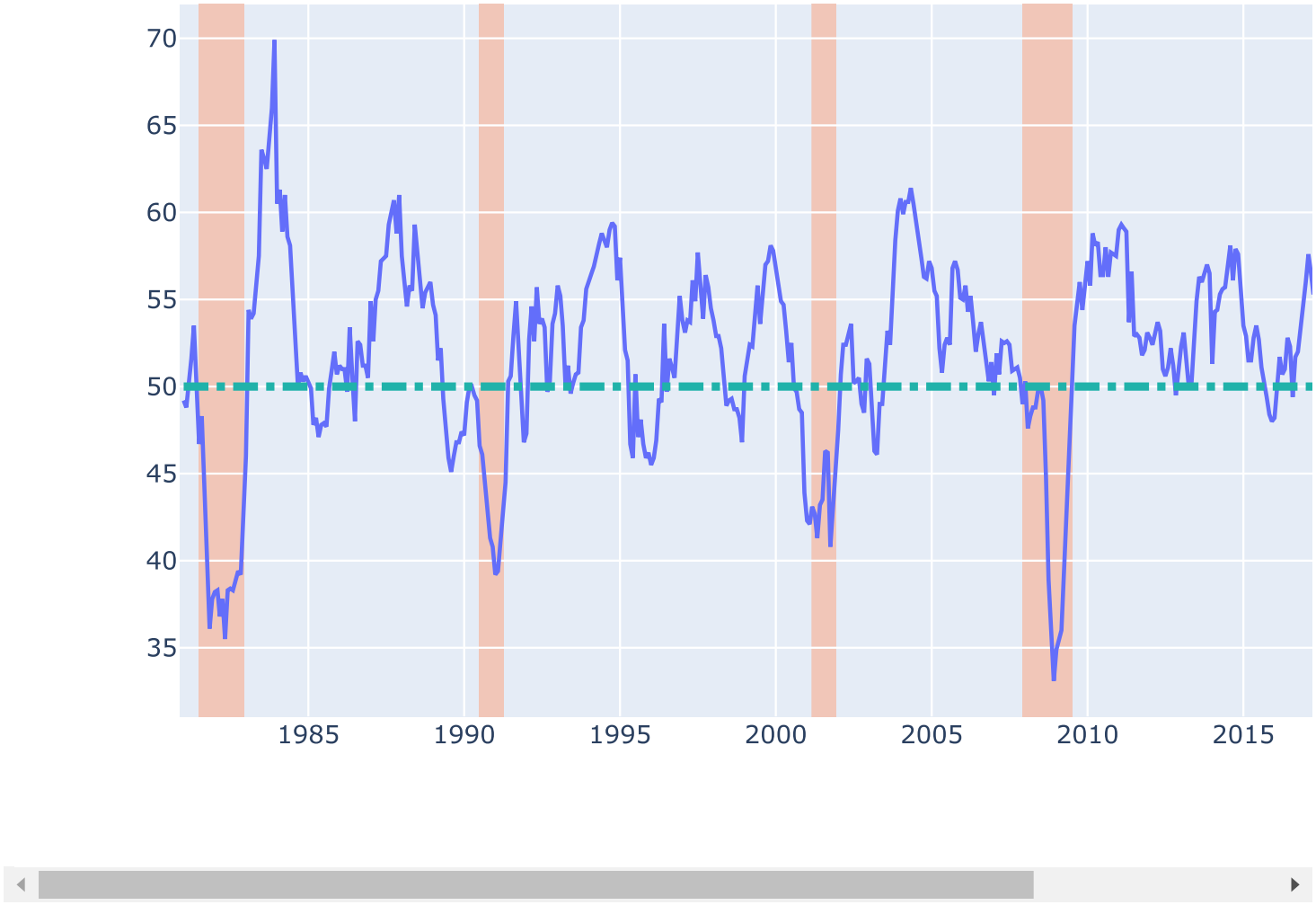
495 rows × 2 columns

```
import plotly.graph_objects as go
from plotly.subplots import make_subplots
fig = go.Figure()

# (A) Plot the PMI
```

```
# (A) Plot the PMI
fig.add_trace(
    go.Scatter(
        x=pmi.Date,
        y=pmi.PMI,
        name="Purchasing Manager Index" ),
)

# (B) Plot the Coronavius month and the recessions
fig.update_layout(
    shapes=[
        # Coronavirus 2020-January
        dict(
            type="rect",
            xref="x",
            yref="paper",
            x0="2020-01-01",
            y0=0,
            x1="2020-3-01",
            y1=1,
            fillcolor="Red",
            opacity=0.5,
            layer="below",
            line_width=0,
        ),
        # 1981-July - 1982-November
        dict(
            type="rect",
            xref="x",
            yref="paper",
            x0="1981-07-01",
            y0=0,
            x1="1982-12-01",
            y1=1,
```

```
            fillcolor="LightSalmon",
            opacity=0.5,
            layer="below",
            line_width=0,
        ),
        # 1990-July - 1991-April
        dict(
            type="rect",
            xref="x",
            yref="paper",
            x0="1990-07-01",
            y0=0,
            x1="1991-04-01",
            y1=1,
            fillcolor="LightSalmon",
            opacity=0.5,
            layer="below",
            line_width=0,
        ),
        # 2001-March - 2001-November
        dict(
            type="rect",
            xref="x",
            yref="paper",
            x0="2001-03-01",
            y0=0,
            x1="2001-12-01",
            y1=1,
            fillcolor="LightSalmon",
            opacity=0.5,
            layer="below",
            line_width=0,
        ),
        # 2007-December - 2009-June
```

```
        dict(
            type="rect",
            xref="x",
            yref="paper",
            x0="2007-12-01",
            y0=0,
            x1="2009-07-01",
            y1=1,
            fillcolor="LightSalmon",
            opacity=0.5,
            layer="below",
            line_width=0,
        ),
    ]
)

# (D) Add a horizontal line at 50.0
fig.add_shape(
            type="line",
            x0='1981-01-01',
            y0=50,
            x1='2020-02-01',
            y1=50,
            line=dict(
                color="LightSeaGreen",
                width=4,
                dash="dashdot",
            ),
    )

fig.show()
```


70
65
60
55
50
45
40
35
1985
1990
1995
2000
2005
2010
2015