The 2000 U.S. Presidential Election

The 2000 presidential election---between Republican George W. Bush, Democrat Al Gore, and other third-party candidates---was one of the closest in American history. The election came down to one state, Florida, which Bush won by just 537 votes (out of nearly 6,000,000 votes cast in the state).

After Election Day, Democrats claimed that the "butterfly ballot" that was used in Palm Beach County confused Gore voters into voting for Reform Party candidate Pat Buchanan. The ballot in question is shown below. To vote for Gore, who is listed second on the left, a voter actually had to punch the third hole (because the second hole is actually a vote for Buchanan, who is listed first on the right).

In this lab, you will evaluate this. The data file `florida.csv` contains county-level information about:

- the number of votes for Gore, Bush, Buchanan (and a few other candidates) in the 2000 presidential election
- the number of votes for Clinton (Democrat), Dole (Republican), and Perot (Reform) in the 1996 presidential election
- the number of votes for Buchanan in the 1996 primary
- the number of registered Reform voters and the total number of registered voters

Using this data, evaluate the claim that many voters in Palm Beach County voted for Buchanan when they intended to vote for Gore. (*Hint:* You should check whether Palm Beach County fits the general pattern of the other counties in Florida. Visualizations will likely be more helpful than summary statistics.) Then, craft a story that guides the reader through your discoveries. Your story should contain both figures and explanations.

In [1]:

```
import pandas as pd
import matplotlib.pyplot as plt

florida_df = pd.read_csv("florida.csv")
florida_df
```

Out[1]:

	county	buchanan2000	gore2000	bush2000	nader2000	browne2000	total2000	clintc
0	ALACHUA	262	47,300	34,062	3,215	658	85,235	40
1	BAKER	73	2,392	5,610	53	17	8,072	2
2	BAY	248	18,850	38,637	828	171	58,486	17
3	BRADFORD	65	3,072	5,413	84	28	8,597	3
4	BREVARD	570	97,318	115,185	4,470	643	217,616	80
...	...	...	...	...	...	...	...	
62	VOLUSIA	396	97,063	82,214	2,436	3,211	184,924	78
63	WAKULLA	46	3,835	4,511	149	30	8,525	3
64	WALTON	120	5,637	12,176	265	68	18,146	5
65	WASHINGTON	88	2,796	4,983	93	32	7,904	2
66	PALM BEACH	3,407	268,945	152,846	5,564	743	428,098	230

67 rows × 13 columns

In [2]:

```
florida_df[ florida_df["county"] == "PALM BEACH"]
```

Out[2]:

	county	buchanan2000	gore2000	bush2000	nader2000	browne2000	total2000	clinton96	
66	PALM BEACH	3,407	268,945	152,846	5,564	743	428,098	230,621	1

In [3]:

```
florida_df["buchanan96p"] = florida_df["buchanan96p"].str.replace(',', '').astype(int)
florida_df["buchanan2000"] = florida_df["buchanan2000"].str.replace(',', '').astype(int)
```

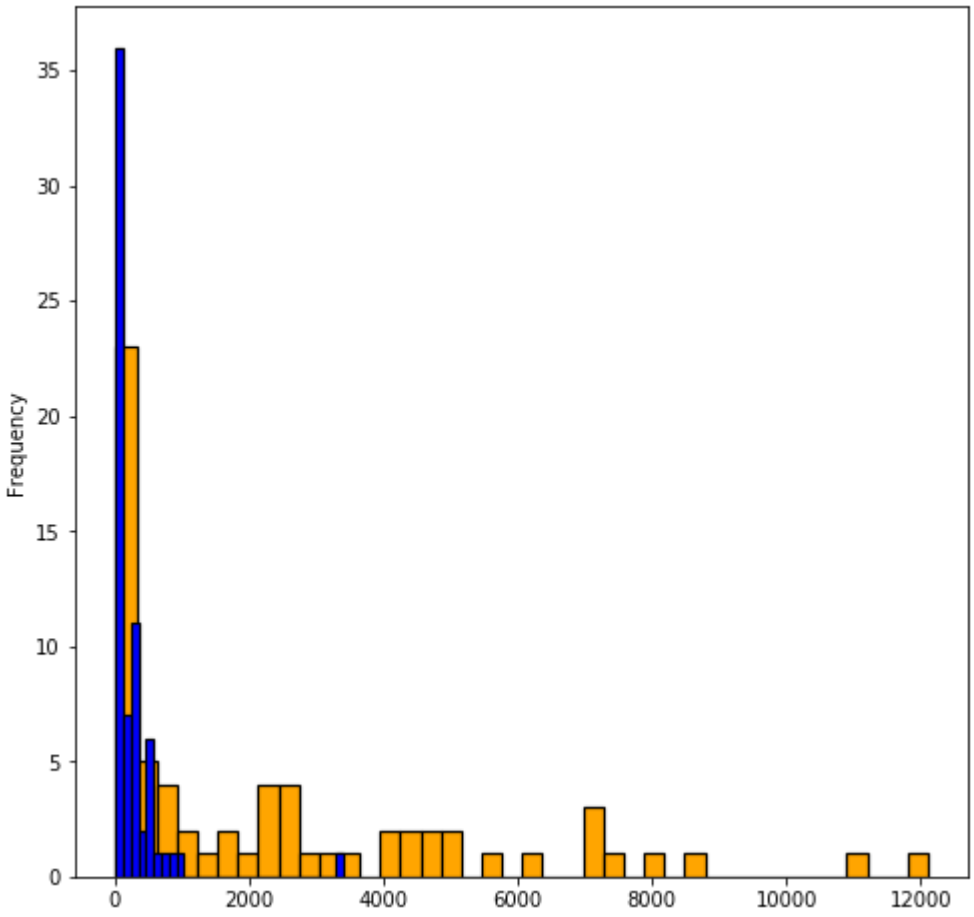
In [5]:

```
florida_df["buchanan96p"].plot.hist(bins = 40,color = "orange",
                            figsize = (8,8),edgecolor='black', linewidth=1.2)

florida_df["buchanan2000"].plot.hist(bins = 30,color = "blue",
                            figsize = (8,8),edgecolor='black', linewidth=1.2)
```

Out[5]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x1d56cc1ea88>
```



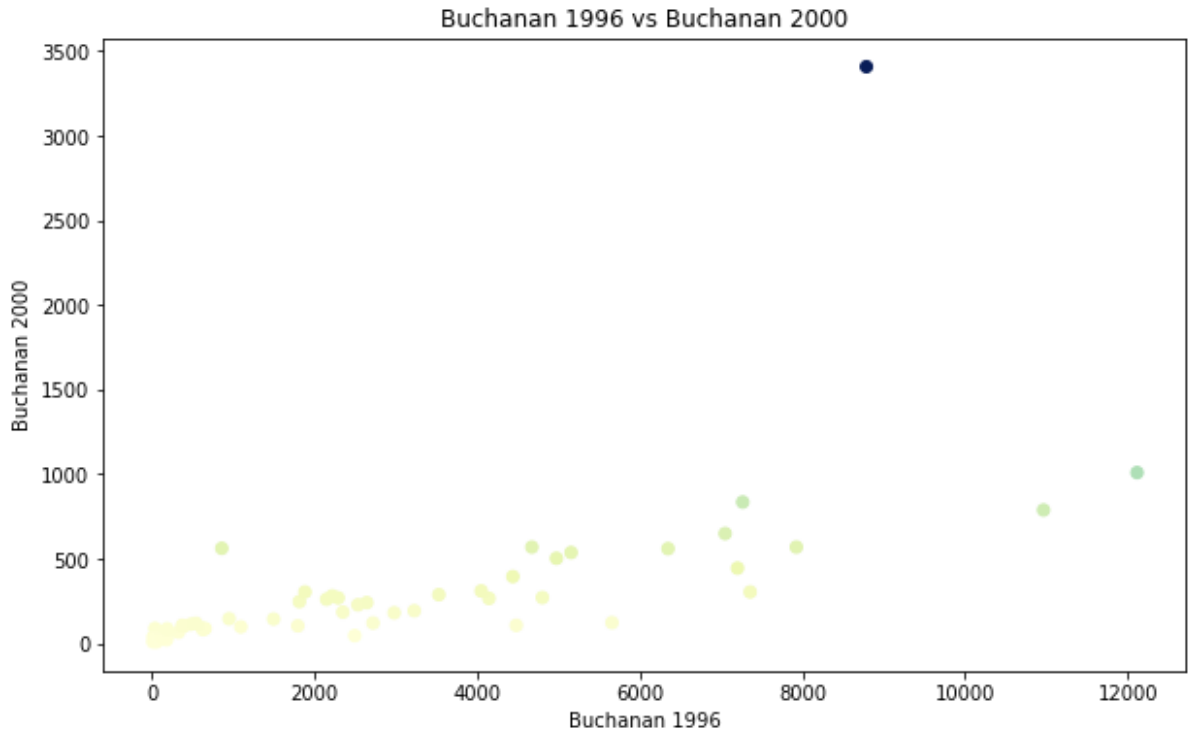
In [21]:

```
fig, ax = plt.subplots(figsize=(10, 6))
# Define x and y axes
#  cmap = 'YlGnBu'

ax.scatter(florida_df["buchanan96p"],florida_df["buchanan2000"], c = florida_df["buchanan2000"], cmap = 'YlGnBu')

# Set plot title and axes labels
ax.set(title = "Buchanan 1996 vs Buchanan 2000", xlabel = "Buchanan 1996", ylabel = "Buchanan 2000")

plt.show()
```



In [27]:

```
florida_df.loc[[florida_df["buchanan2000"].idxmax()]]
```

Out[27]:

	county	buchanan2000	gore2000	bush2000	nader2000	browne2000	total2000	clinton96	
66	PALM BEACH	3407	268,945	152,846	5,564	743	428,098	230,621	1

Buchanan votes in 1996 and 2000 elections seem to align to each other like a linear relationship.
There's one alarming outiler in the number of votes in each county. The alarming outiler is from Palm Beach county.
Just as we predicted. Palm beach doesn't align with the other countys.

Submission Instructions

Once you are finished, follow these steps:

1. Restart the kernel and re-run this notebook from beginning to end by going to `Kernel > Restart Kernel and Run All Cells`.
2. If this process stops halfway through, that means there was an error. Correct the error and repeat Step 1 until the notebook runs from beginning to end.
3. Double check that there is a number next to each code cell and that these numbers are in order.

Then, submit your lab as follows:

1. Go to `File > Export Notebook As > PDF`.
2. Double check that the entire notebook, from beginning to end, is in this PDF file. (If the notebook is cut off, try first exporting the notebook to HTML and printing to PDF.)
3. Upload the PDF and Notebook to iLearn.