

```
In [3]:
```

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

```
In [4]:
```

```
birth = pd.read_csv("birth-rate.csv")
crimeByState = pd.read_csv("crimeratesbystate-formatted.csv")
education = pd.read_csv("education.csv")
```

```
In [5]:
```

```
birth
```

```
Out[5]:
```

	Country	1960	1961	1962	1963	1964	1965	1966	1967	1968	...	1999	2000
0	Aruba	36.400	35.179	33.863	32.459	30.994	29.513	28.069	26.721	25.518	...	15.024	14.52
1	Afghanistan	52.201	52.206	52.208	52.204	52.192	52.168	52.130	52.076	52.006	...	51.229	50.90
2	Angola	54.432	54.394	54.317	54.199	54.040	53.836	53.585	53.296	52.984	...	48.662	48.35
3	Albania	40.886	40.312	39.604	38.792	37.913	37.008	36.112	35.245	34.421	...	17.713	16.85
4	Netherlands Antilles	32.321	30.987	29.618	28.229	26.849	25.518	24.280	23.173	22.230	...	15.809	15.41
...
229	Samoa	48.202	47.788	47.226	46.491	45.591	44.558	43.447	42.331	41.270	...	31.504	31.11
230	Yemen, Rep.	54.501	54.516	54.563	54.645	54.761	54.914	55.100	55.310	55.530	...	41.322	40.40
231	South Africa	42.267	41.993	41.610	41.112	40.520	39.883	39.268	38.734	38.317	...	24.899	24.68
232	Zambia	48.112	48.323	48.533	48.734	48.915	49.061	49.156	49.195	49.175	...	45.048	45.01
233	Zimbabwe	48.178	48.179	48.148	48.079	47.977	47.852	47.724	47.614	47.536	...	31.268	30.87

234 rows × 50 columns

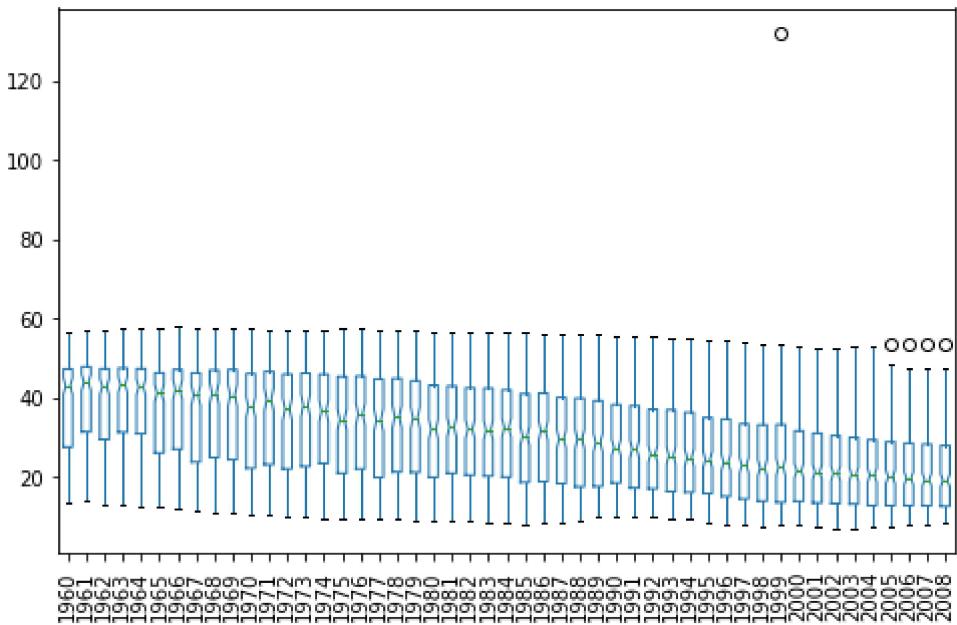


```
In [6]:
```

```
birth.plot.box('Birth by year', notch=True, rot = 90, figsize = (8, 5))
```

```
Out[6]:
```

```
<AxesSubplot:>
```



In [7]:

education

Out[7]:

	state	reading	math	writing	percent_graduates_sat	pupil_staff_ratio	dropout_rate
0	United States	501	515	493	46	7.9	4.4
1	Alabama	557	552	549	7	6.7	2.3
2	Alaska	520	516	492	46	7.9	7.3
3	Arizona	516	521	497	26	10.4	7.6
4	Arkansas	572	572	556	5	6.8	4.6
5	California	500	513	498	49	10.9	5.5
6	Colorado	568	575	555	20	8.1	6.9
7	Connecticut	509	513	512	83	6.6	2.1
8	Delaware	495	498	484	71	7.9	5.5
9	District of Columbia	466	451	461	79	6.3	7.1
10	Florida	497	498	480	59	8.1	3.8
11	Georgia	490	491	479	71	7.0	4.6
12	Hawaii	479	502	469	58	8.3	5.4
13	Idaho	541	540	520	18	10.0	2.6
14	Illinois	588	604	583	6	9.9	4.0
15	Indiana	496	507	480	63	7.5	2.7
16	Iowa	610	615	588	3	6.8	2.3
17	Kansas	581	589	564	7	8.6	2.7
18	Kentucky	573	573	561	7	6.6	3.0

	state	reading	math	writing	percent_graduates_sat	pupil_staff_ratio	dropout_rate
19	Louisiana	563	558	555	7	6.8	7.4
20	Maine	468	467	455	90	4.9	5.3
21	Maryland	500	502	495	69	7.2	3.8
22	Massachusetts	514	526	510	84	7.8	3.8
23	Michigan	584	603	575	5	8.1	7.4
24	Minnesota	595	609	578	7	7.7	3.0
25	Mississippi	567	554	559	4	6.9	4.3
26	Missouri	595	600	584	5	6.9	3.7
27	Montana	541	542	519	22	7.4	3.7
28	Nebraska	587	594	572	4	6.7	2.8
29	Nevada	501	505	479	42	12.1	4.5
30	New Hampshire	523	523	510	75	6.2	3.2
31	New Jersey	496	513	496	76	6.9	2.0
32	New Mexico	553	546	534	11	7.0	6.1
33	New York	485	502	478	85	7.4	5.3
34	North Carolina	495	511	480	63	7.3	5.7
35	North Dakota	590	593	566	3	6.2	2.3
36	Ohio	537	546	523	22	7.5	4.5
37	Oklahoma	575	571	557	5	7.4	3.5
38	Oregon	523	525	499	52	8.8	4.6
39	Pennsylvania	493	501	483	71	7.1	-1.0
40	Rhode Island	498	496	494	66	8.4	5.8
41	South Carolina	486	496	470	67	10.8	3.9
42	South Dakota	589	600	569	3	7.1	3.9
43	Tennessee	571	565	565	10	7.6	3.1
44	Texas	486	506	475	51	7.4	4.0
45	Utah	559	558	540	6	11.9	3.1
46	Vermont	518	518	506	64	4.9	-1.0
47	Virginia	511	512	498	68	6.0	2.6
48	Washington	524	531	507	53	9.9	5.1
49	West Virginia	511	501	499	18	7.4	4.0
50	Wisconsin	594	608	582	5	8.3	2.2
51	Wyoming	567	568	550	5	5.6	5.1

In [8]: crimeByState

Out[8]:

	state	murder	forcible_rape	robbery	aggravated_assault	burglary	larceny_theft	motor_v
0	United States	5.6	31.7	140.7		291.1	726.7	2286.3
1	Alabama	8.2	34.3	141.4		247.8	953.8	2650.0
2	Alaska	4.8	81.1	80.9		465.1	622.5	2599.1
3	Arizona	7.5	33.8	144.4		327.4	948.4	2965.2
4	Arkansas	6.7	42.9	91.1		386.8	1084.6	2711.2
5	California	6.9	26.0	176.1		317.3	693.3	1916.5
6	Colorado	3.7	43.4	84.6		264.7	744.8	2735.2
7	Connecticut	2.9	20.0	113.0		138.6	437.1	1824.1
8	Delaware	4.4	44.7	154.8		428.2	688.9	2144.0
9	District of Columbia	35.4	30.2	672.1		721.3	649.7	2694.9
10	Florida	5.0	37.1	169.4		496.6	926.3	2658.3
11	Georgia	6.2	23.6	154.8		264.3	931.0	2751.1
12	Hawaii	1.9	26.9	78.5		147.8	767.9	3308.4
13	Idaho	2.4	40.4	18.6		195.4	564.4	1931.7
14	Illinois	6.0	33.7	181.7		330.2	606.9	2164.8
15	Indiana	5.7	29.6	108.6		179.9	697.6	2412.0
16	Iowa	1.3	27.9	38.9		223.3	606.4	2042.7
17	Kansas	3.7	38.4	65.3		280.0	689.2	2758.1
18	Kentucky	4.6	34.0	88.4		139.8	634.0	1685.8
19	Louisiana	9.9	31.4	118.0		435.1	870.6	2494.5
20	Maine	1.4	24.7	24.4		61.7	478.5	1832.6
21	Maryland	9.9	22.6	256.7		413.8	641.4	2294.3
22	Massachusetts	2.7	27.1	119.0		308.1	541.1	1527.4
23	Michigan	6.1	51.3	131.8		362.9	696.8	1917.8
24	Minnesota	2.2	44.0	92.0		158.7	578.9	2226.9
25	Mississippi	7.3	39.3	82.3		149.4	919.7	2083.9
26	Missouri	6.9	28.0	124.1		366.4	738.3	2746.2
27	Montana	1.9	32.2	18.9		228.5	389.2	2543.0
28	Nebraska	2.5	32.9	59.1		192.5	532.4	2574.3
29	Nevada	8.5	42.1	194.7		361.5	972.4	2153.9
30	New Hampshire	1.4	30.9	27.4		72.3	317.0	1377.3

	state	murder	forcible_rape	robbery	aggravated_assault	burglary	larceny_theft	motor_v
31	New Jersey	4.8	13.9	151.6	184.4	447.1	1568.4	
32	New Mexico	7.4	54.1	98.7	541.9	1093.9	2639.9	
33	New York	4.5	18.9	182.7	239.7	353.3	1569.6	
34	North Carolina	6.7	26.5	145.5	289.4	1201.1	2546.2	
35	North Dakota	1.1	24.2	7.4	65.5	311.9	1500.3	
36	Ohio	5.1	39.8	163.1	143.4	872.8	2429.0	
37	Oklahoma	5.3	41.7	91.0	370.5	1006.0	2644.2	
38	Oregon	2.2	34.8	68.1	181.8	758.6	3112.2	
39	Pennsylvania	6.1	28.9	154.6	235.0	451.6	1729.1	
40	Rhode Island	3.2	29.8	72.1	146.1	494.2	1816.0	
41	South Carolina	7.4	42.5	132.1	579.0	1000.9	2954.1	
42	South Dakota	2.3	46.7	18.6	108.1	324.4	1343.7	
43	Tennessee	7.2	36.4	167.3	541.9	1026.9	2828.1	
44	Texas	6.2	37.2	156.6	329.8	961.6	2961.7	
45	Utah	2.3	37.3	44.3	143.4	606.2	2918.8	
46	Vermont	1.3	23.3	11.7	83.5	491.8	1686.1	
47	Virginia	6.1	22.7	99.2	154.8	392.1	2035.0	
48	Washington	3.3	44.7	92.1	205.8	959.7	3149.5	
49	West Virginia	4.4	17.7	44.6	206.1	621.2	1794.0	
50	Wisconsin	3.5	20.6	82.2	135.2	440.8	1992.8	
51	Wyoming	2.7	24.0	15.3	188.1	476.3	2533.9	



In [44]:

```
import seaborn as sns
from matplotlib.ticker import FuncFormatter

limits = [50, 120, 200]
data_to_plot = ("Example 1", 105, 120)

palette = sns.color_palette("Blues_r", len(limits))

fig, ax = plt.subplots()
ax.set_aspect('equal')
ax.set_title('robbery')
ax.set_yticks([1])
ax.set_yticklabels([data_to_plot[0]])
#ax.set_xticklabels('')

prev_limit = 0
for idx, lim in enumerate(limits):
```

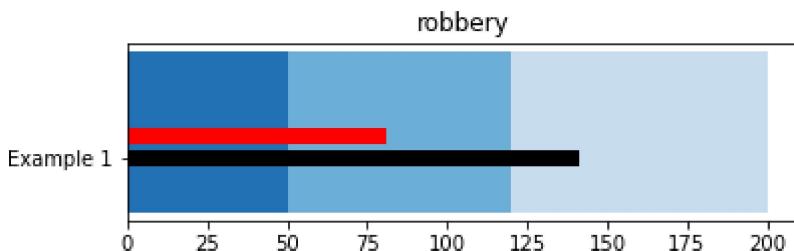
```

        ax.barh([9], lim-prev_limit, left=prev_limit, height=50, color=palette[idx])
        prev_limit = lim

    ax.barh([1], crimeByState['robbery'][1], color='black', height=5)

    ax.barh([8], crimeByState['robbery'][2], color='red', height=5)
plt.show()

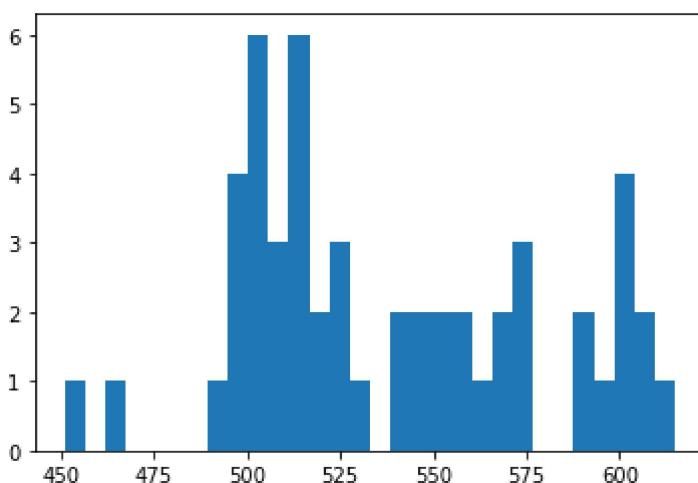
```



In [52]: `crimeByState.describe()`

	murder	forcible_rape	robbery	aggravated_assault	burglary	larceny_theft	motor_vehic
count	52.000000	52.000000	52.000000	52.000000	52.000000	52.000000	52
mean	5.321154	33.690385	114.432692	269.805769	691.196154	2303.155769	383
std	4.845913	11.169167	96.963180	144.917580	231.517880	509.664215	249
min	1.100000	13.900000	7.400000	61.700000	311.900000	1343.700000	102
25%	2.650000	26.375000	67.400000	153.450000	493.600000	1895.525000	222
50%	4.800000	32.550000	98.950000	237.350000	669.300000	2353.150000	322
75%	6.700000	39.950000	152.350000	361.850000	921.350000	2698.975000	421
max	35.400000	81.100000	672.100000	721.300000	1201.100000	3308.400000	1402

In [10]: `plt.hist(education['math'], bins = 30)`
`plt.show()`

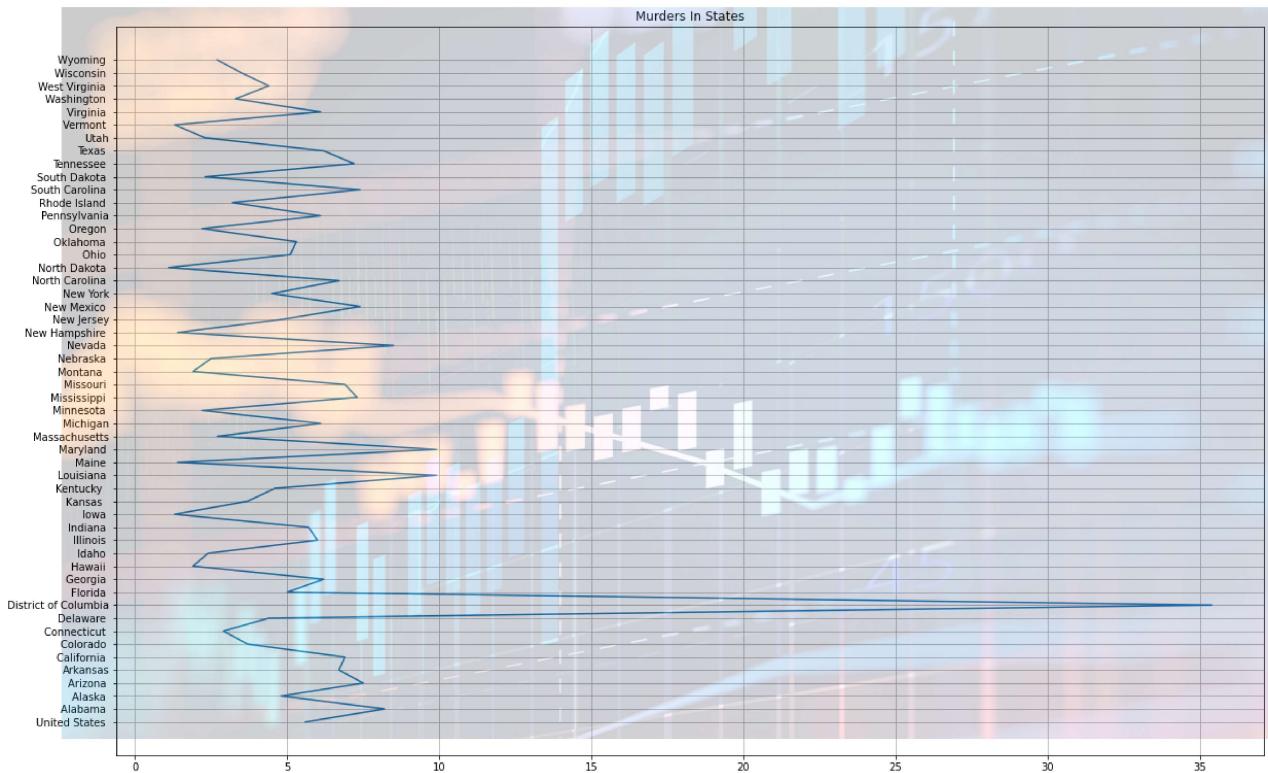


In [69]:

```
import matplotlib.image as image

im = image.imread('stock_market.jpg') # Image

fig, ax = plt.subplots()
ax.grid()
ax.plot('murder', 'state', data=crimeByState)
ax.set_title("Murders In States")
fig.set_size_inches(20, 13)
fig.figimage(im, 60, 40,cmap='ocean', alpha=.2)
plt.show()
```



In []:



In []:

