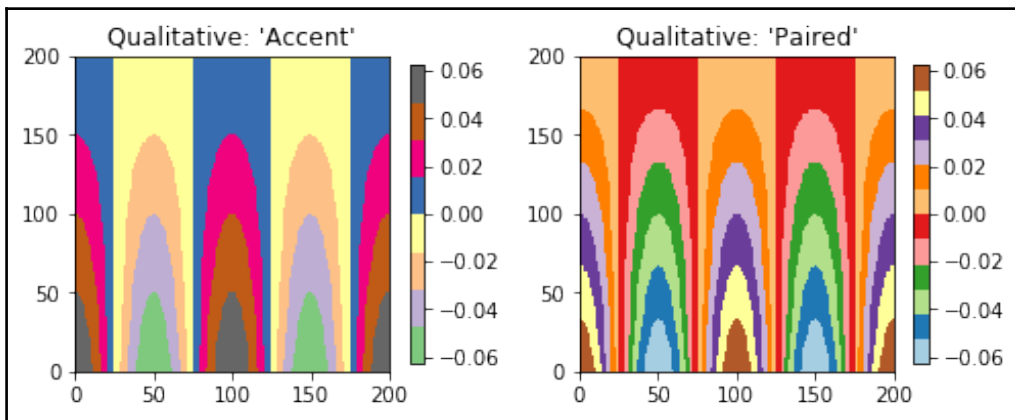
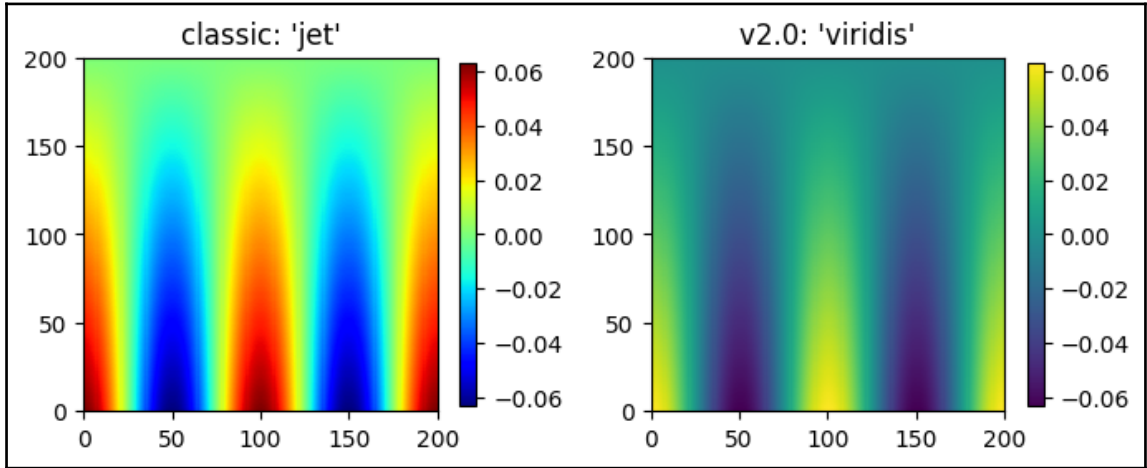
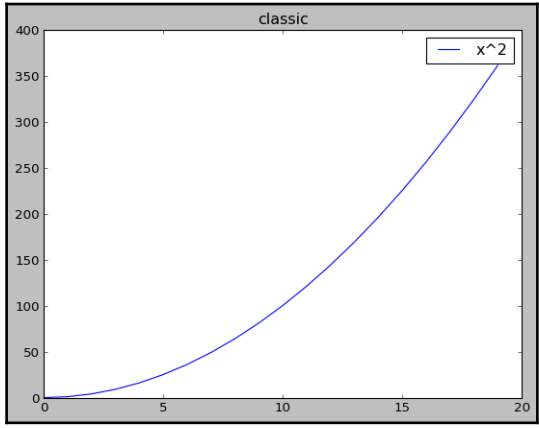
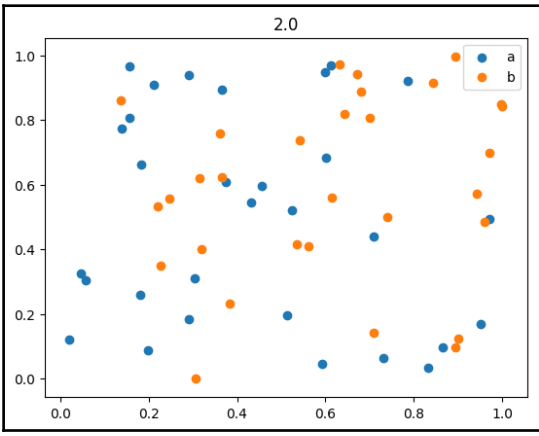
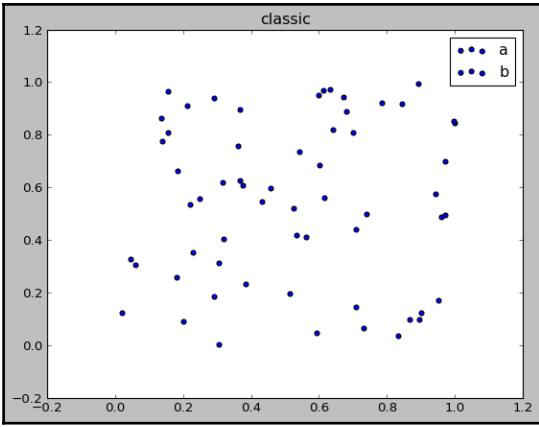
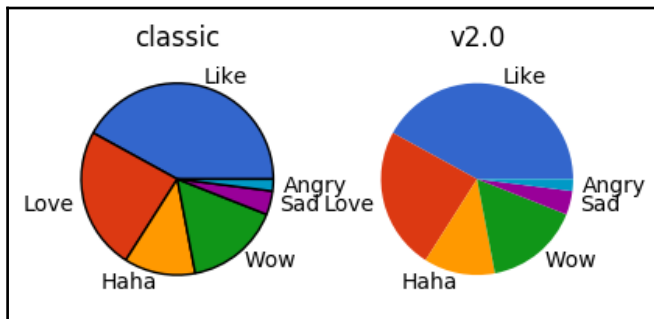
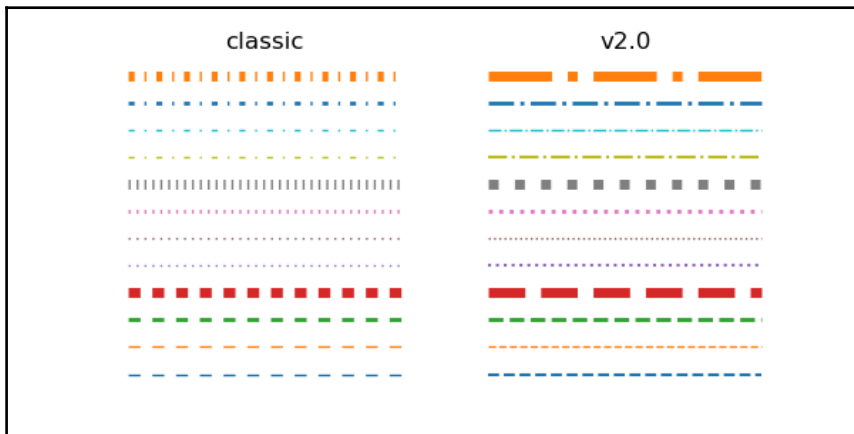
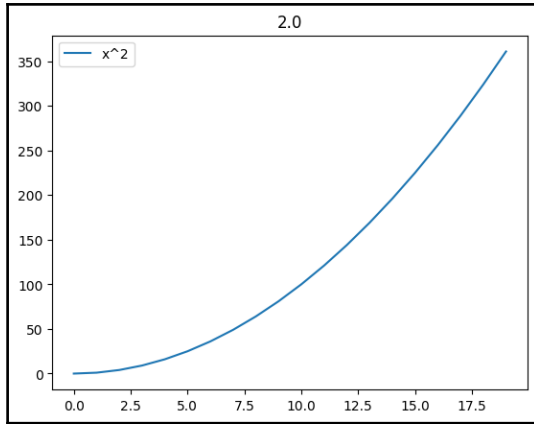


Chapter 1: Hello Plotting World!







```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\claire>
```



jupyter Logout

Files Running Clusters

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<input type="checkbox"/>	mynotebook1.ipynb	5 minutes ago
<input type="checkbox"/>	mynotebook2.ipynb	Running 4 minutes ago
<input type="checkbox"/>	myfile1.txt	9 minutes ago
<input type="checkbox"/>	myfile2.txt	9 minutes ago
<input type="checkbox"/>	myfile3.txt	6 minutes ago

jupyter mynotebook1 Last Checkpoint: 8 minutes ago (autosaved)

File Edit View Insert Cell Kernel Help

Save Cut/Copy/Paste Run/Stop/Restart Choose cell type
Add new cell cells Move cells kernel

Code
Code
Markdown
Raw NBConvert
Heading

```
In [1]: def demo(n):
        for i in range(n):
            print(i)
```

```
In [2]: demo(10)
0
1
2
3
4
5
6
7
8
9
```

```
In [3]: demo('xyz')
```

```
-----
TypeError                                 Traceback (most recent call last)
<ipython-input-3-db40dbc442aa> in <module>()
----> 1 demo('xyz')
```

```
<ipython-input-1-1bacd60b8b94> in demo(n)
      1 def demo(n):
----> 2     for i in range(n):
      3         print(i)
```

```
TypeError: range() integer end argument expected, got str.
```

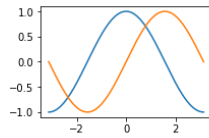
In []:

Title: My first notebook

```
==  
# Header 1  
## Header 2  
- point 1  
- point 2  
  
This is <b><i>IMPORTANT</i></b> <br/>  
So is THIS <br/>
```

In [108]: %matplotlib inline

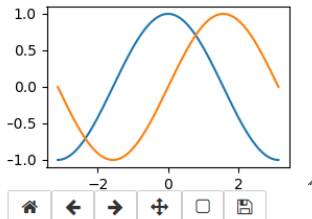
```
In [108]: import numpy as np  
import matplotlib.pyplot as plt  
  
plt.figure(figsize=(3,2))  
X = np.linspace(-np.pi, np.pi, 300)  
C,S = np.cos(X), np.sin(X)  
  
plt.plot(X,C)  
plt.plot(X,S)  
  
plt.show()
```



In [24]: %matplotlib notebook

```
In [25]: import numpy as np  
import matplotlib.pyplot as plt  
  
plt.figure(figsize=(3,2))  
X = np.linspace(-np.pi, np.pi, 300)  
C,S = np.cos(X), np.sin(X)  
  
plt.plot(X,C)  
plt.plot(X,S)  
  
plt.show()
```

Figure 1



Jupyter mynotebook1 Last Checkpoint: 16 minutes ago (autosaved)

File Edit View Insert Cell Kernel Help

New Notebook ▾ ↑ ↓ ▶ ■ ↻ Code ▾ []

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Trusted Notebook

Close and Halt

Notebook (.ipynb)

Python (.py)

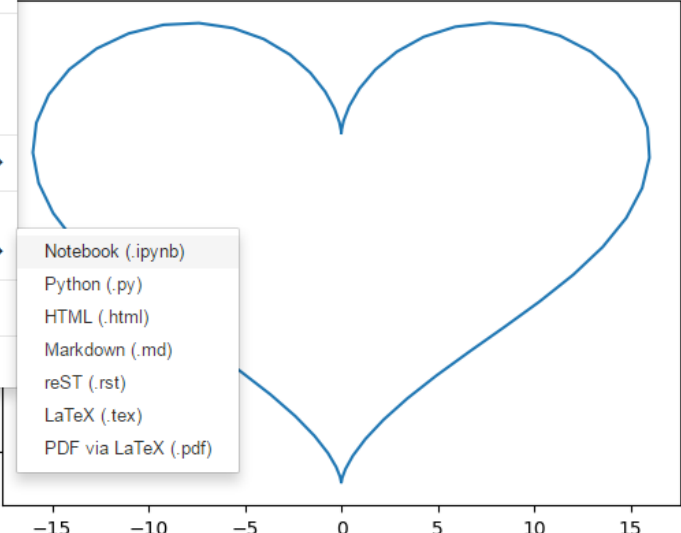
HTML (.html)

Markdown (.md)

reST (.rst)

LaTeX (.tex)

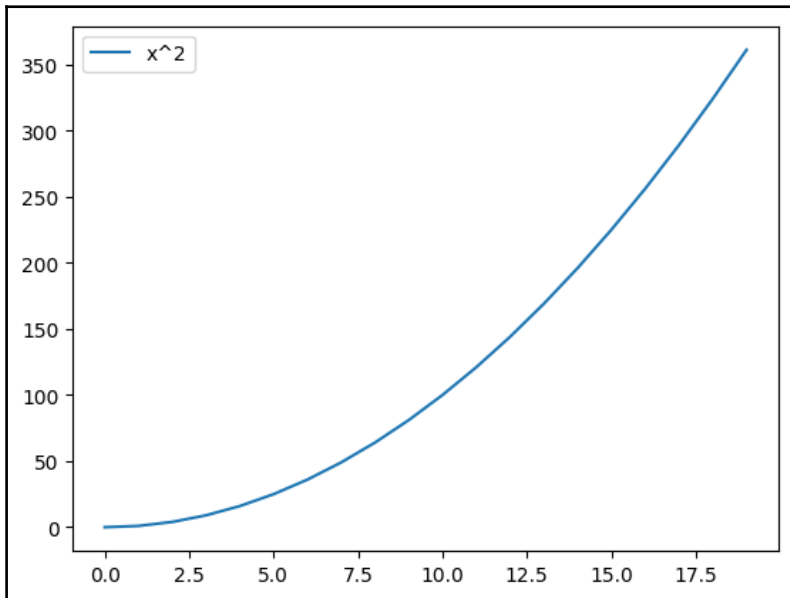
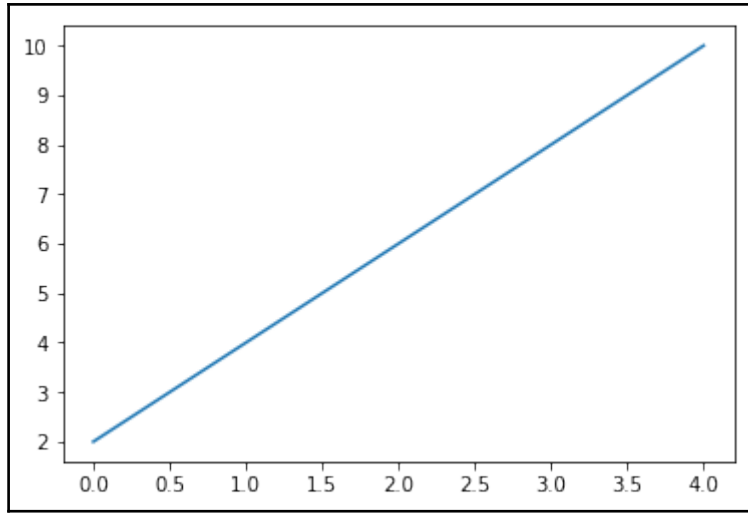
PDF via LaTeX (.pdf)



-15 -15 -10 -5 0 5 10 15

-15

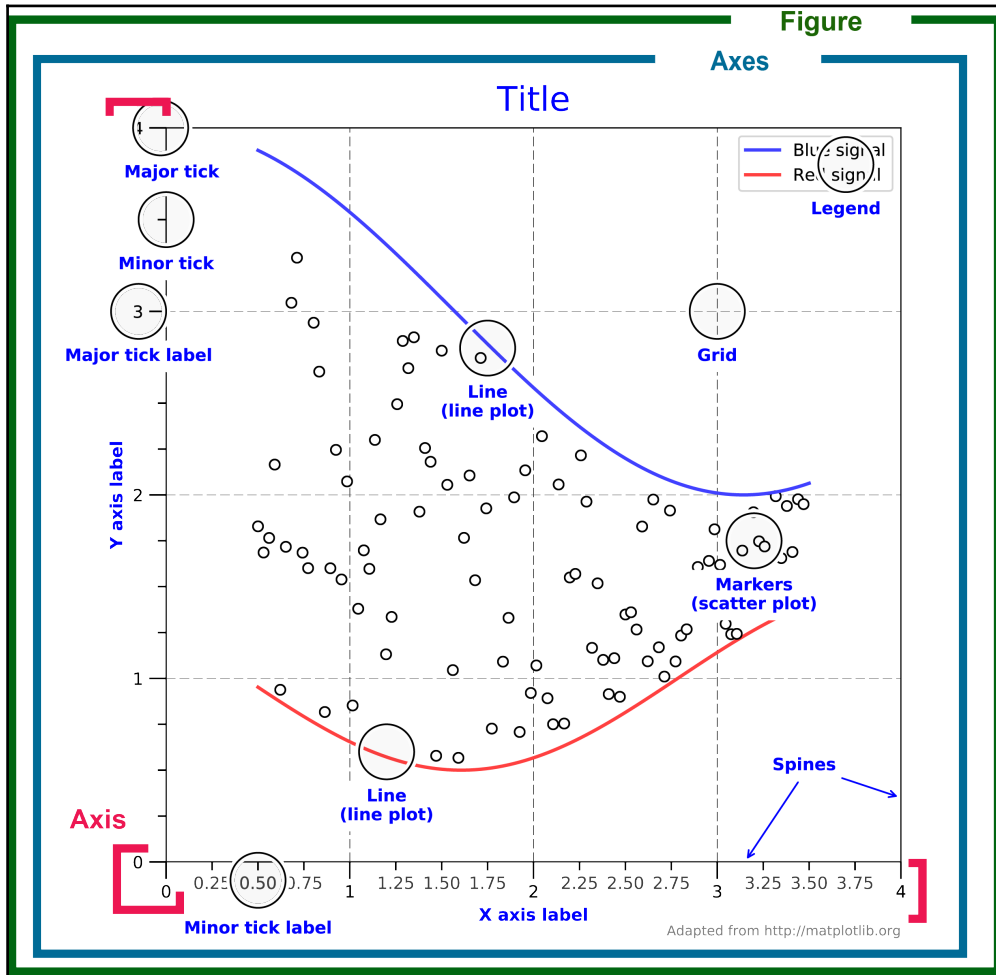
```
1 abc-2
2 abc-4
3 abc-6
4 abc-8
5 abc-10
6 abc-12
7 abc-14
8 abc-16
9 abc-18
10 abc-20
11 abc-22
12 abc-24
13 abc-26
14 abc-28
15 abc-30
16 abc-32
17 abc-34
```

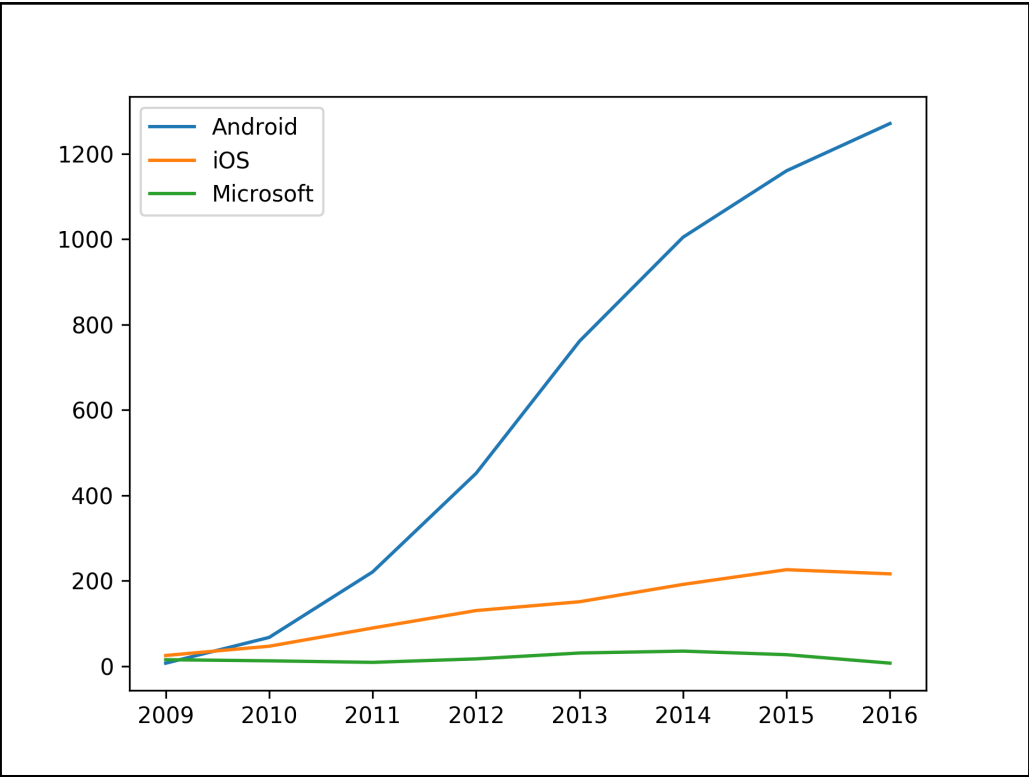


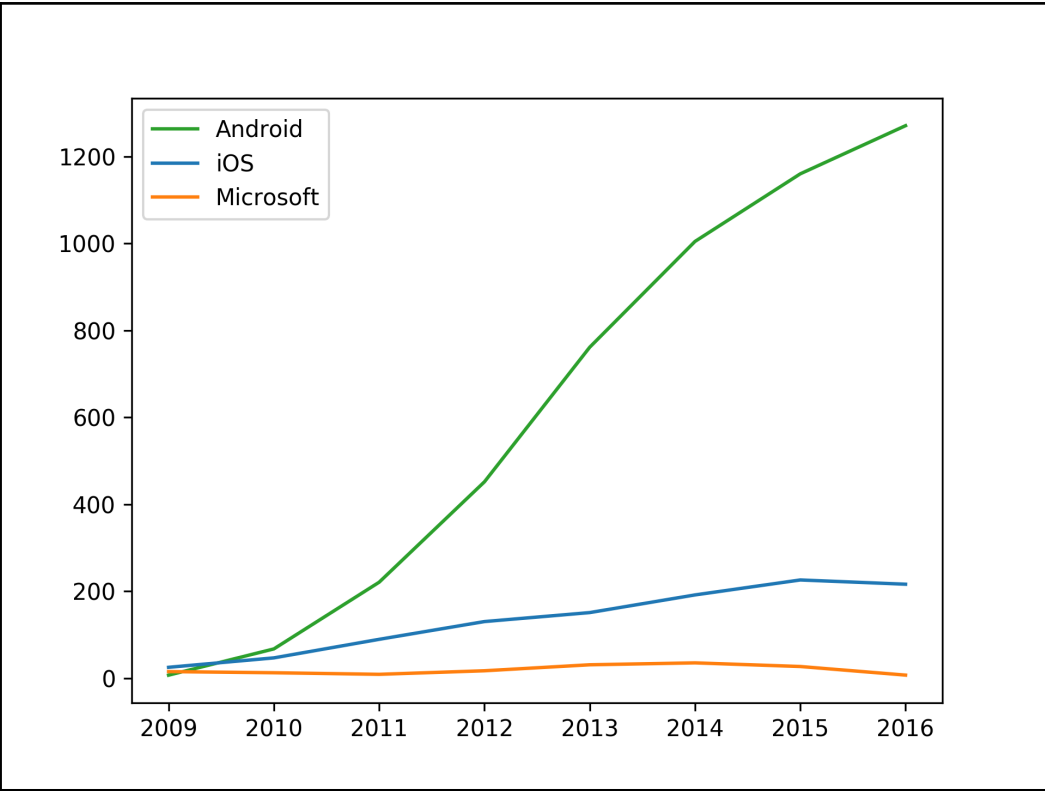

```
In [3]: plt.savefig('test.doc')
```

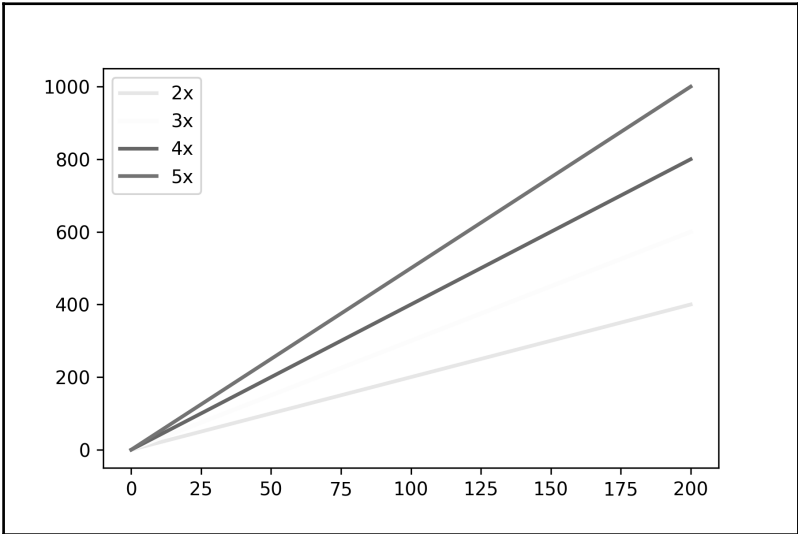
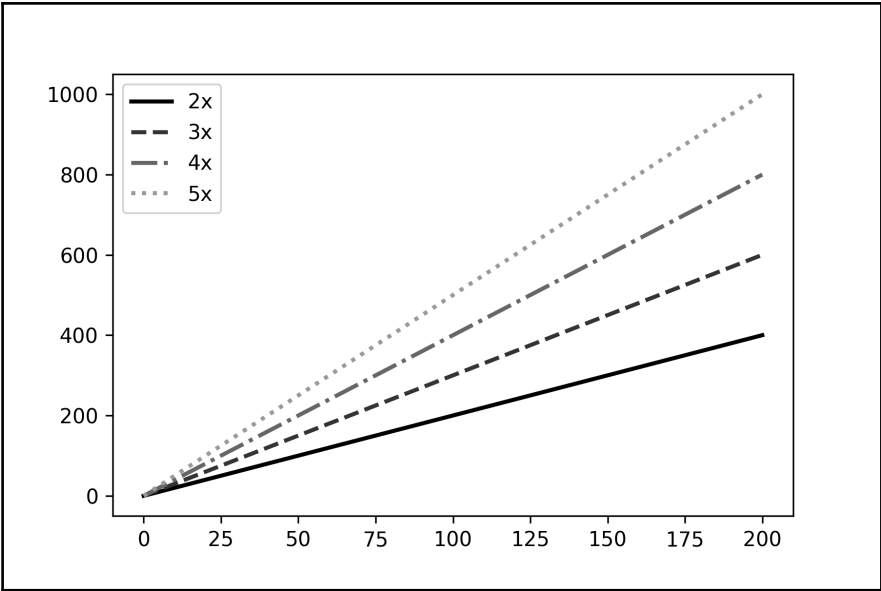
```
-----  
ValueError                                Traceback (most recent call last)  
<ipython-input-3-dfc7fc198e20> in <module>()  
----> 1 plt.savefig('test.doc')  
  
c:\users\c laire\appdata\local\programs\python\python36\lib\site-packages\matplotlib\pyplot.py in savefig(*args, **kwargs)  
    695 def savefig(*args, **kwargs):  
    696     fig = gcf()  
-> 697     res = fig.savefig(*args, **kwargs)  
    698     fig.canvas.draw_idle() # need this if 'transparent=True' to reset colors  
    699     return res  
  
c:\users\c laire\appdata\local\programs\python\python36\lib\site-packages\matplotlib\figure.py in savefig(self, *args, **kwargs)  
    1570         self.set_frameon(frameon)  
    1571  
-> 1572         self.canvas.print_figure(*args, **kwargs)  
    1573  
    1574         if frameon:  
  
c:\users\c laire\appdata\local\programs\python\python36\lib\site-packages\matplotlib\backend_bases.py in print_figure(self, filename, dpi,  
i, facecolor, edgecolor, orientation, format, **kwargs)  
    2143  
    2144         # get canvas object and print method for format  
-> 2145         canvas = self._get_output_canvas(format)  
    2146         print_method = getattr(canvas, 'print_%s' % format)  
    2147  
  
c:\users\c laire\appdata\local\programs\python\python36\lib\site-packages\matplotlib\backend_bases.py in _get_output_canvas(self, format)  
    2083         raise ValueError('Format "%s" is not supported.%n'  
    2084                          'Supported formats: '  
-> 2085                          '%s.' % (format, ' '.join(formats)))  
    2086  
    2087     def print_figure(self, filename, dpi=None, facecolor=None, edgecolor=None,  
  
ValueError: Format "doc" is not supported.  
Supported formats: eps, pdf, pgf, png, ps, raw, rgba, svg, svgz.
```

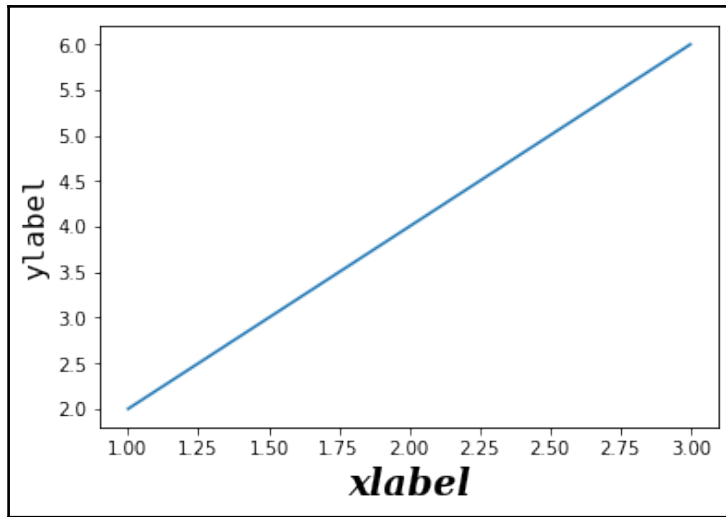
Chapter 2: Figure Aesthetics





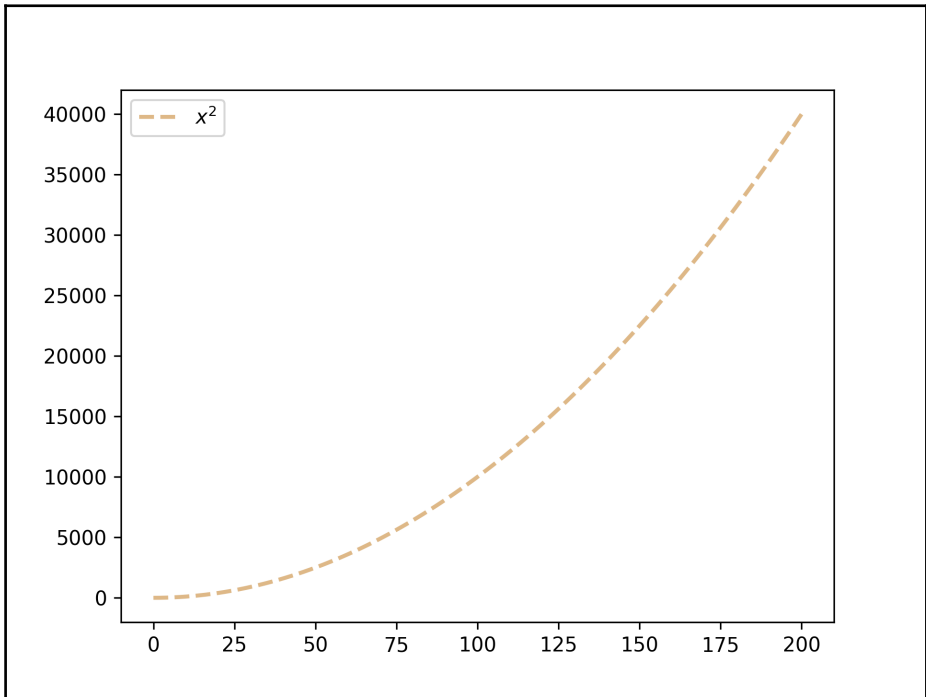
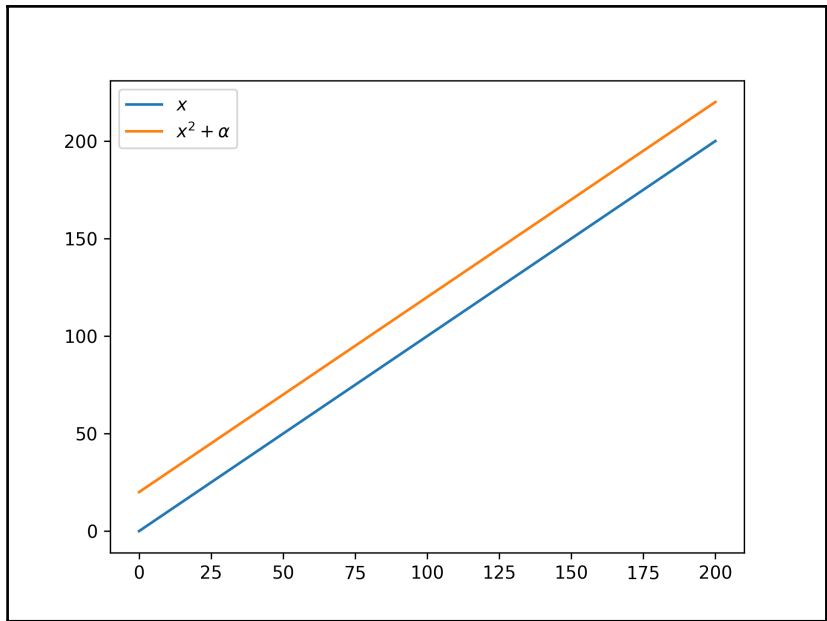


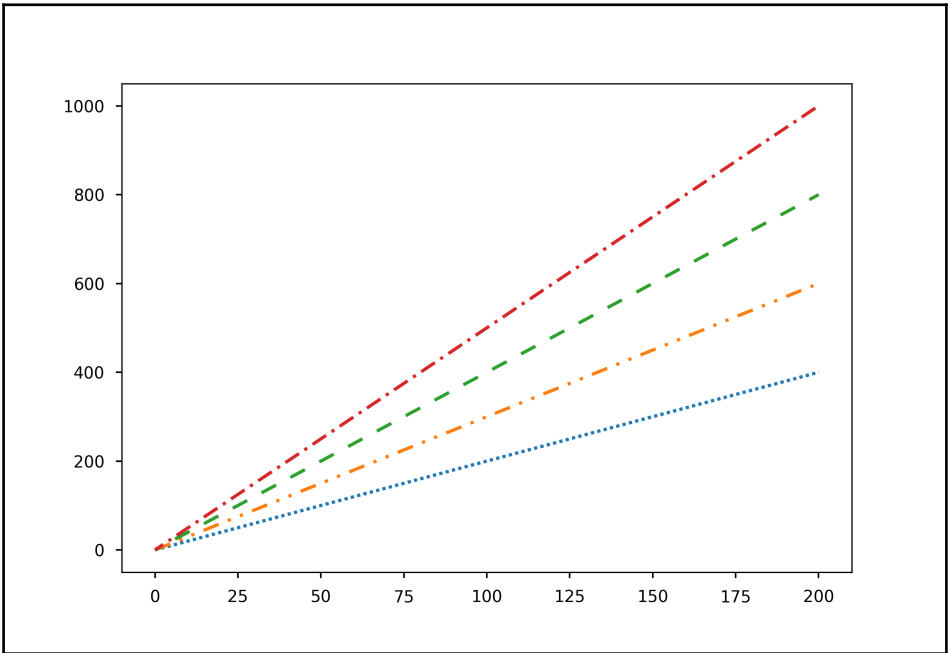
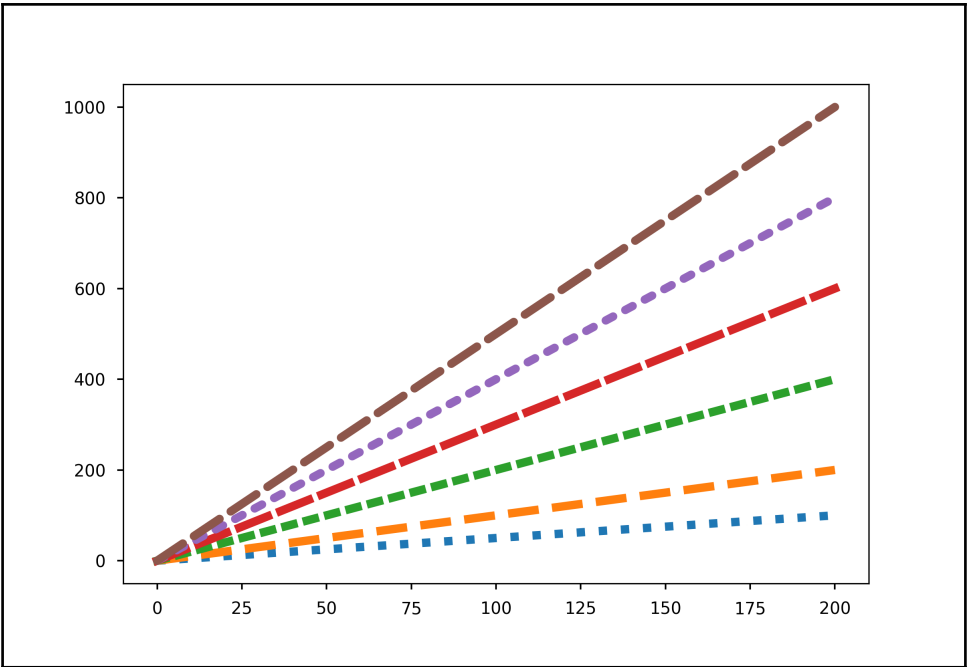


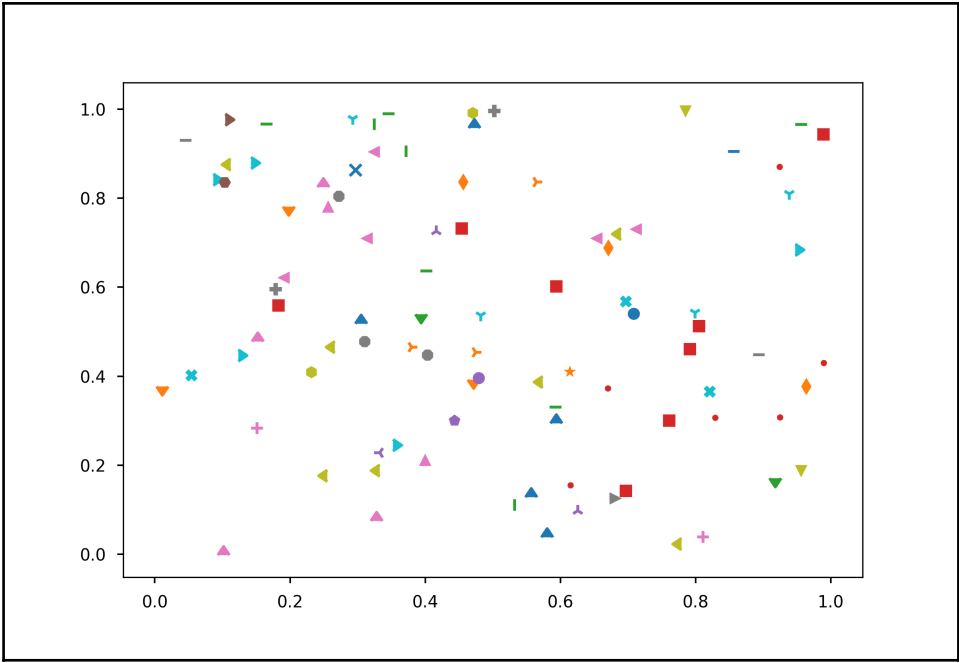


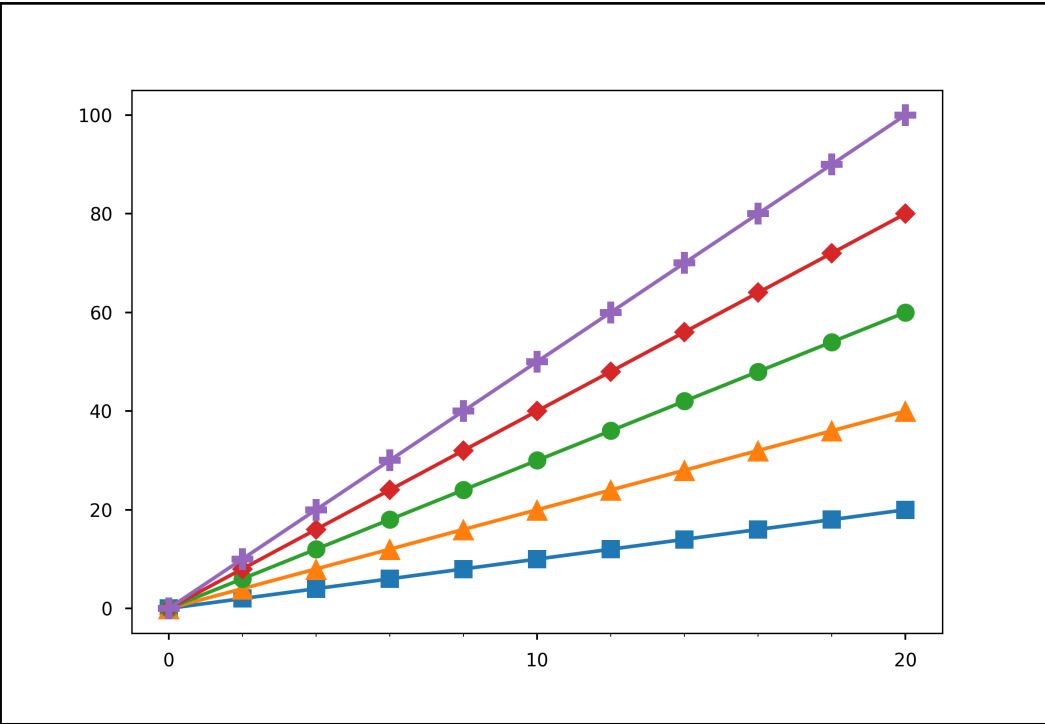
```
In [1]: from matplotlib.font_manager import findSystemFonts
        findSystemFonts(fontpaths=None, fonttext='ttf')

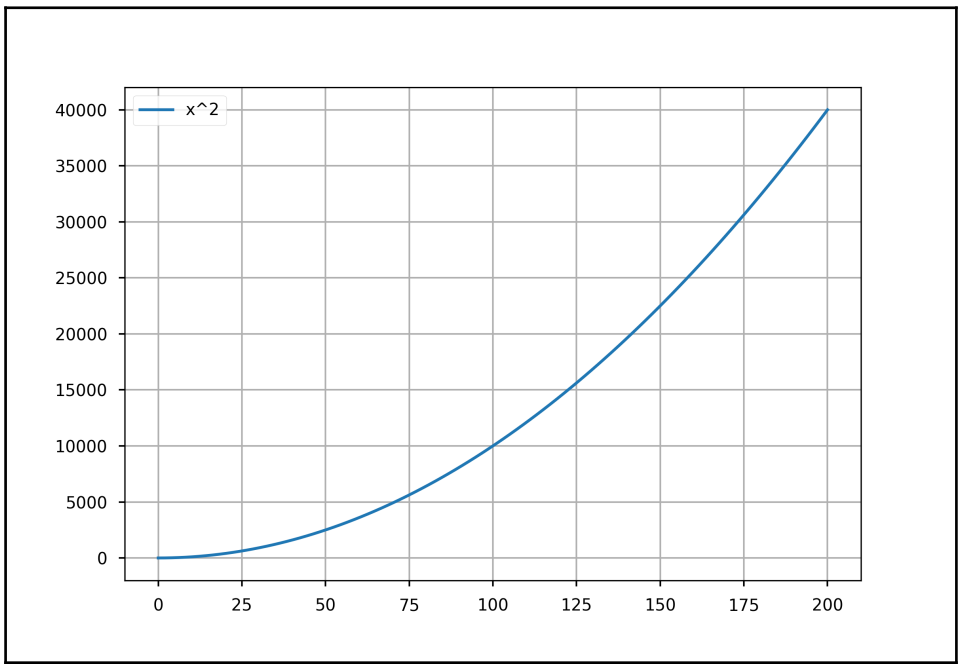
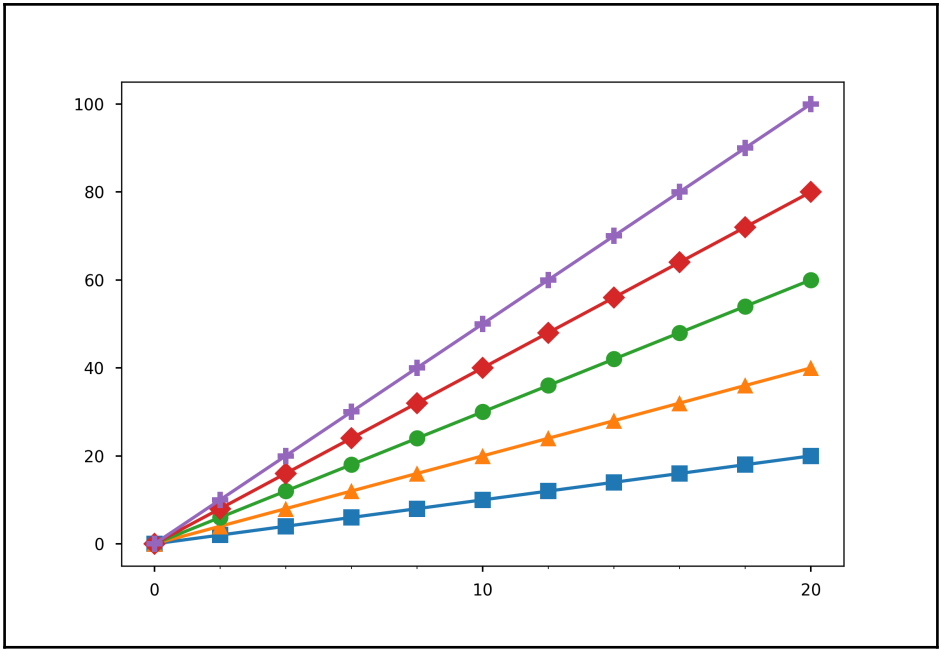
Out[1]: ['/usr/share/fonts/truetype/tlwg/TlwgTypewriter-Oblique.ttf',
         '/usr/share/fonts/truetype/tlwg/Sawasdee.ttf',
         '/usr/share/fonts/truetype/dejavu/DejaVuSansMono.ttf',
         '/home/claire/.fonts/fonts/Inconsolata-g/Inconsolata-g for Powerline.otf',
         '/usr/share/fonts/opentype/stix/STIXNonUnicode-Bold.otf',
         '/usr/share/fonts/truetype/freefont/FreeMonoBoldOblique.ttf',
         '/home/claire/.fonts/fonts/Hack/Hack-Regular.ttf',
         '/usr/share/fonts/opentype/stix/STIXIntegralsUp-Bold.otf',
         '/home/claire/.fonts/fonts/DroidSansMonoSlashed/Droid Sans Mono Slashed for Powerline.ttf',
         '/usr/share/fonts/truetype/fonts-japanese-mincho.ttf',
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         '/home/claire/.fonts/fonts/Meslo/Meslo LG M DZ Regular for Powerline.otf',
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         '/usr/share/fonts/truetype/kacst/KacstNaskh.ttf',
         '/home/claire/.fonts/fonts/DejaVuSansMono/DejaVu Sans Mono for Powerline.ttf',
         '/usr/share/fonts/truetype/tlwg/Kinnari.ttf',
         '/usr/share/fonts/truetype/ancient-scripts/Symbola_hint.ttf',
         '/usr/share/fonts/truetype/tlwg/TlwgTypist.ttf']
```

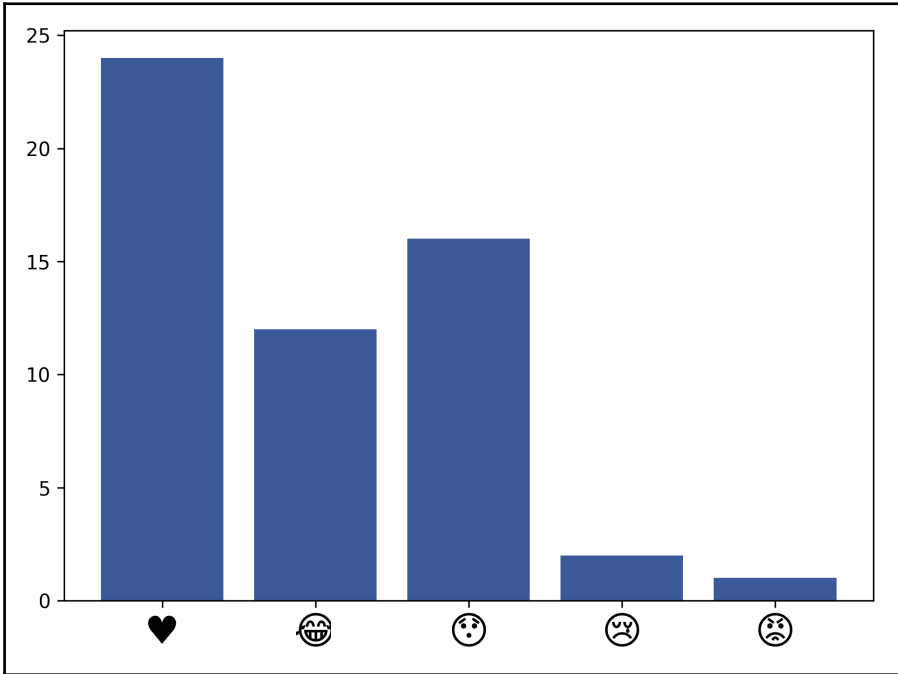
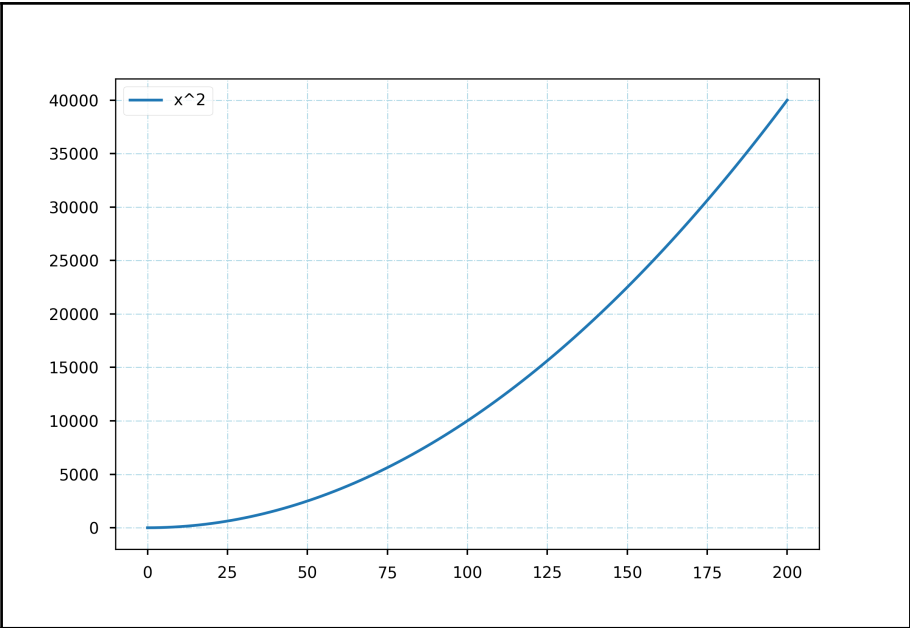


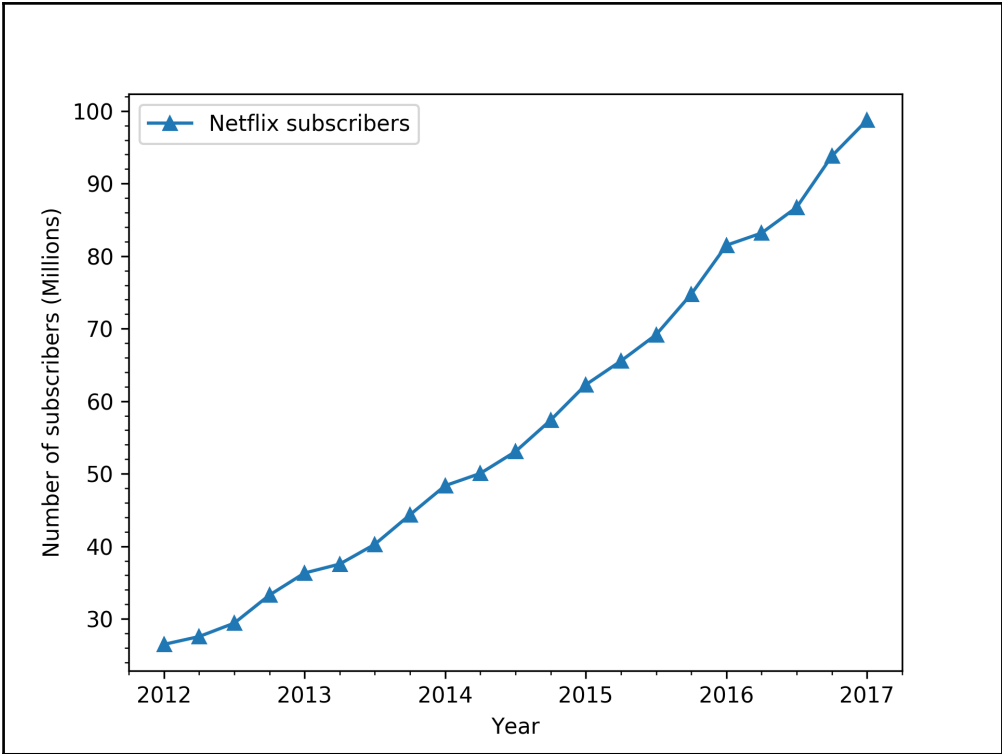


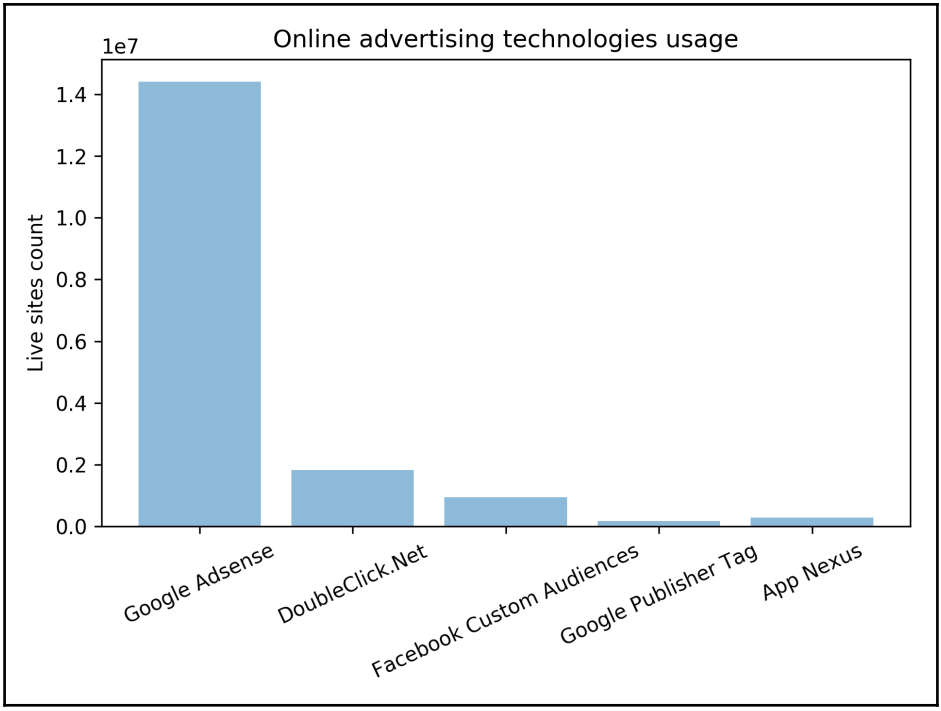


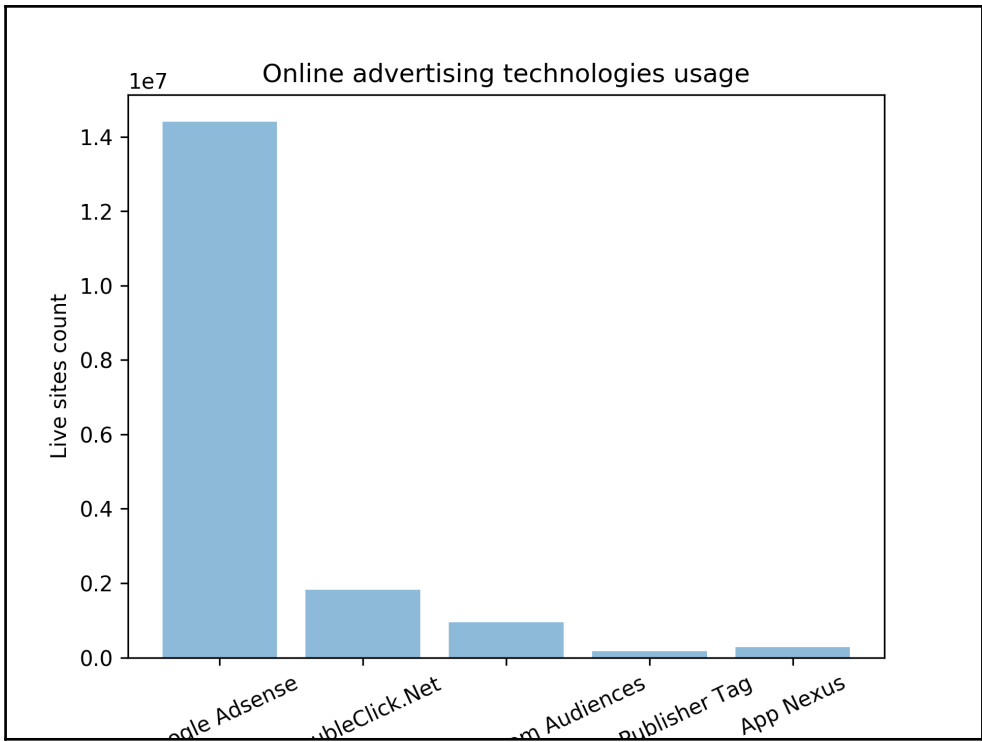


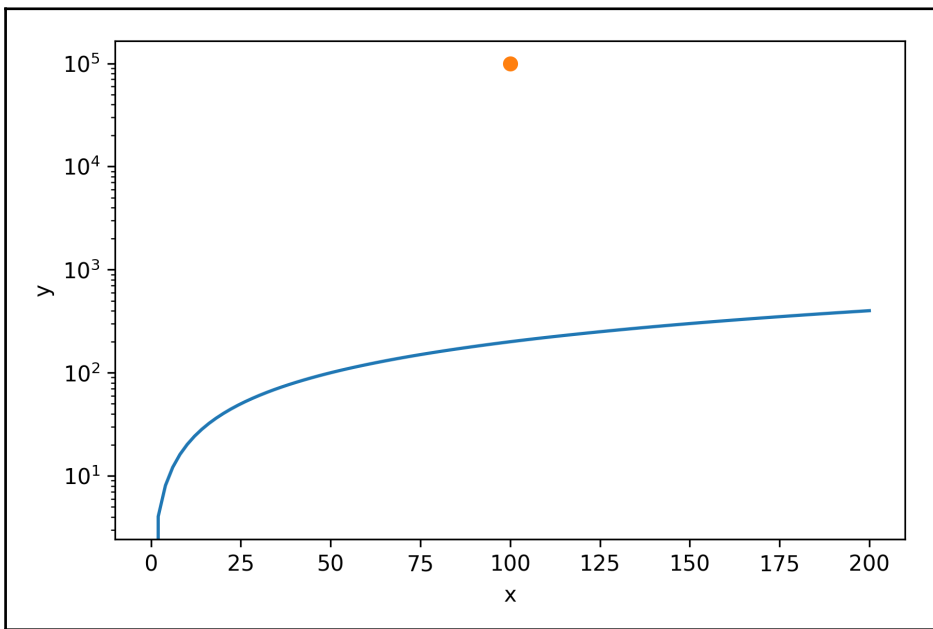
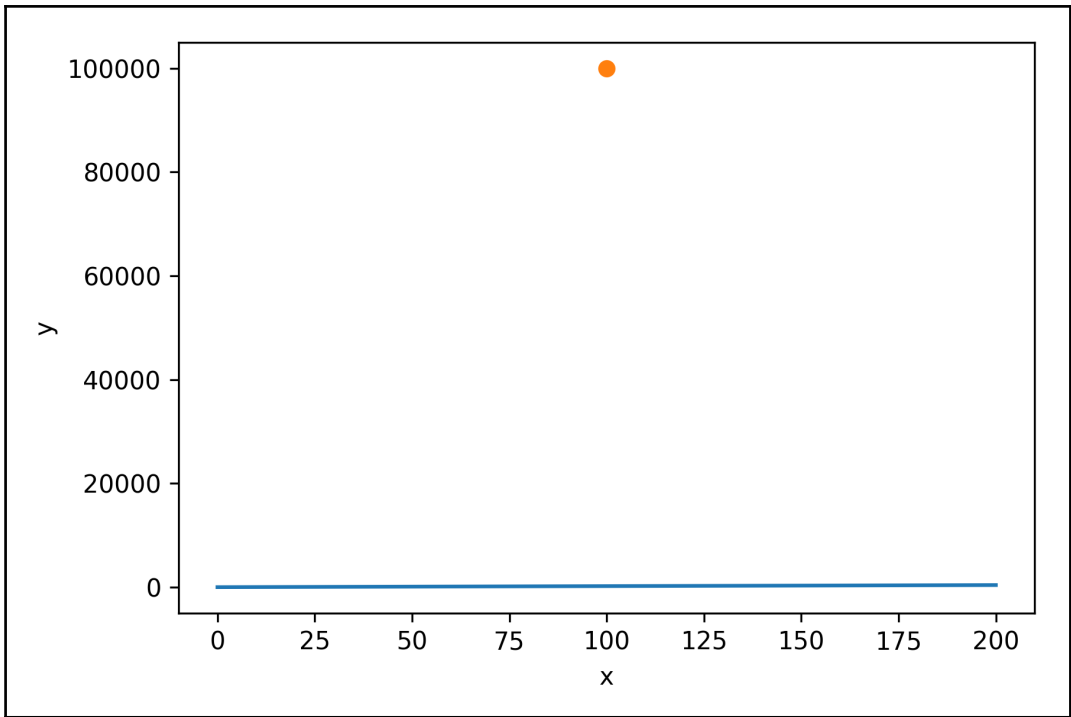


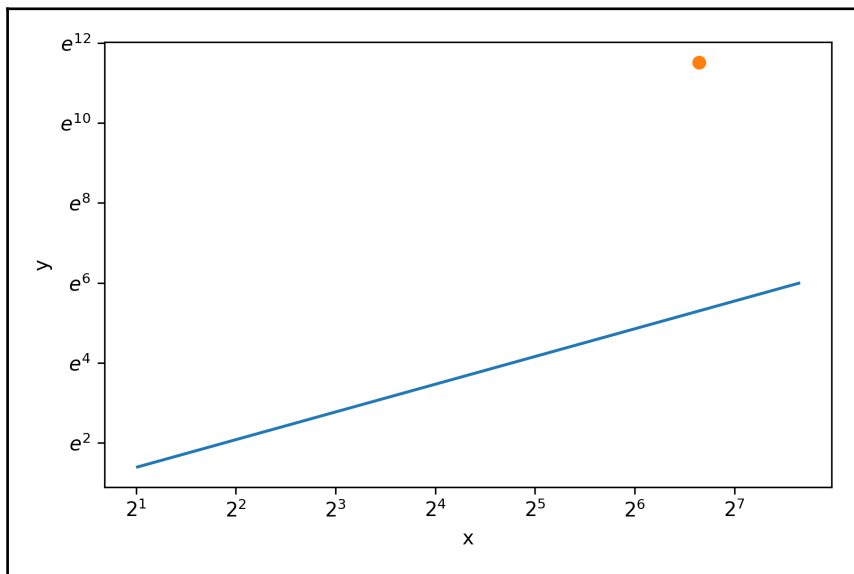
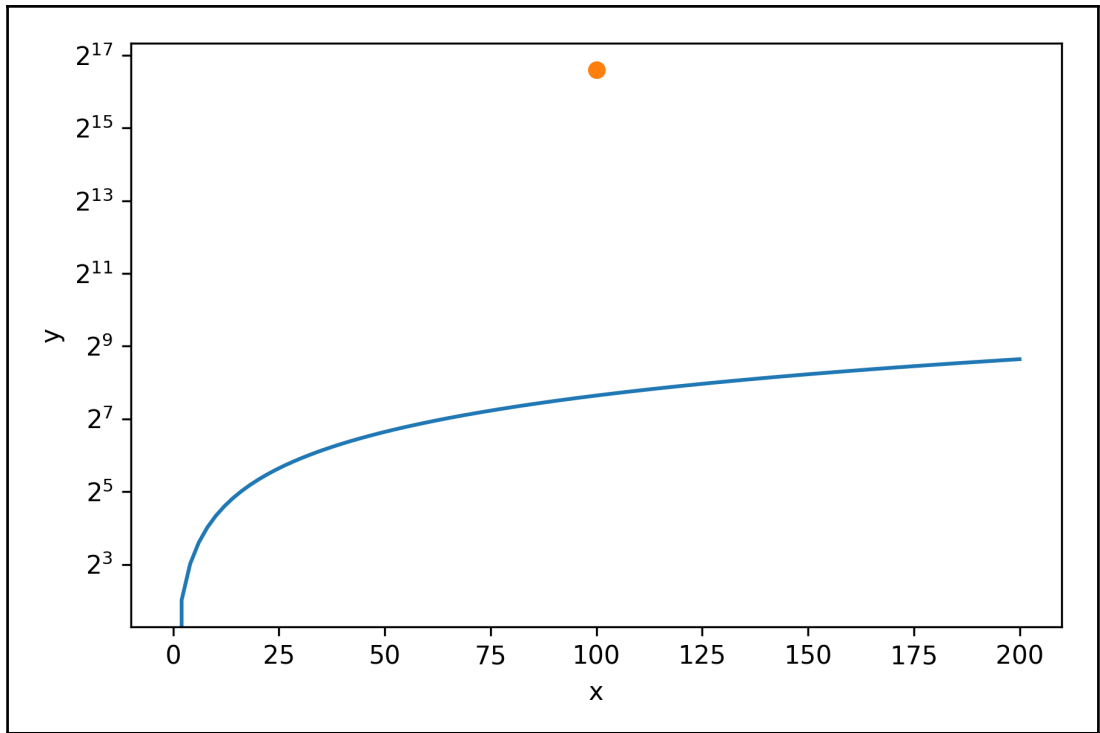


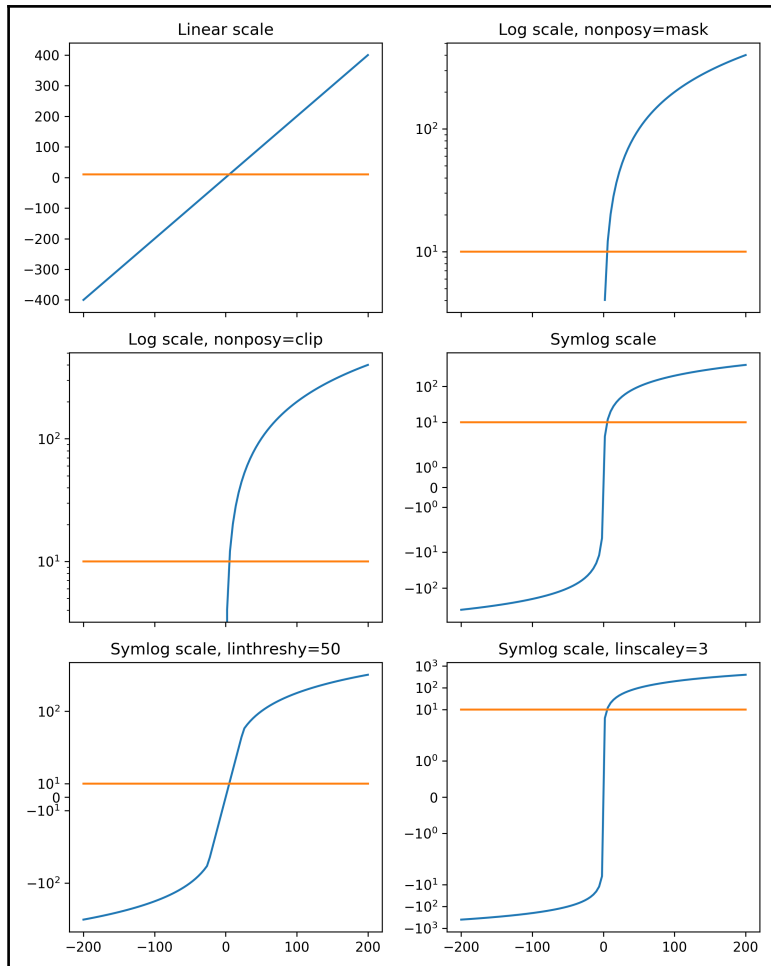


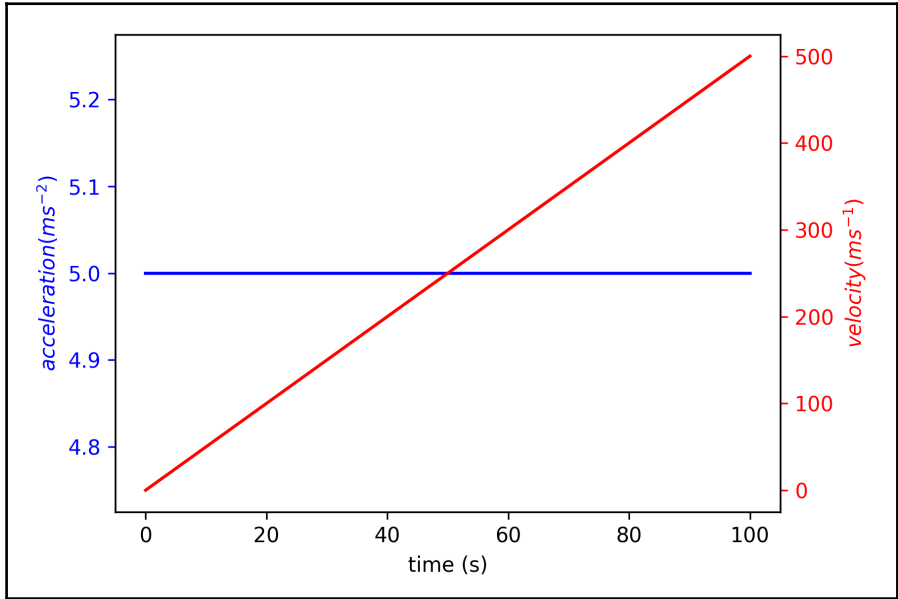
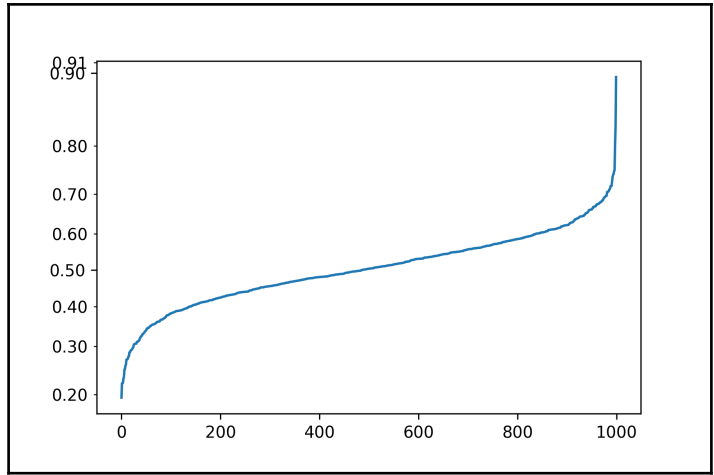






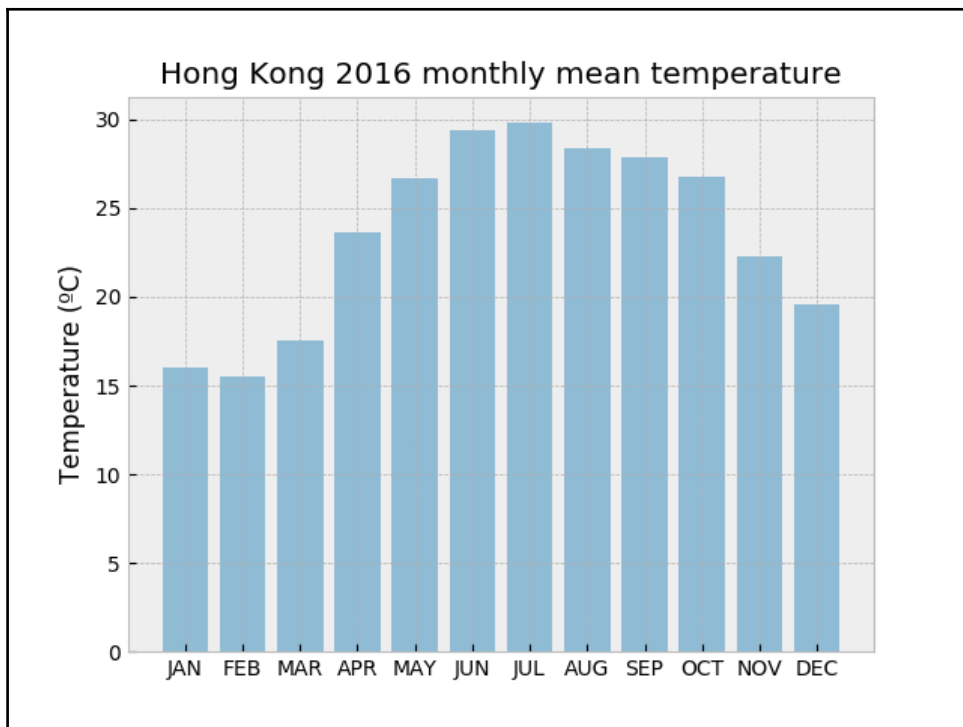




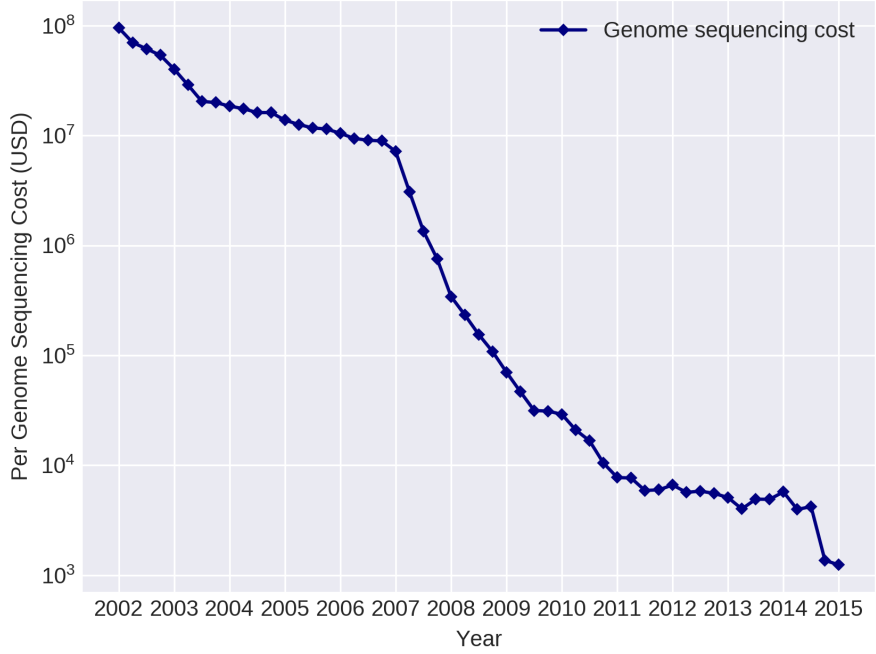


```
In [27]: import matplotlib as mpl
         mpl.style.available
```

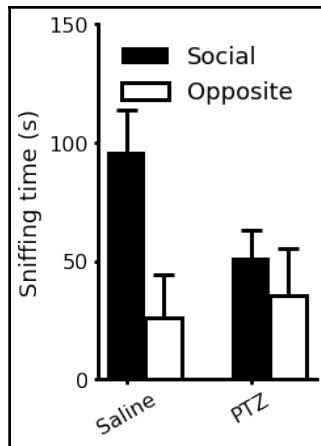
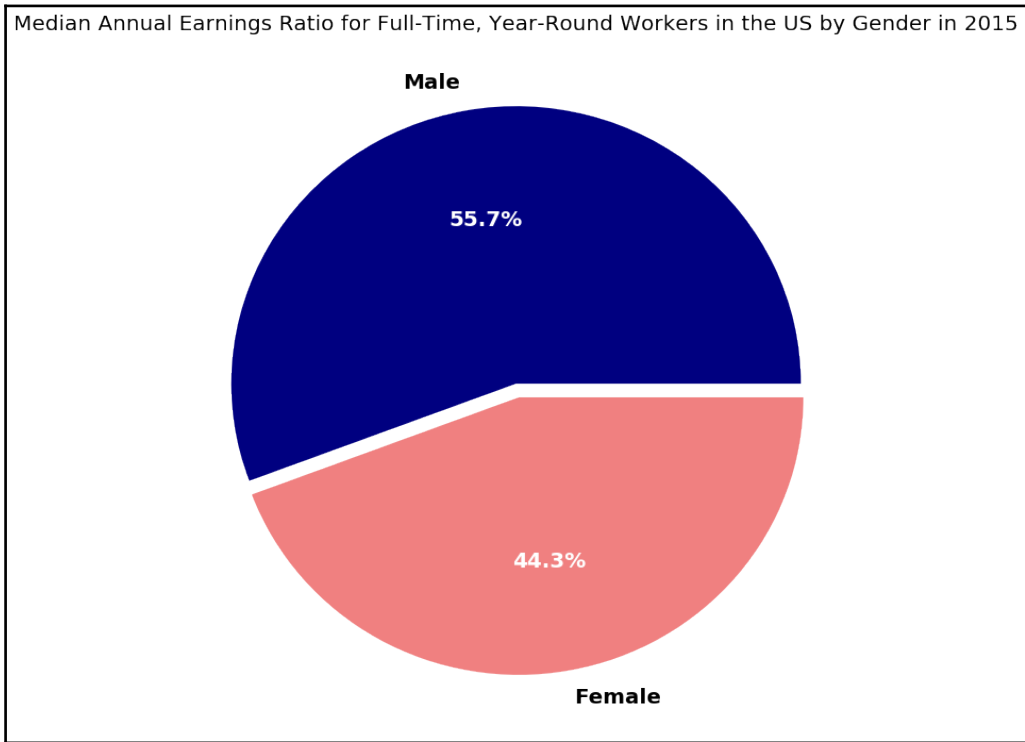
```
Out [27]: ['bah',
           'classic',
           'dark_background',
           'fivethirtyeight',
           'ggplot',
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           'seaborn-bright',
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           'seaborn-dark-palette',
           'seaborn-dark',
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           'seaborn-deep',
           'seaborn-muted',
           'seaborn-notebook',
           'seaborn-paper',
           'seaborn-pastel',
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           'seaborn-talk',
           'seaborn-ticks',
           'seaborn-whitegrid']
```

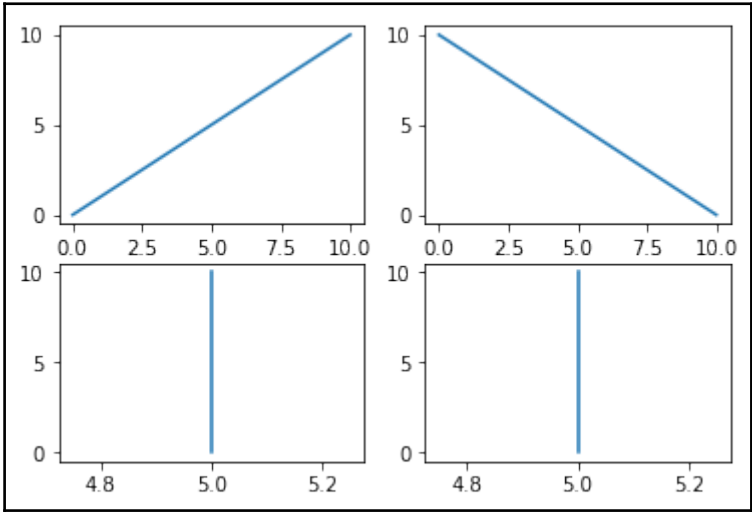
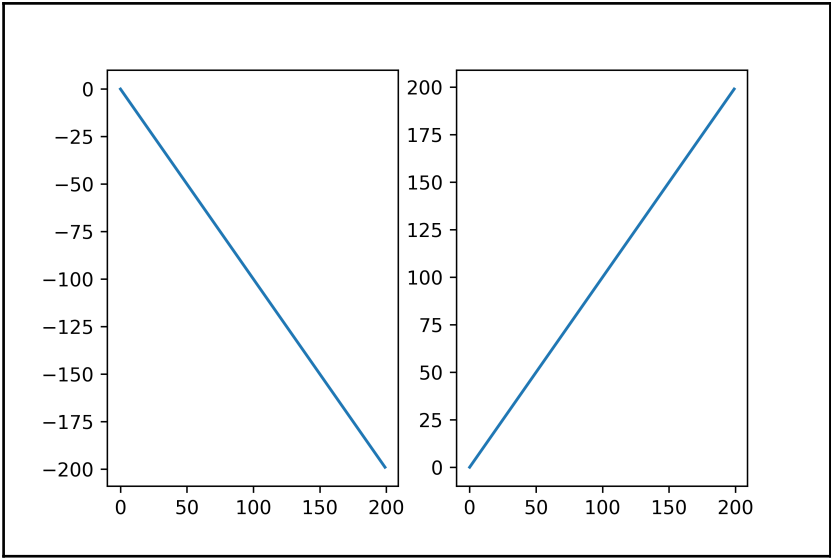


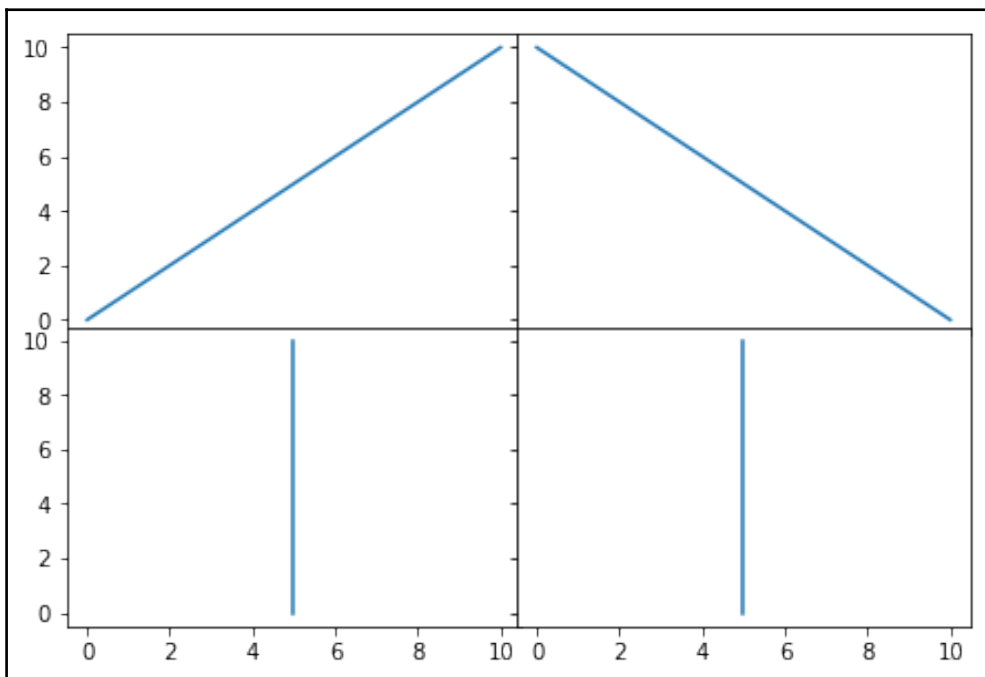
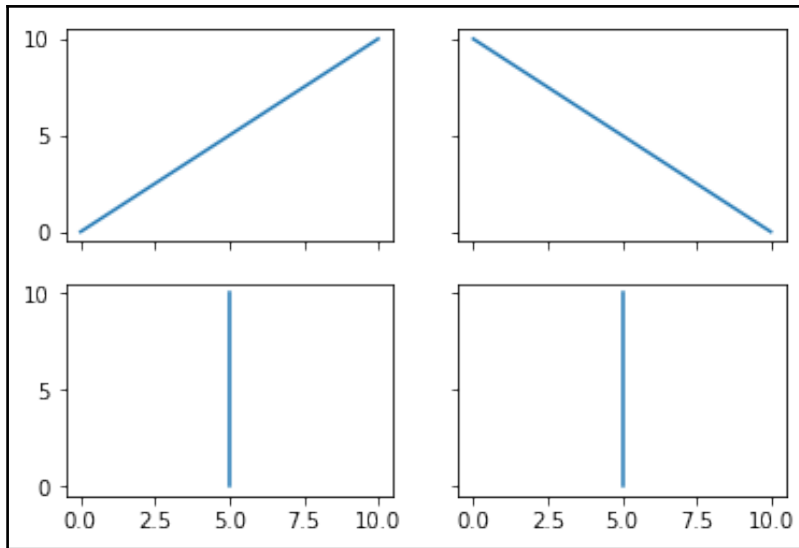
2001-2015 per Genome Sequencing Cost

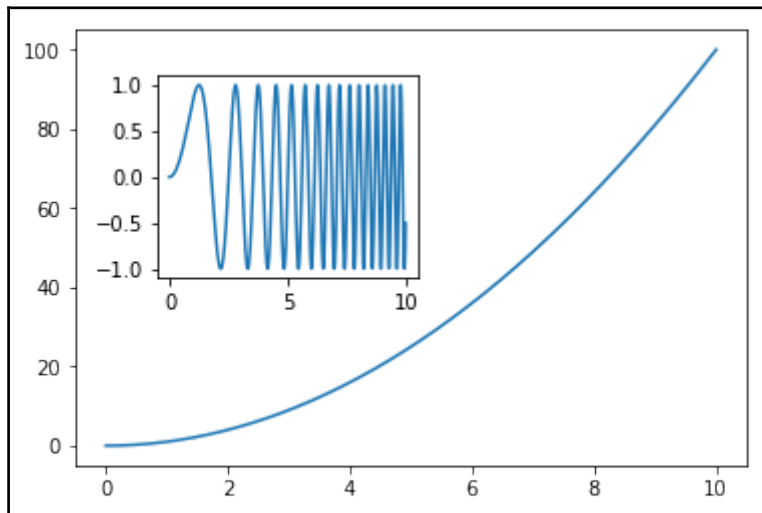
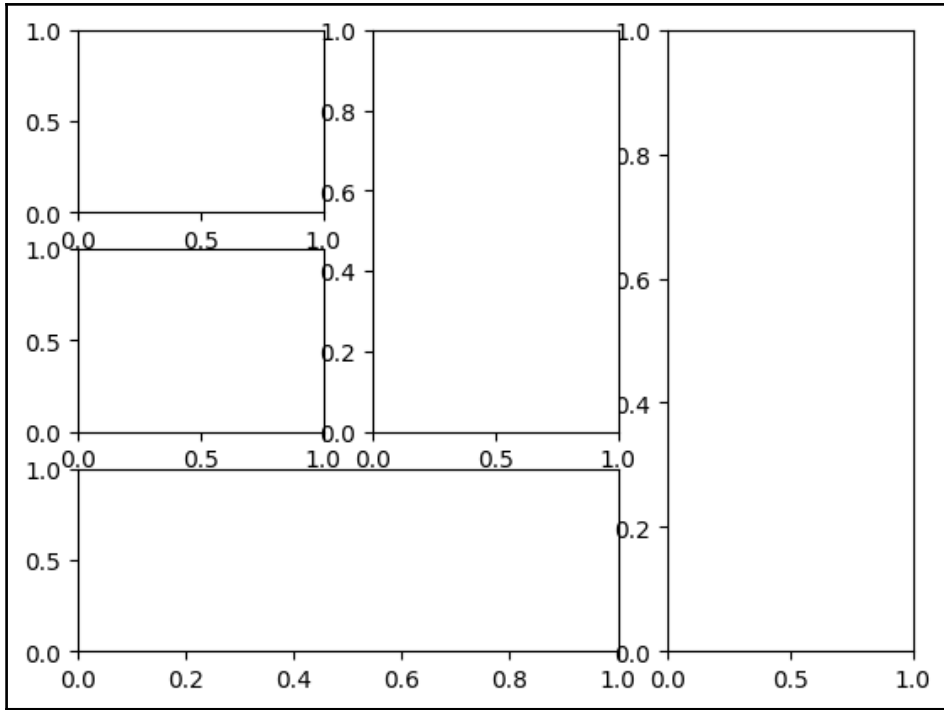


Chapter 3: Figure Layout and Annotations

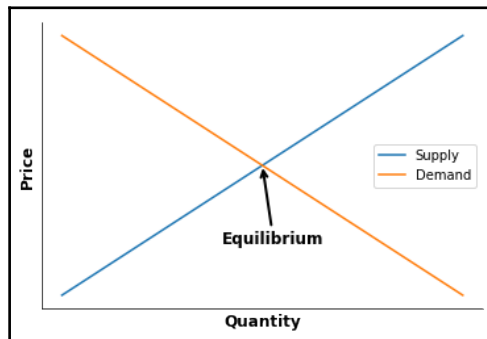
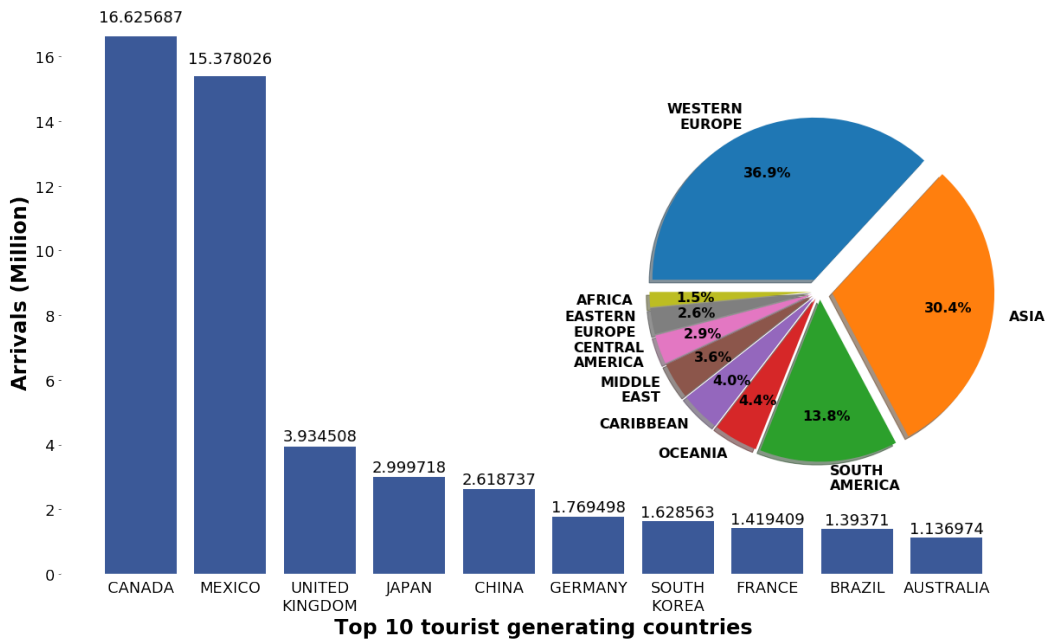


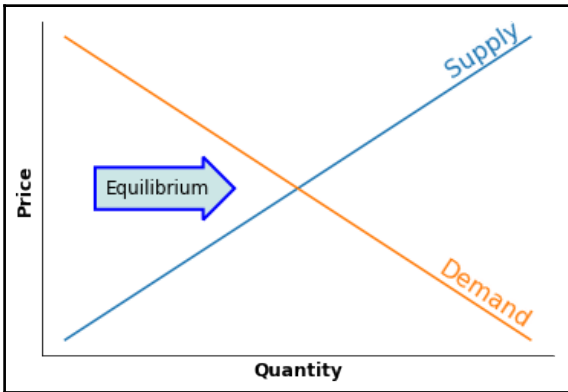
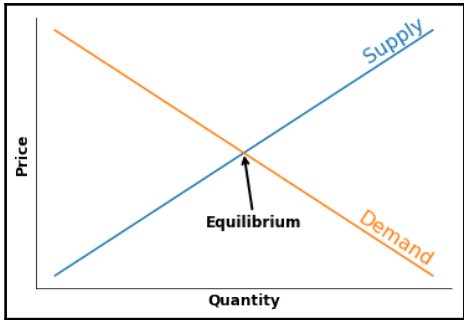




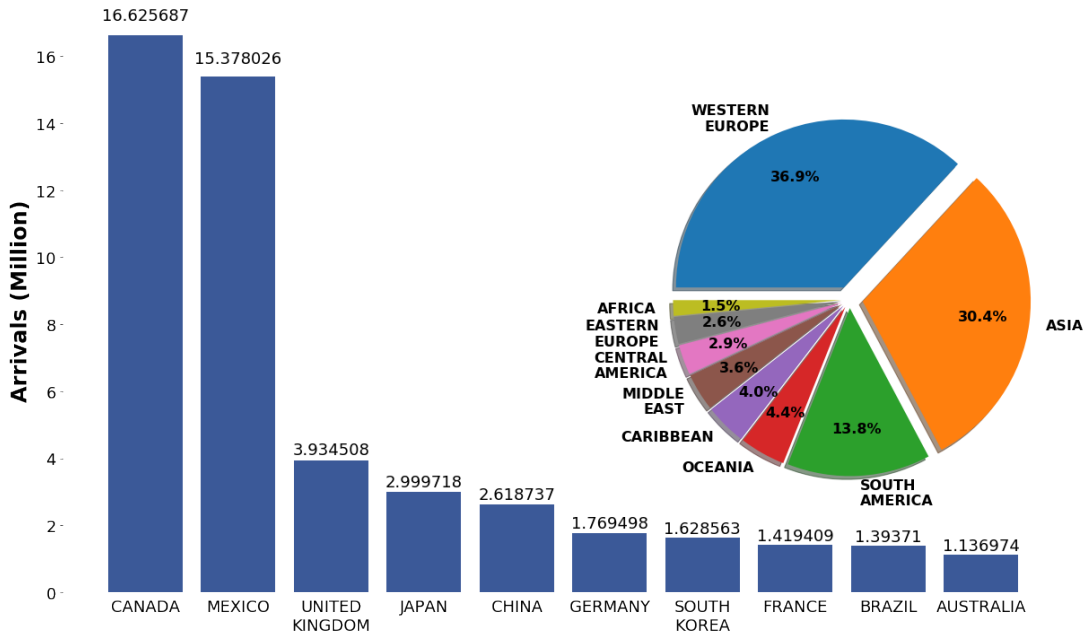


Non-Resident Arrivals to the US in 2016 (by Aug) by Regions

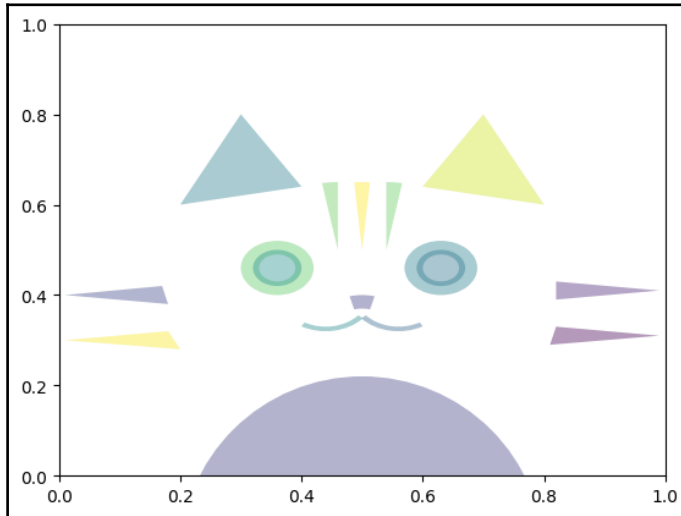


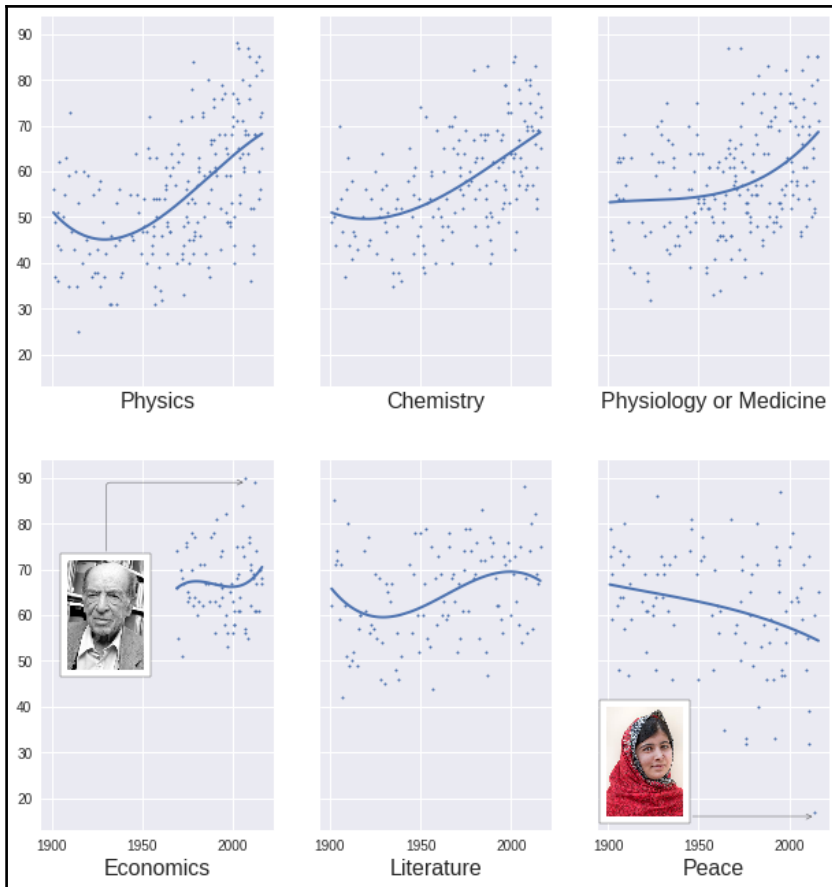


Non-Resident Arrivals to the US in 2016 (by Aug) by Regions

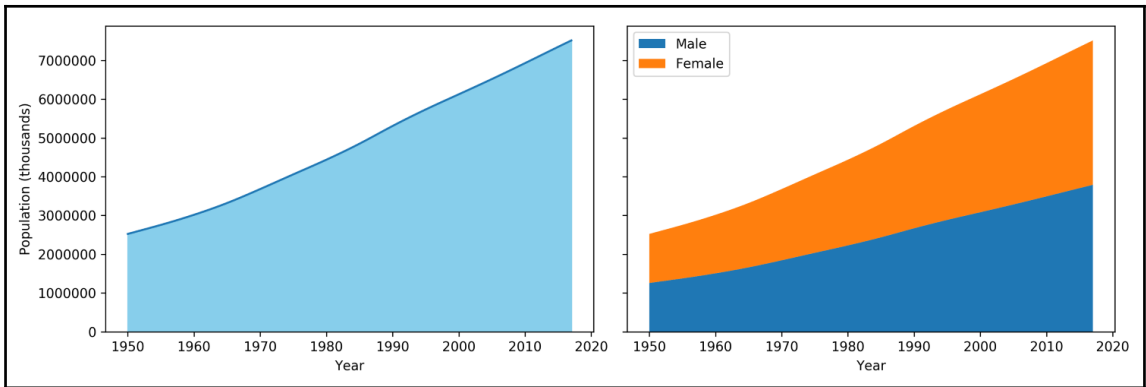
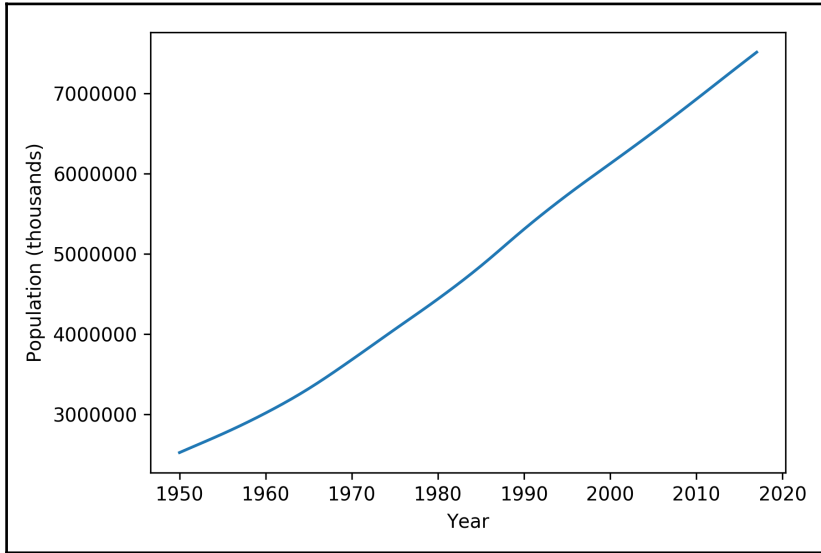


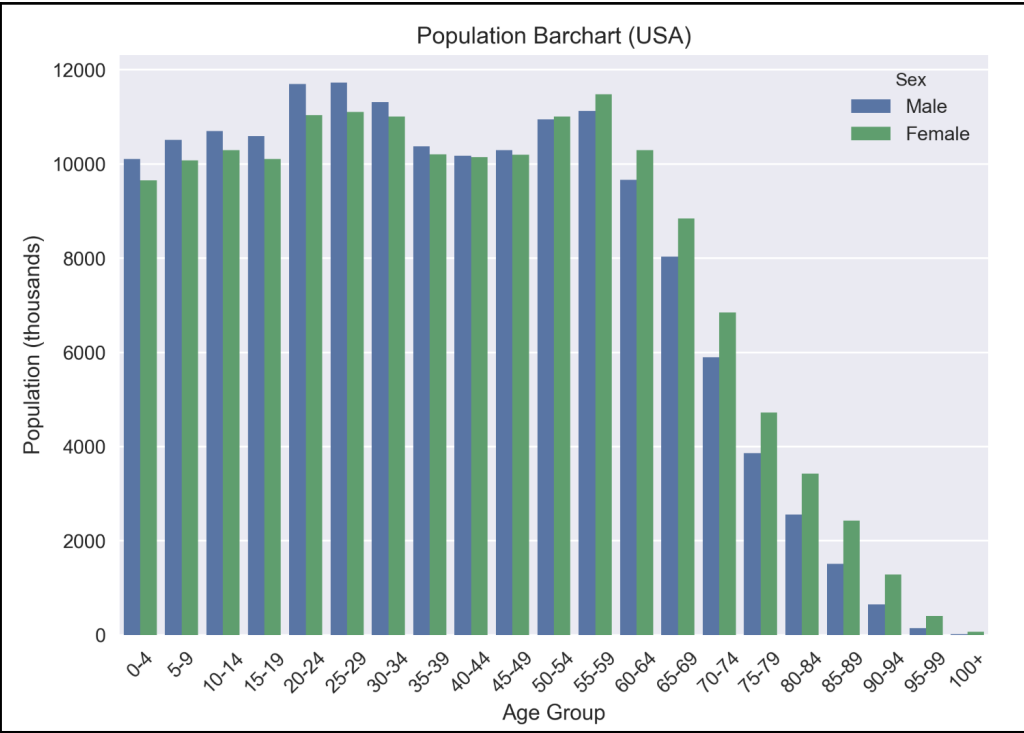
Top 10 tourist generating countries



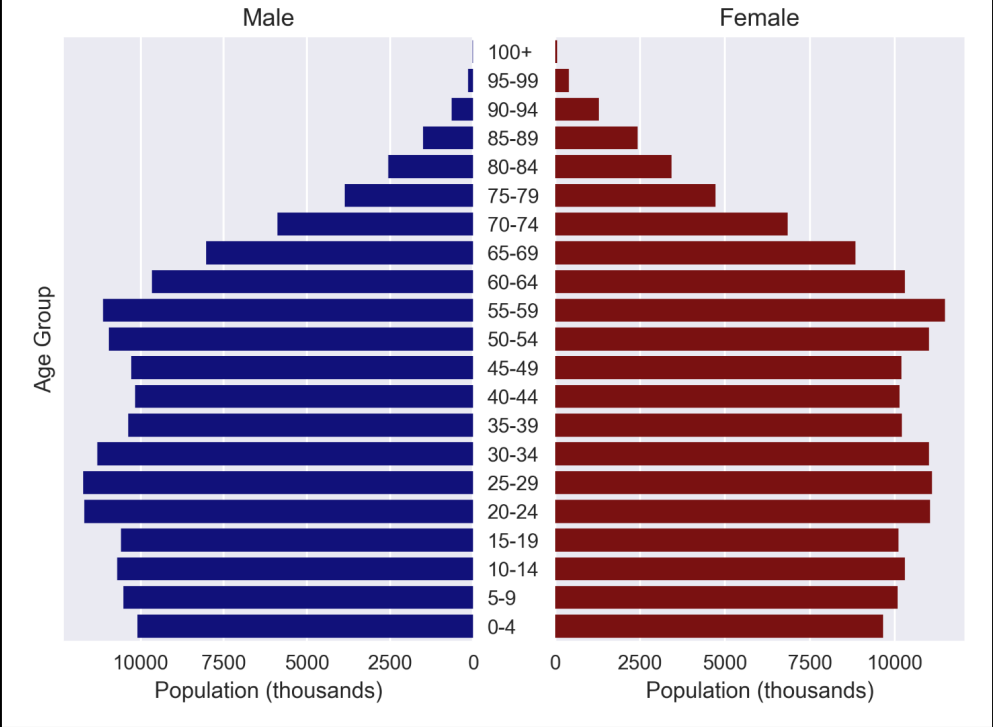


Chapter 4: Visualizing Online Data

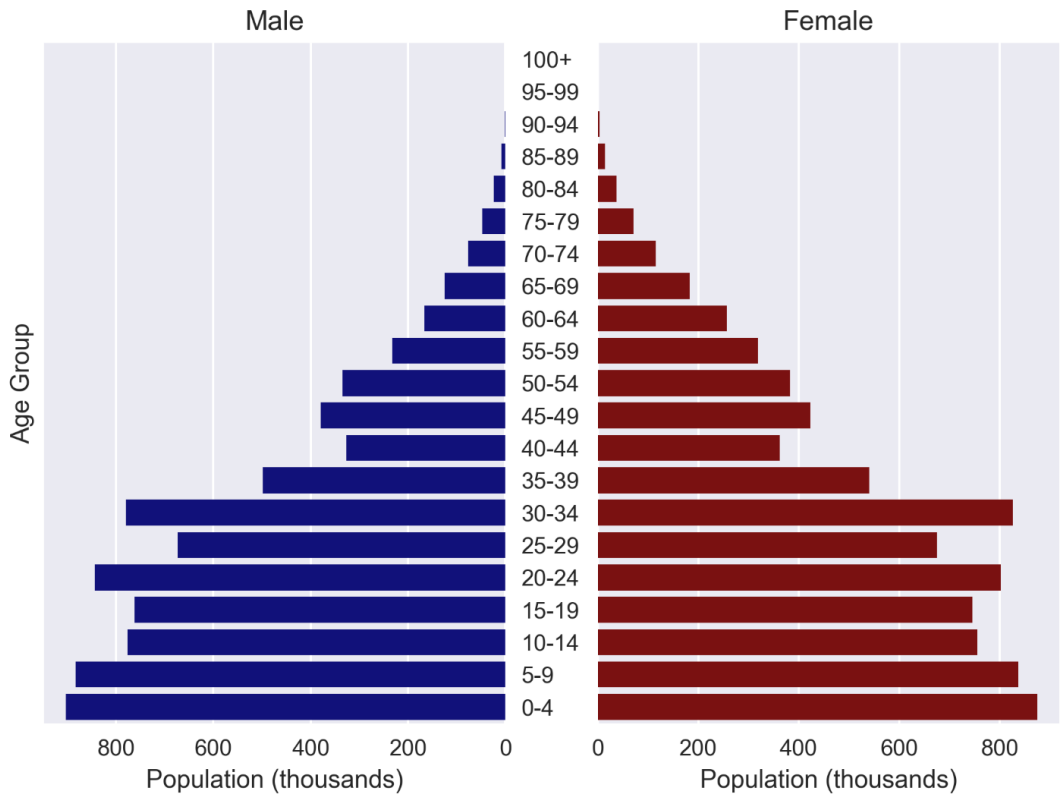




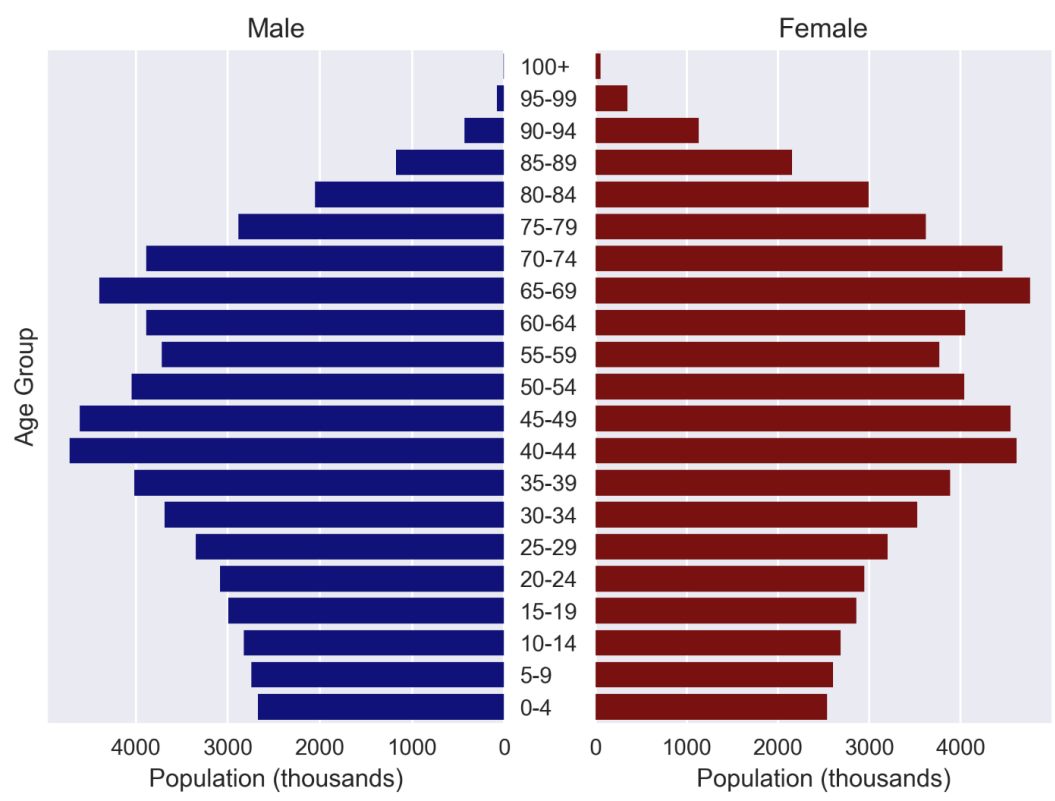
Population Pyramid (USA)



Population Pyramid (Cambodia)



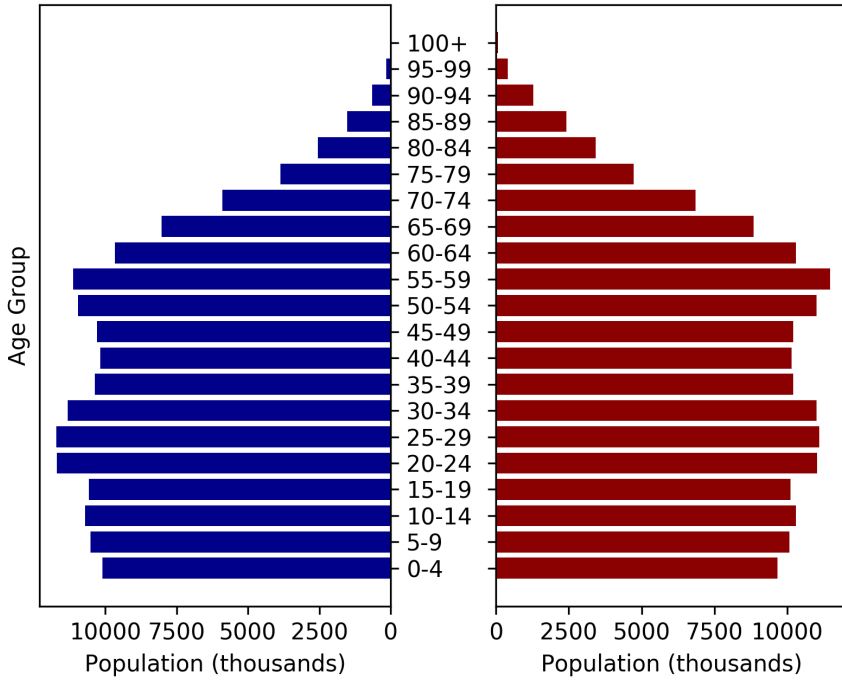
Population Pyramid (Japan)

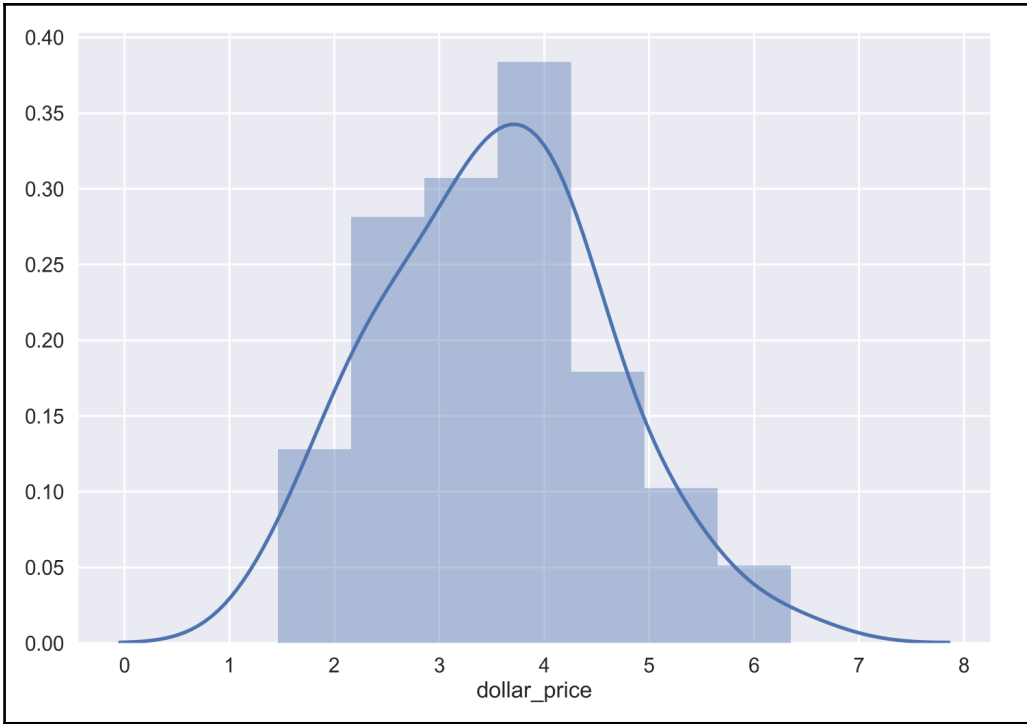


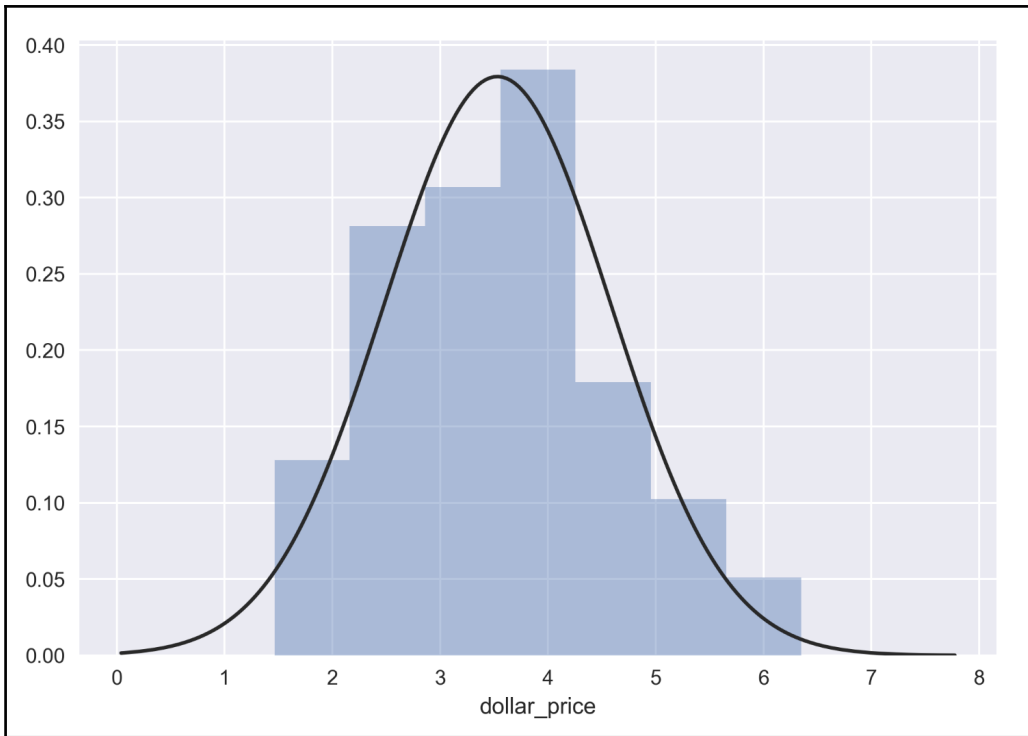
Population Pyramid (USA)

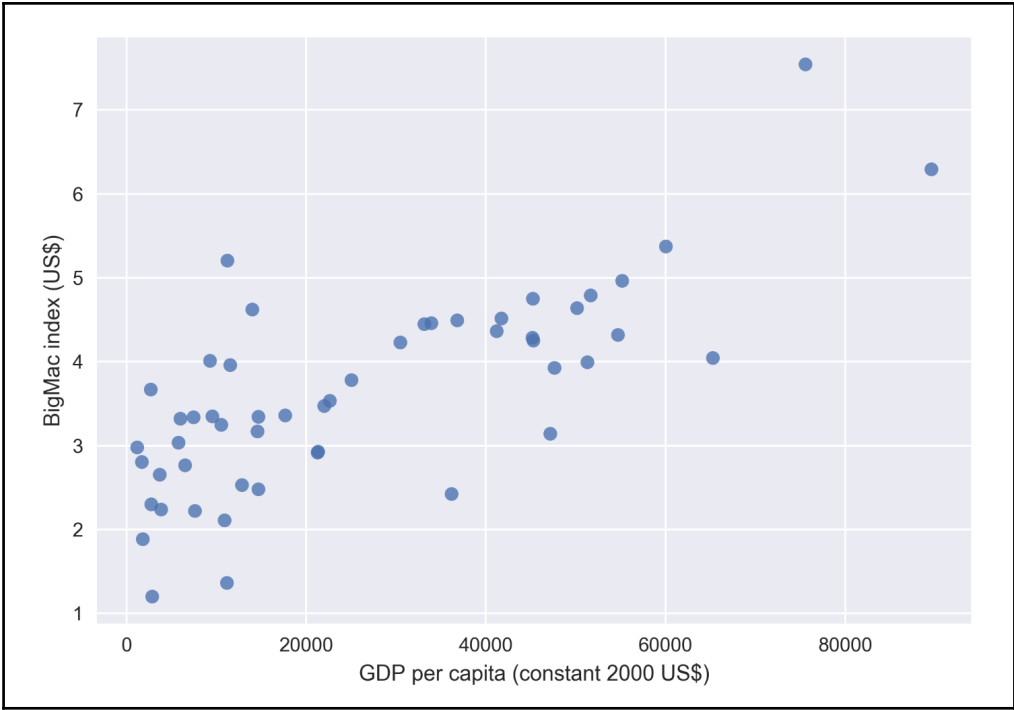
Male

Female

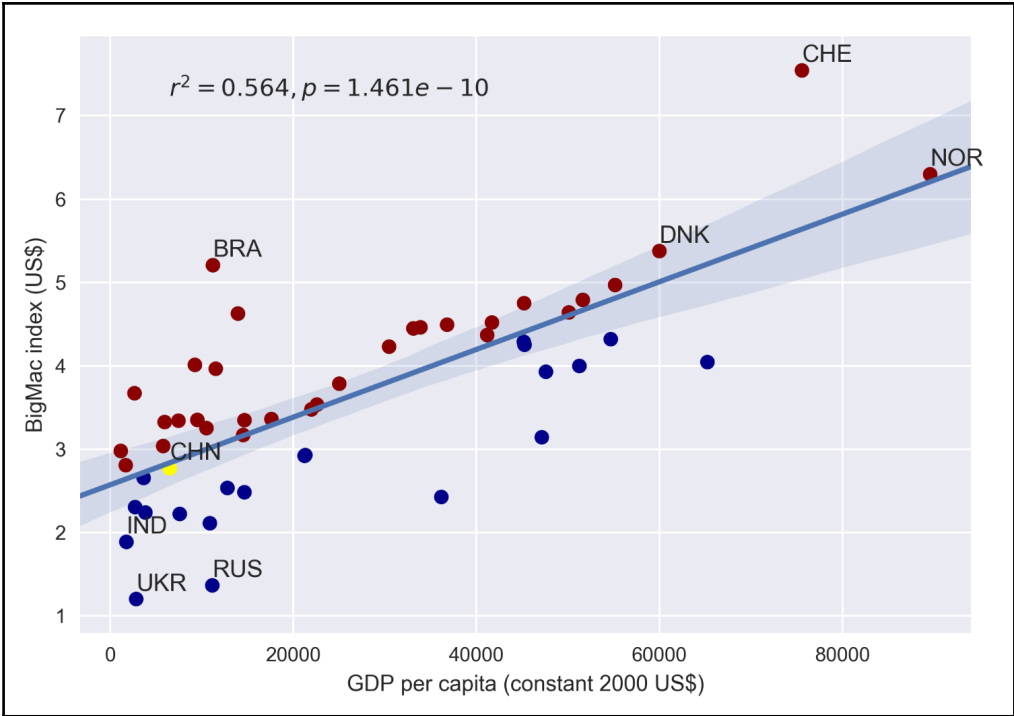




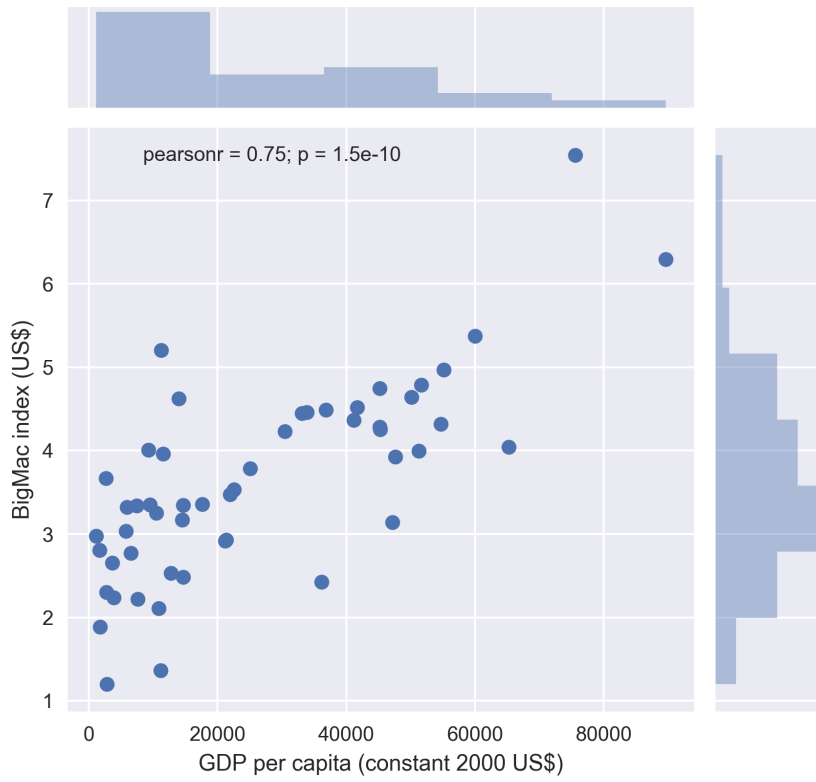




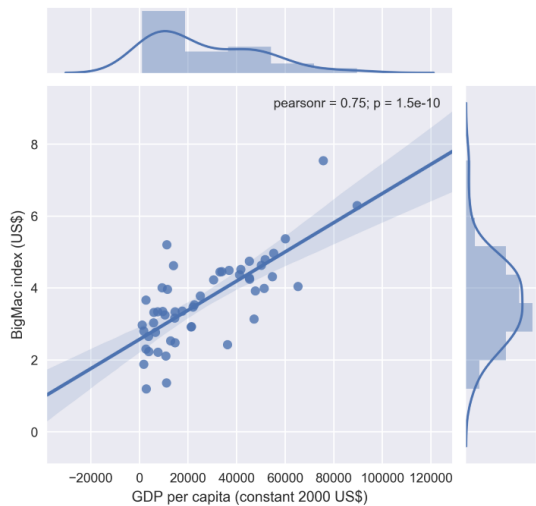




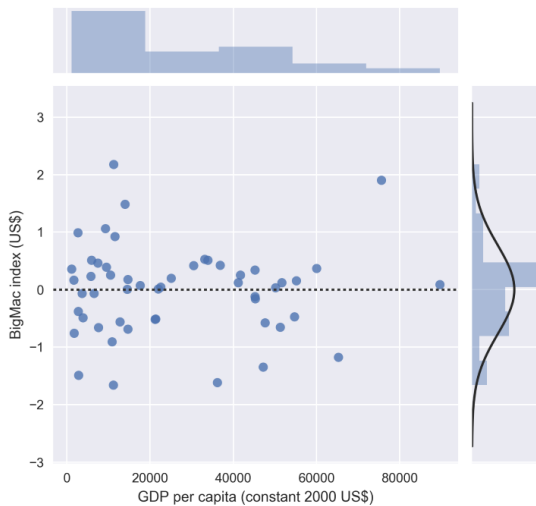
Relationship between GDP per capita and BigMac Index



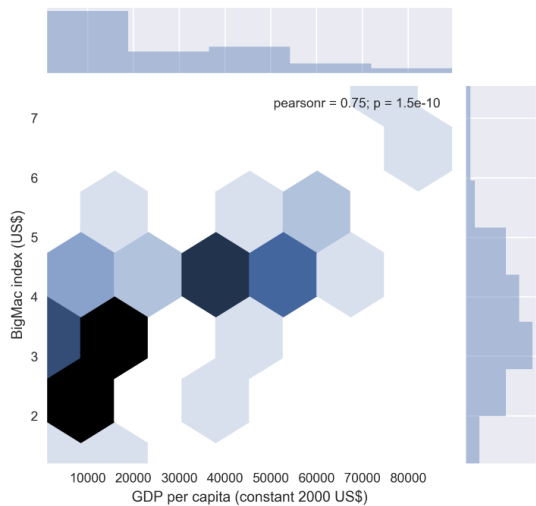
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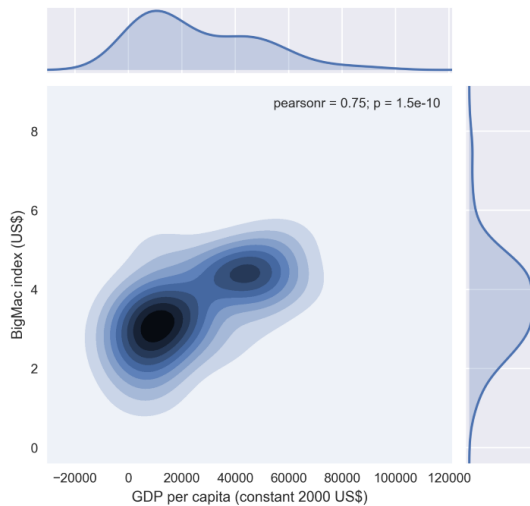
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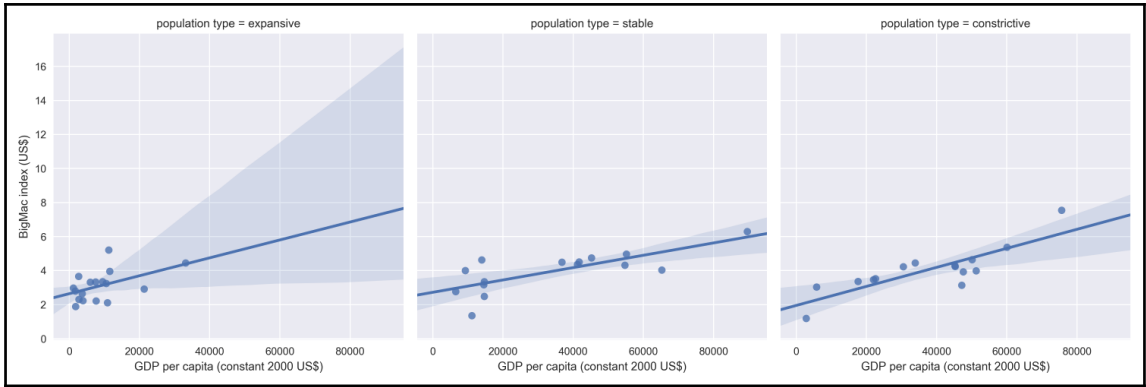


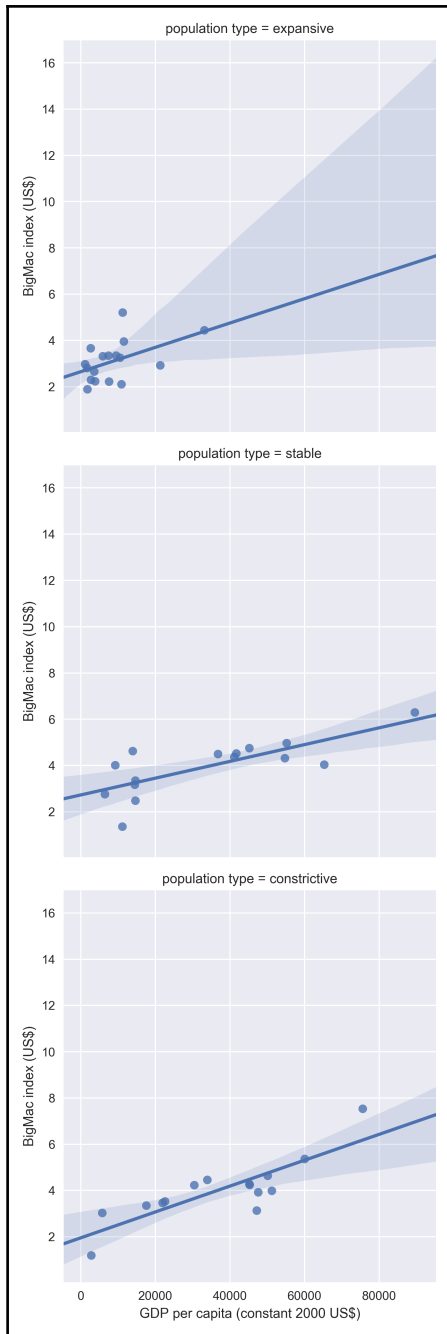
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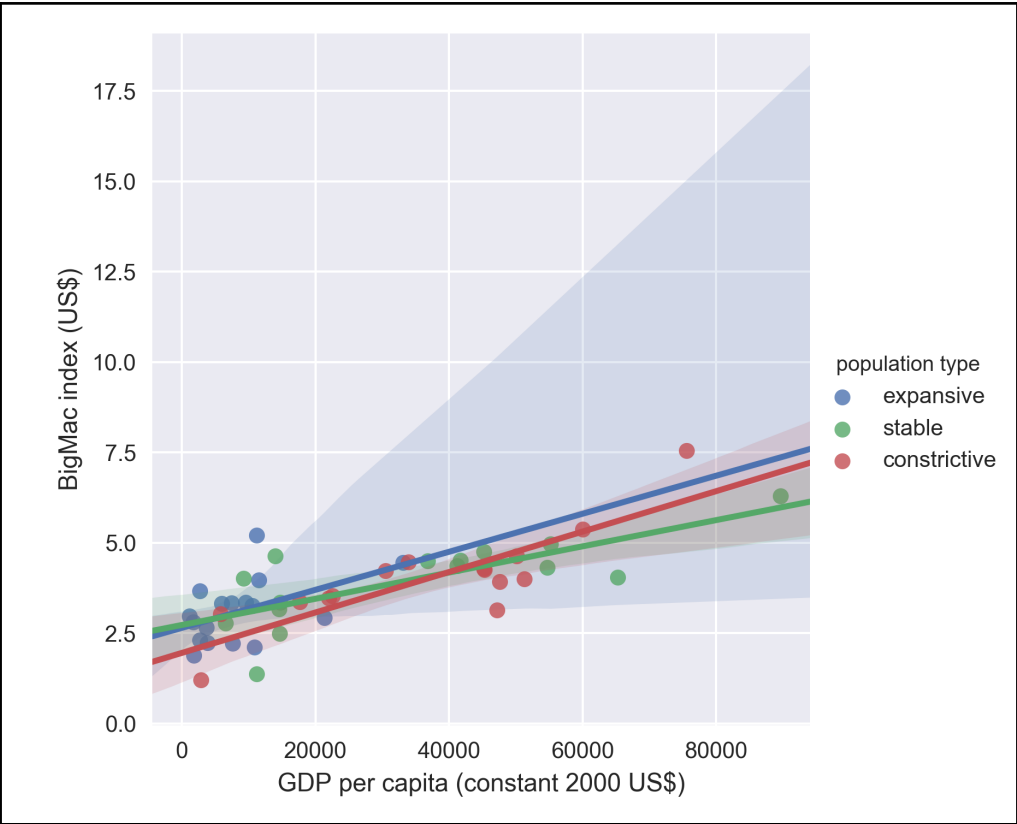


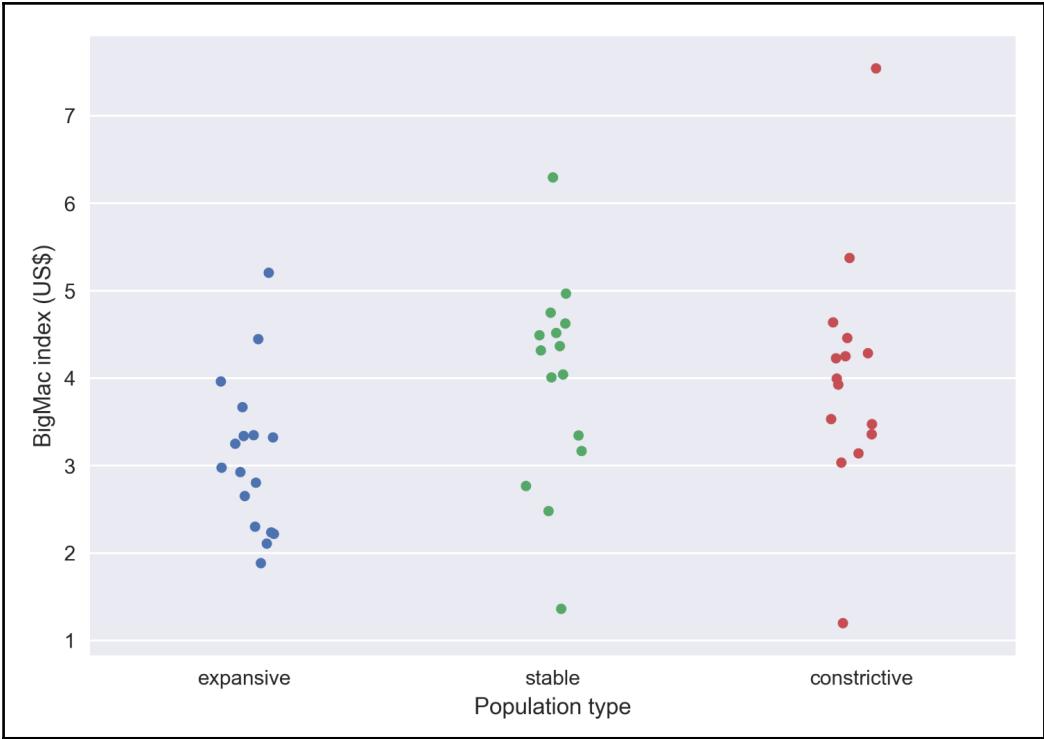
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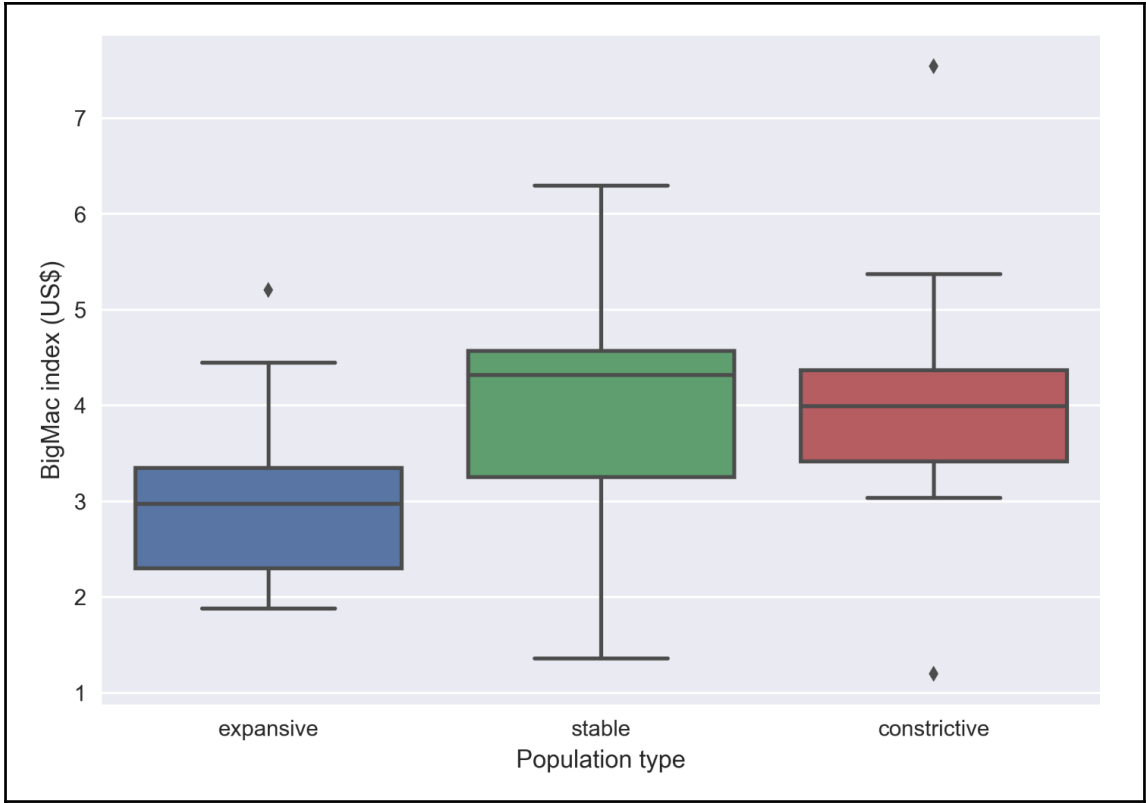


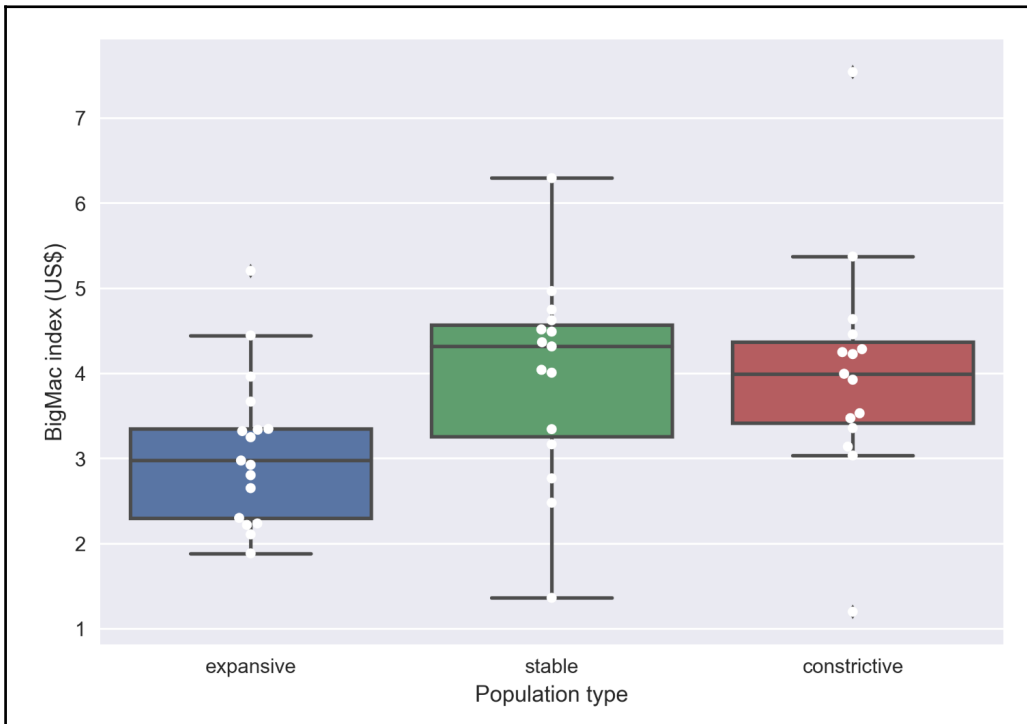
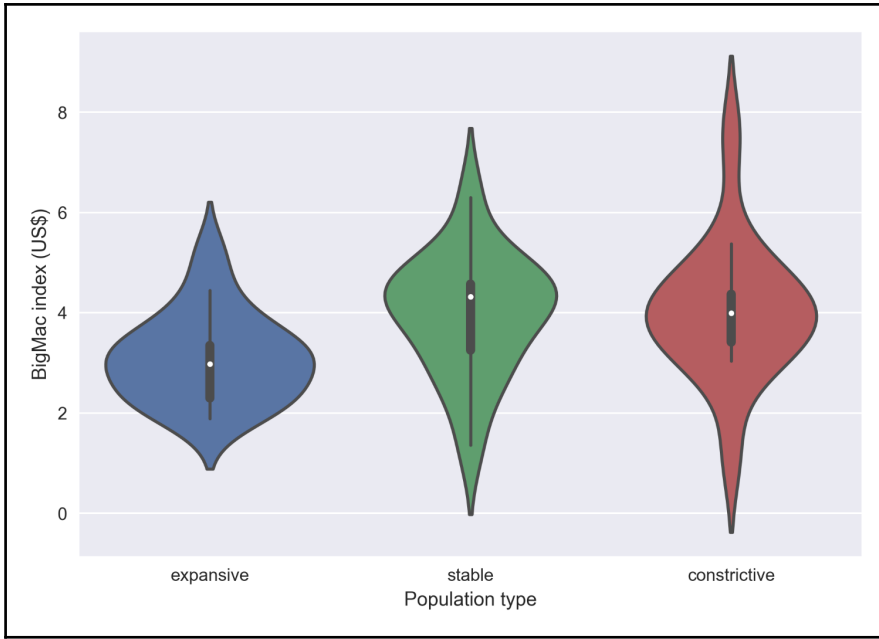


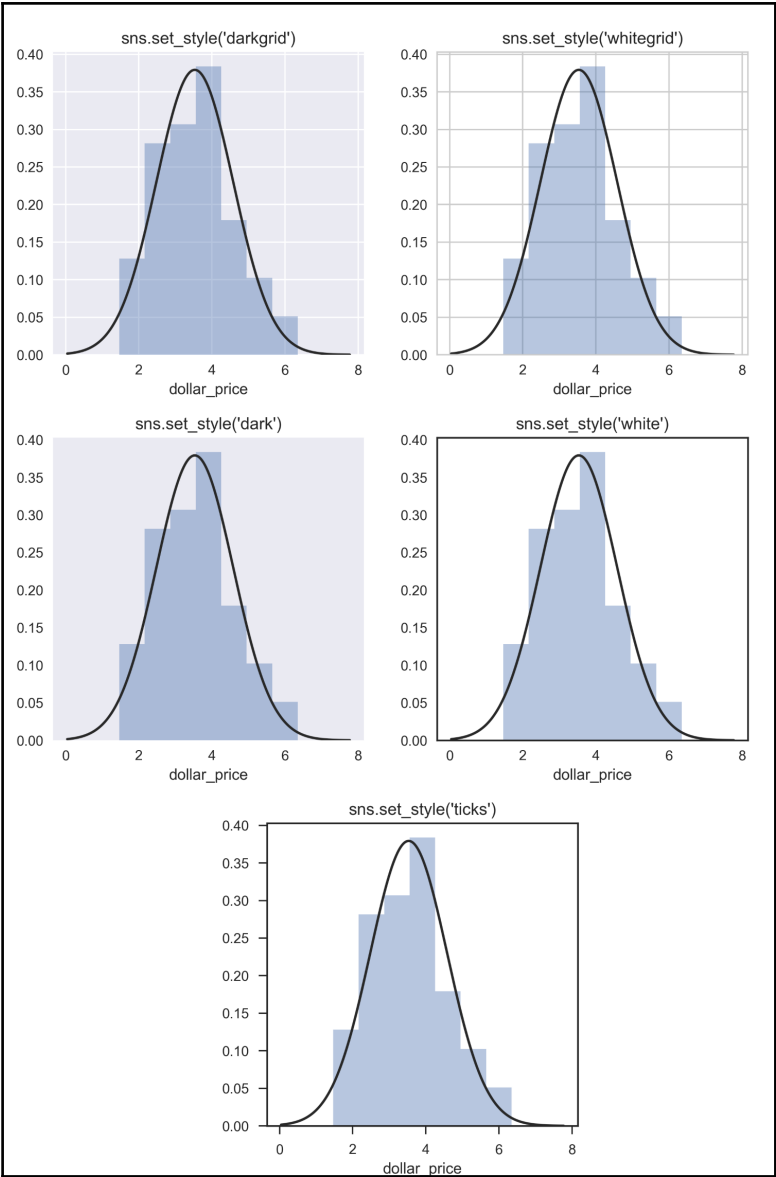


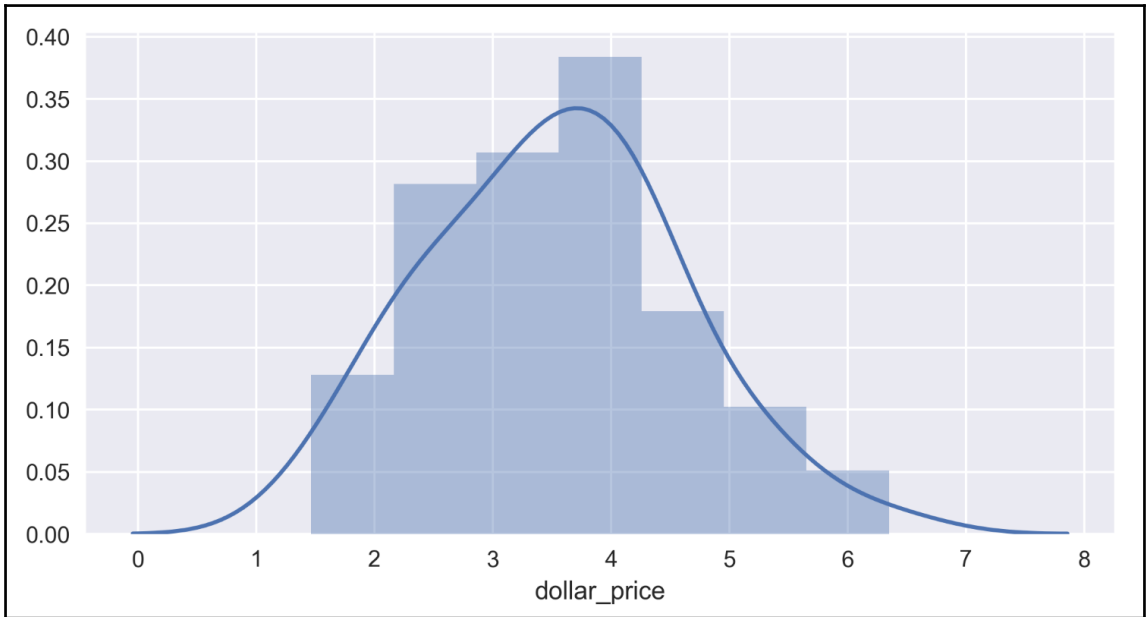
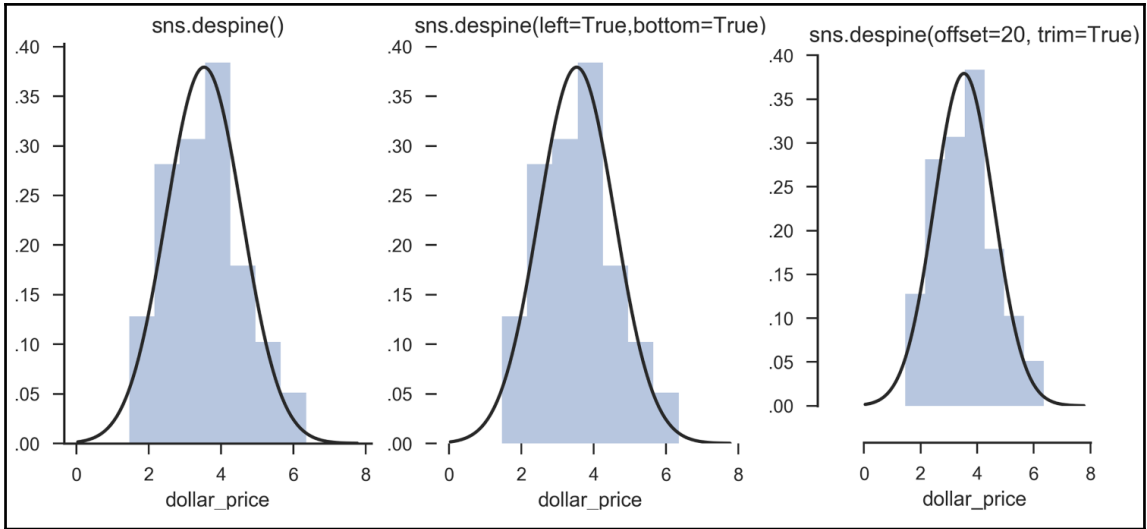


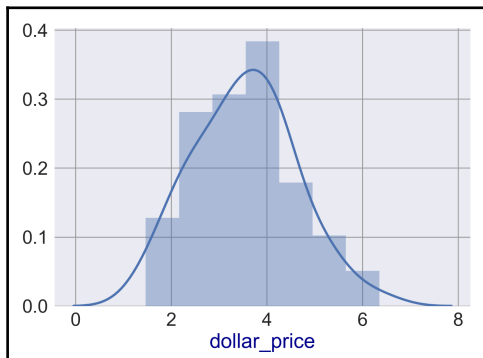
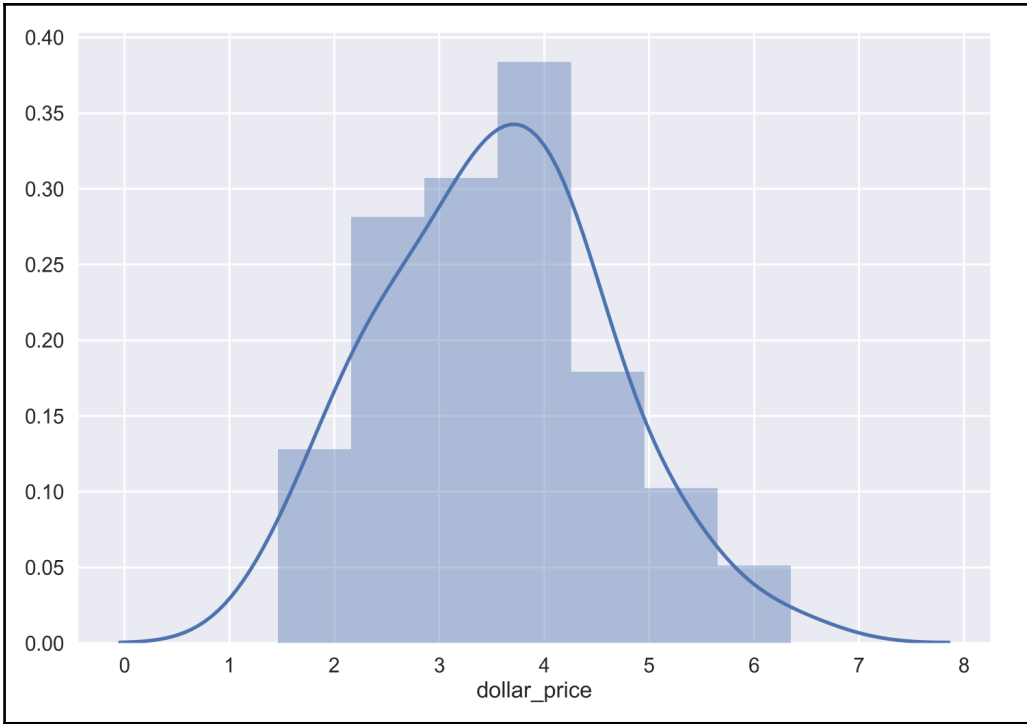


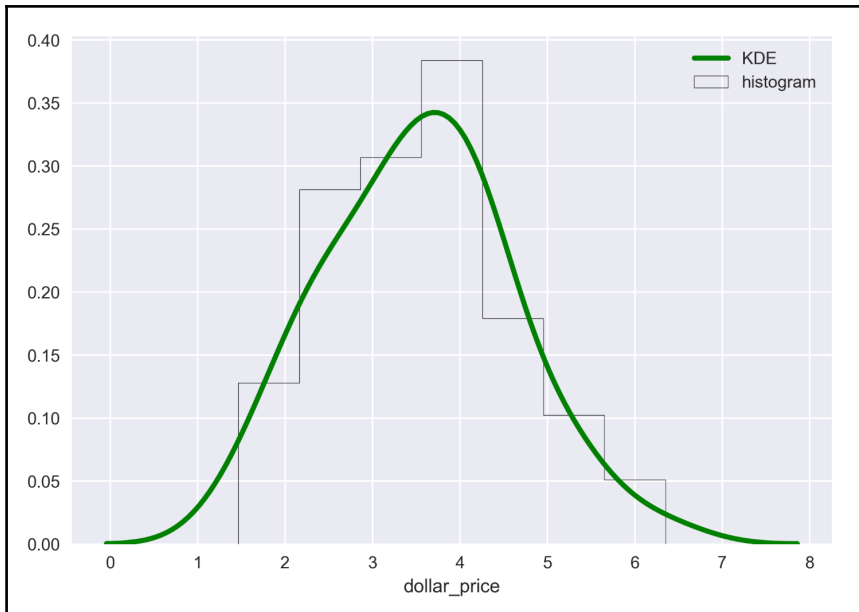


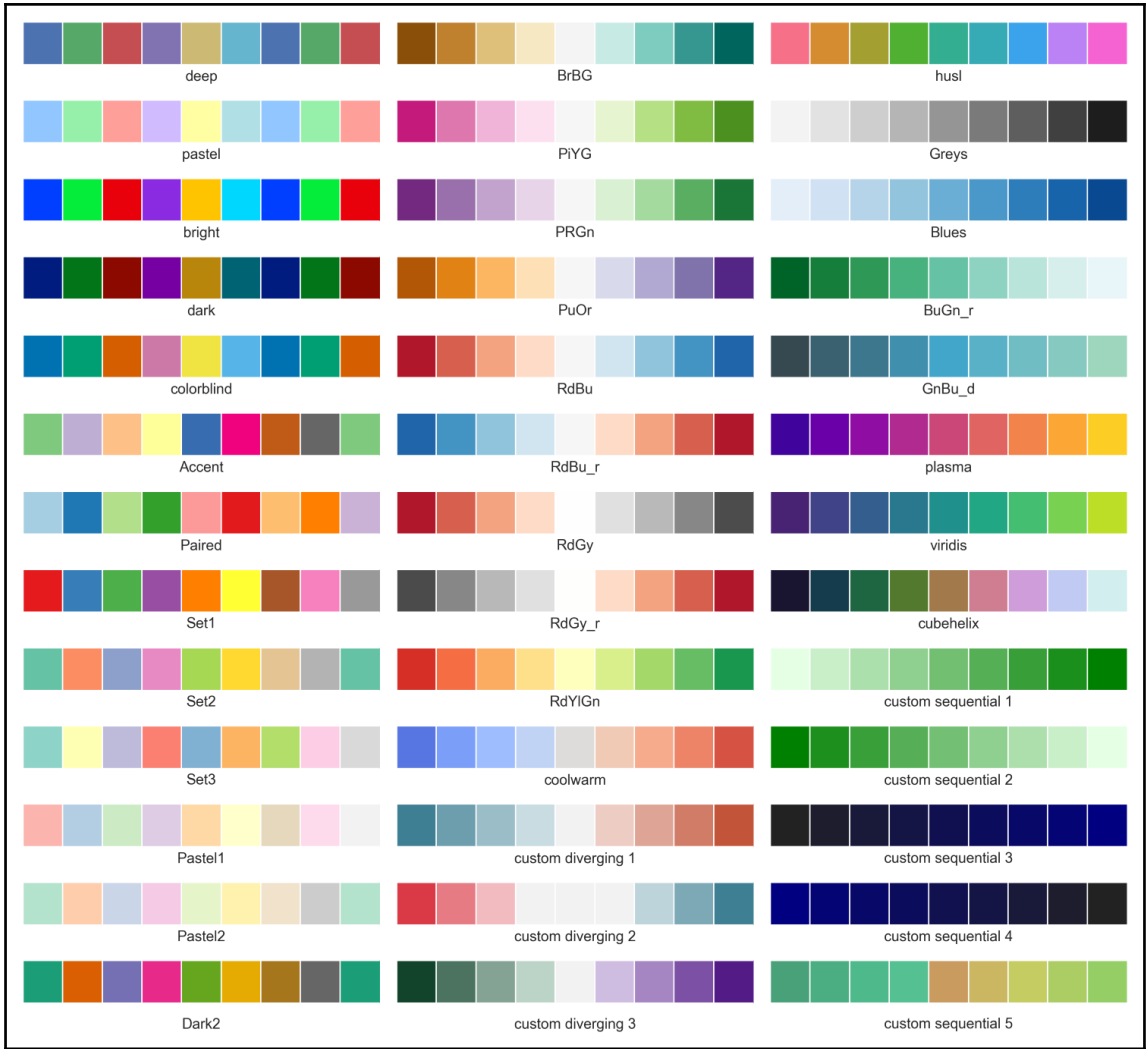


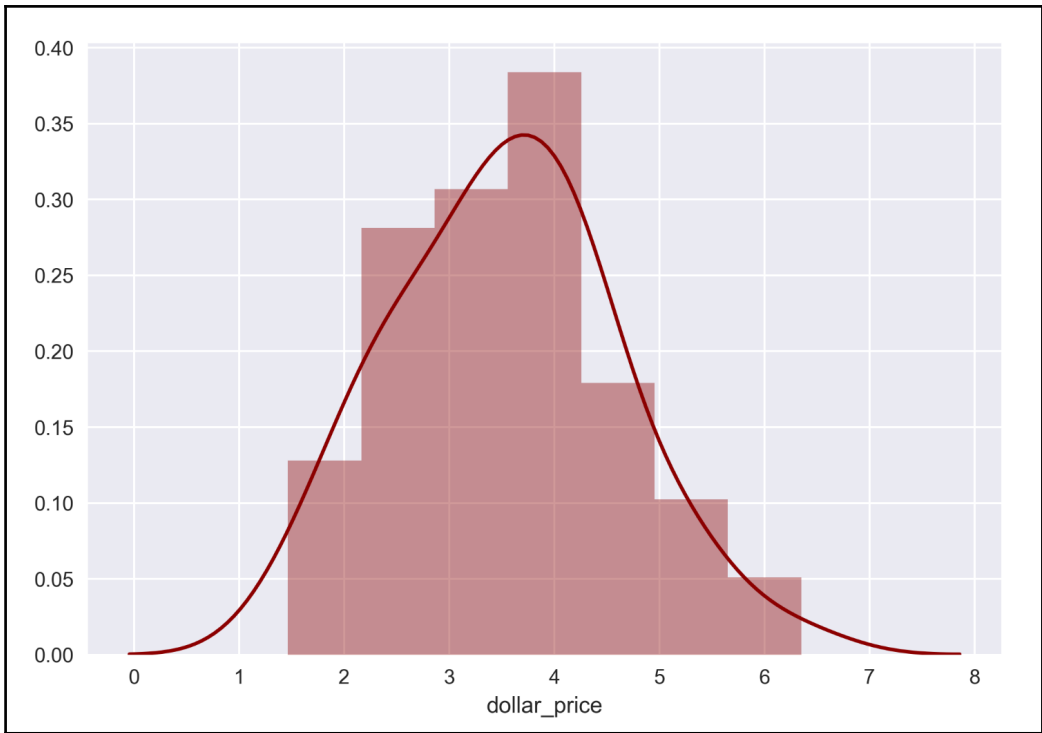


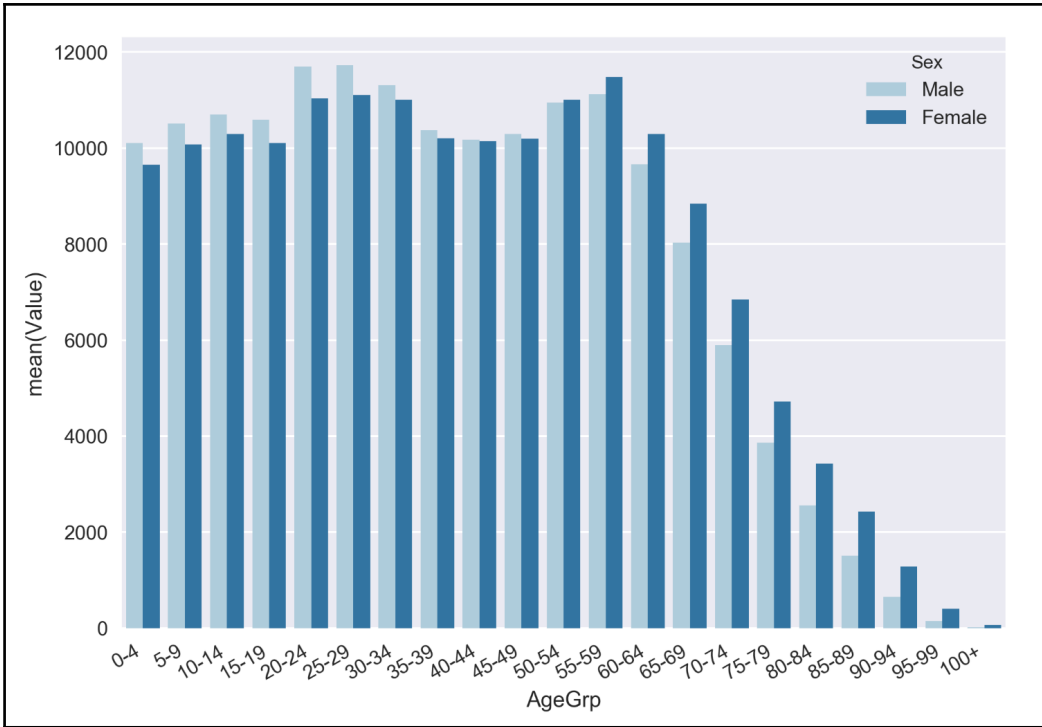


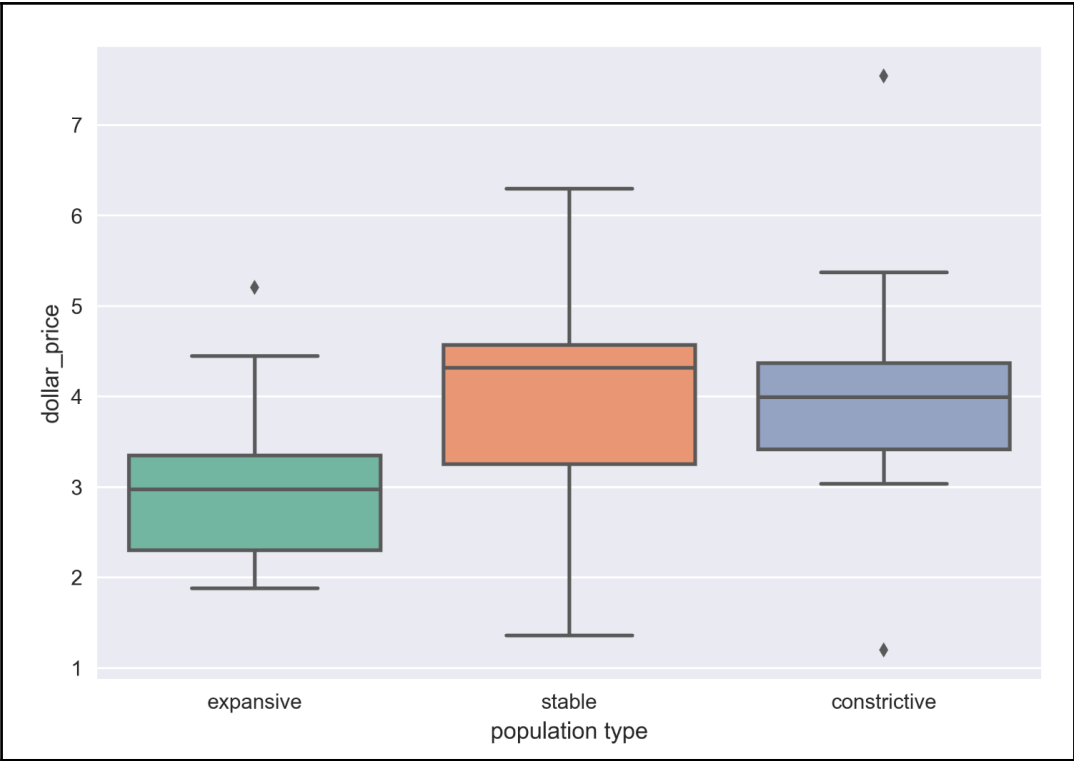




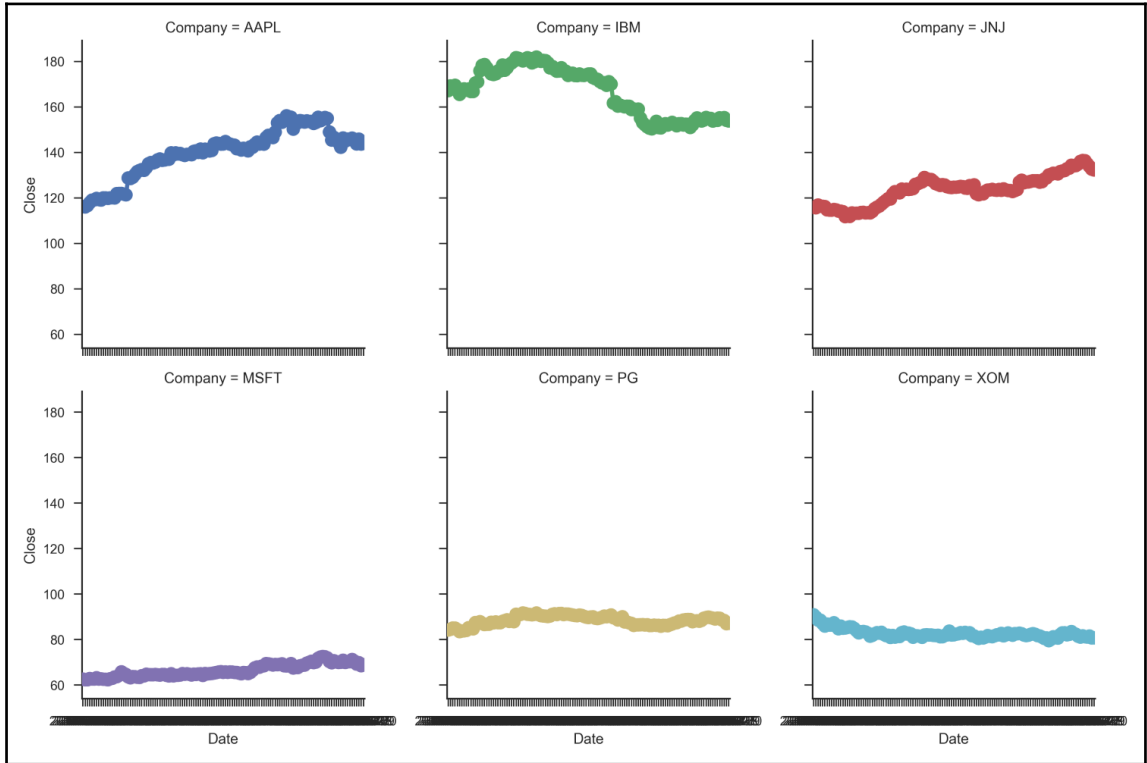


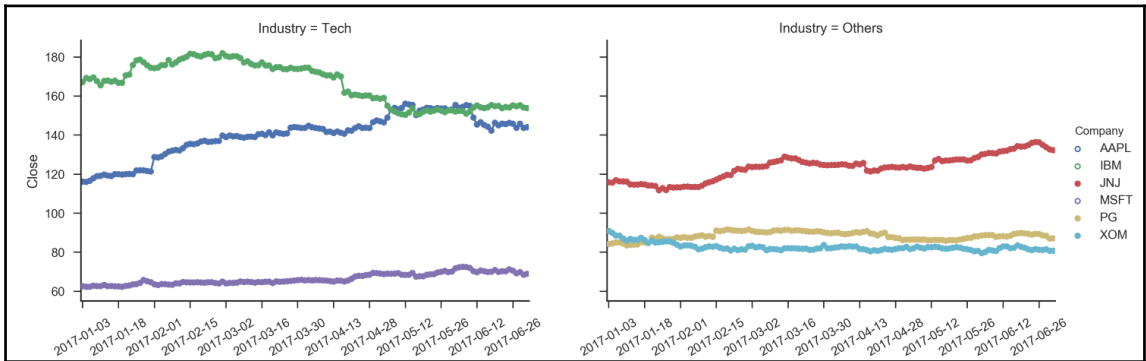
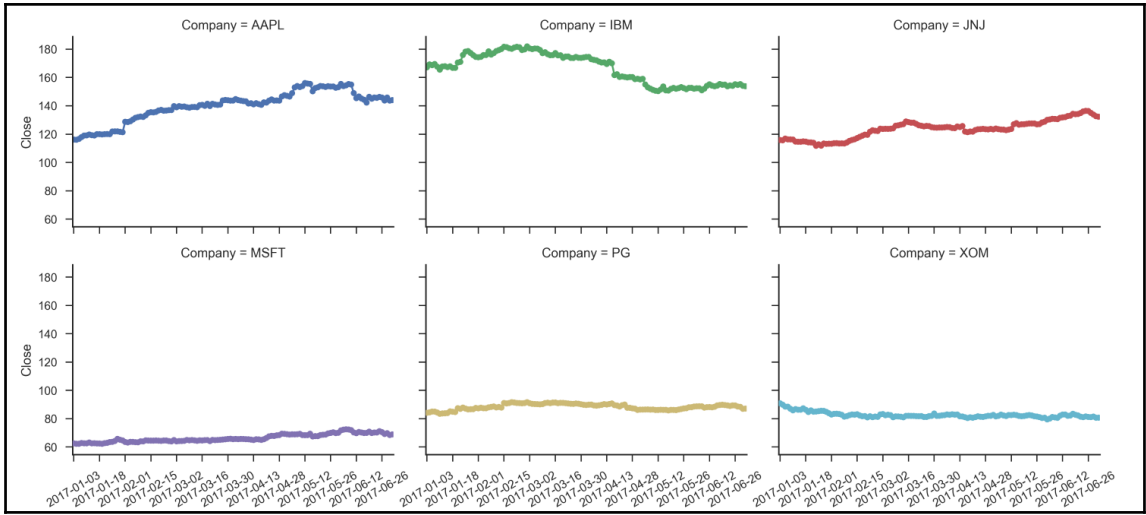


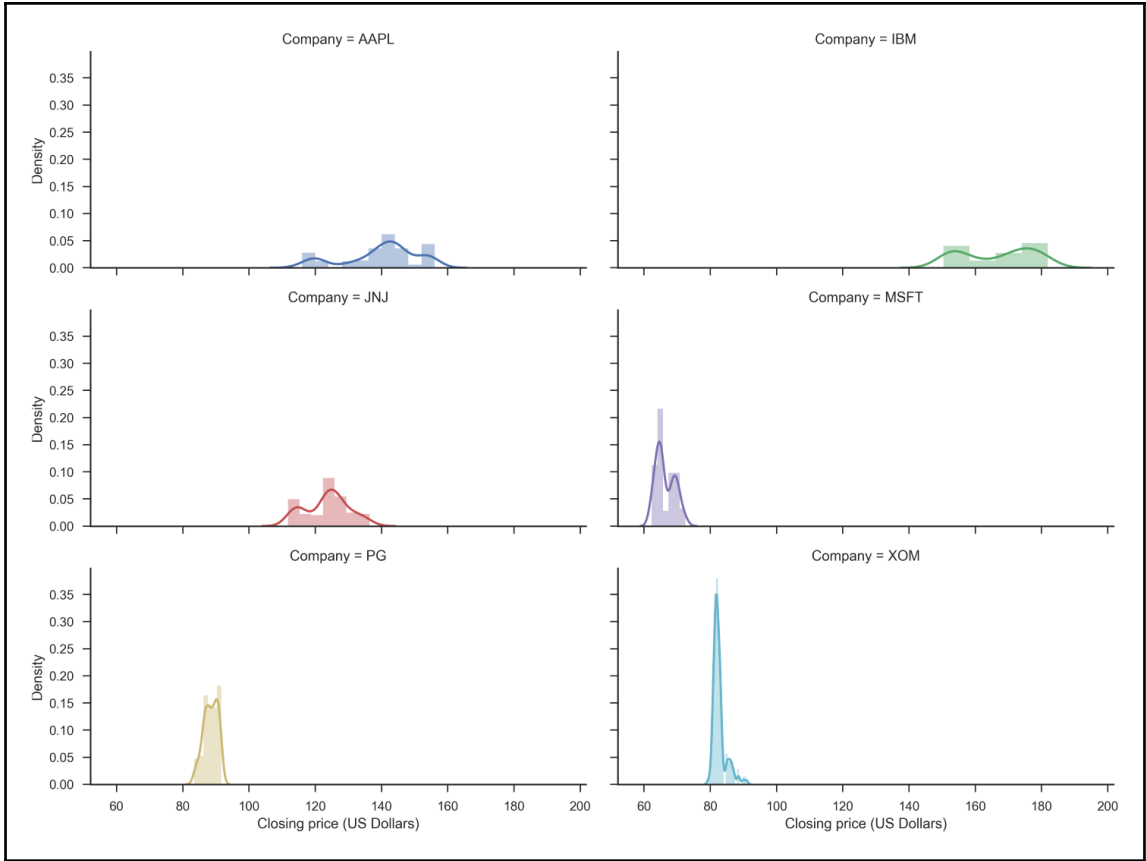


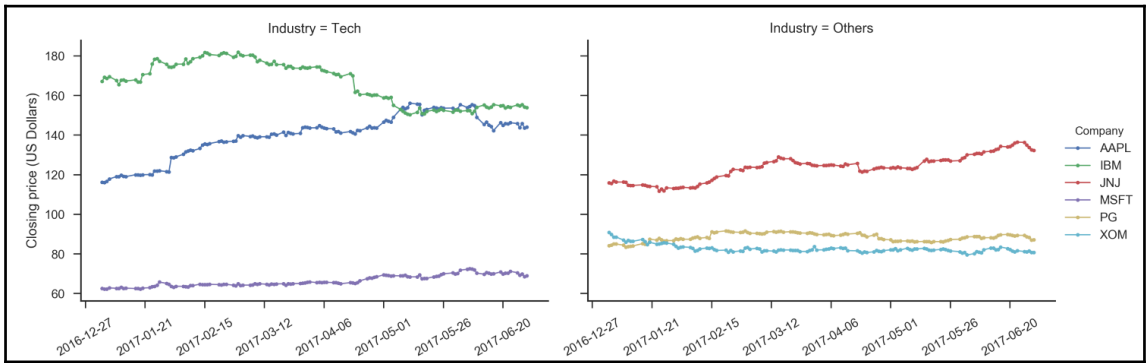
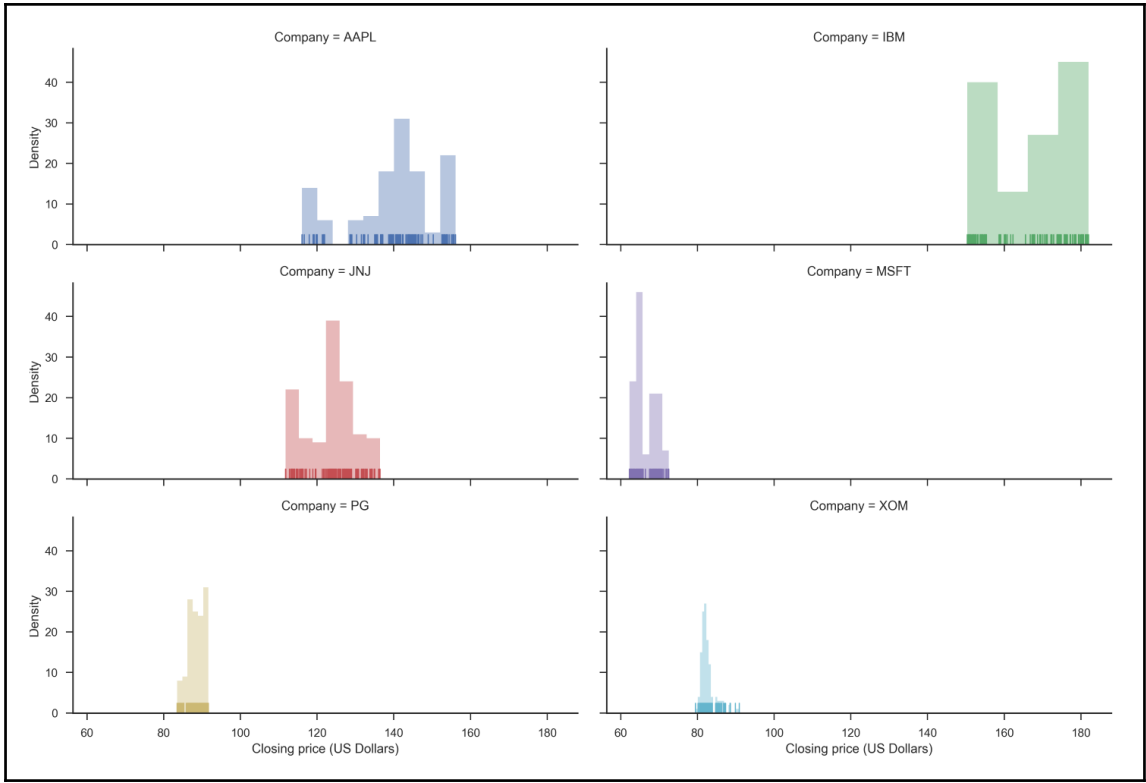


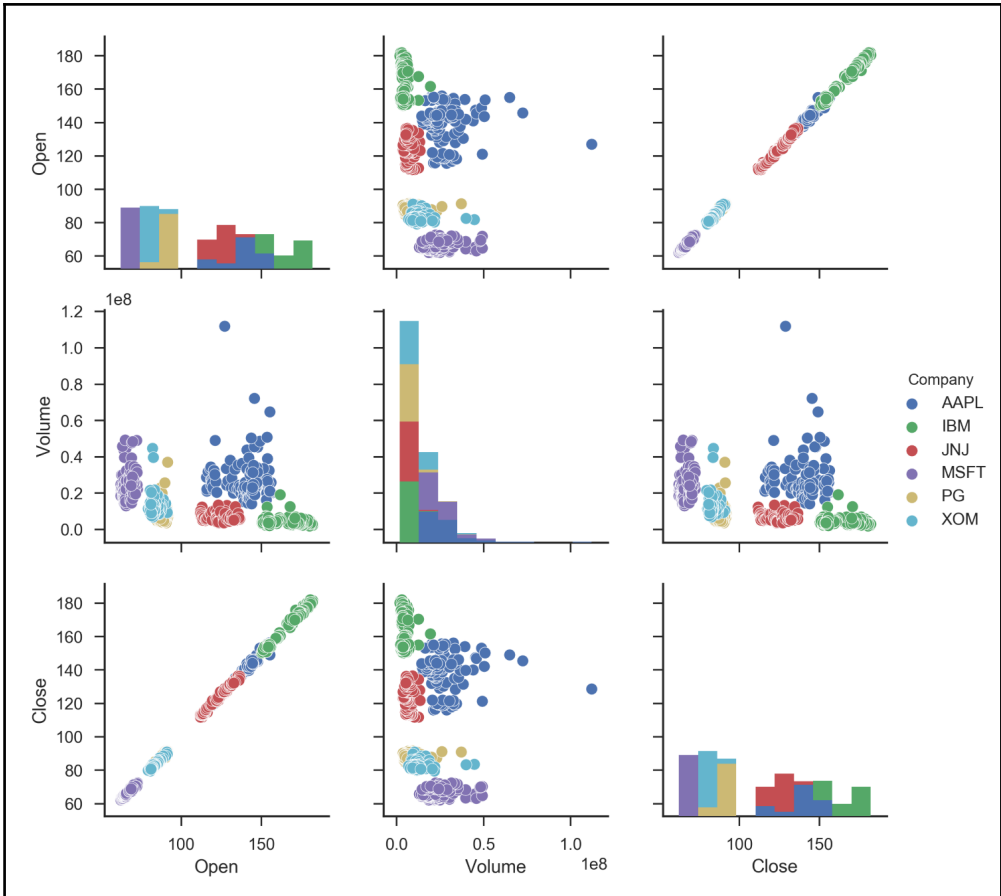
Chapter 5: Visualizing Multivariate Data

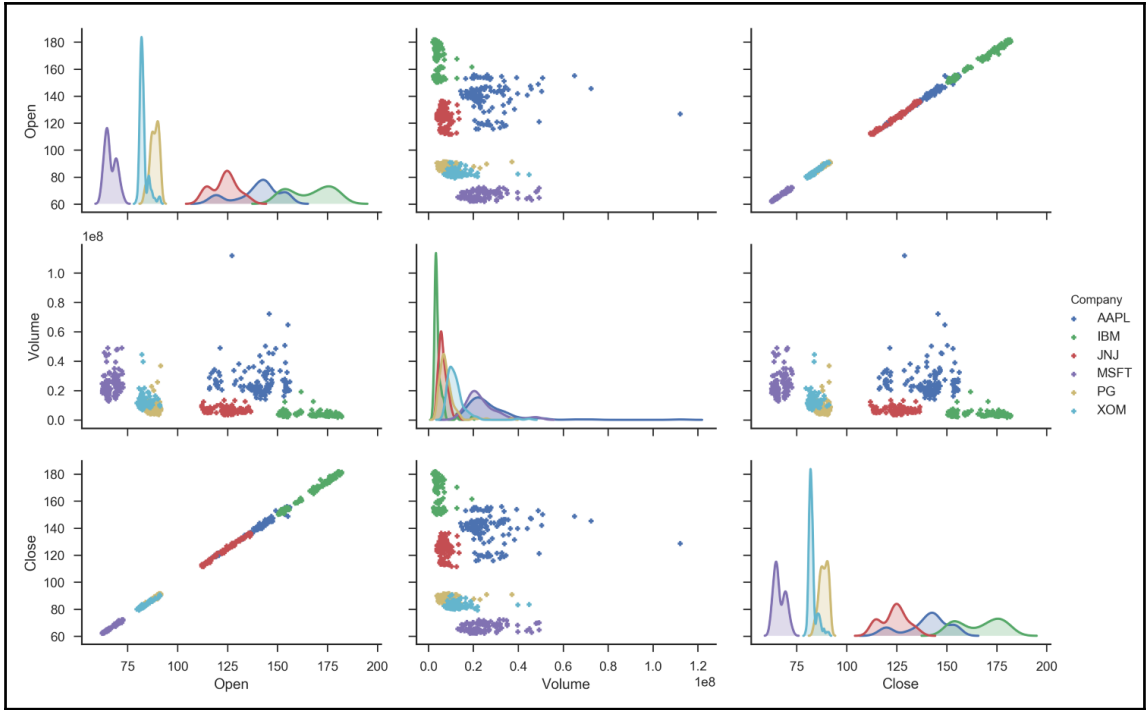


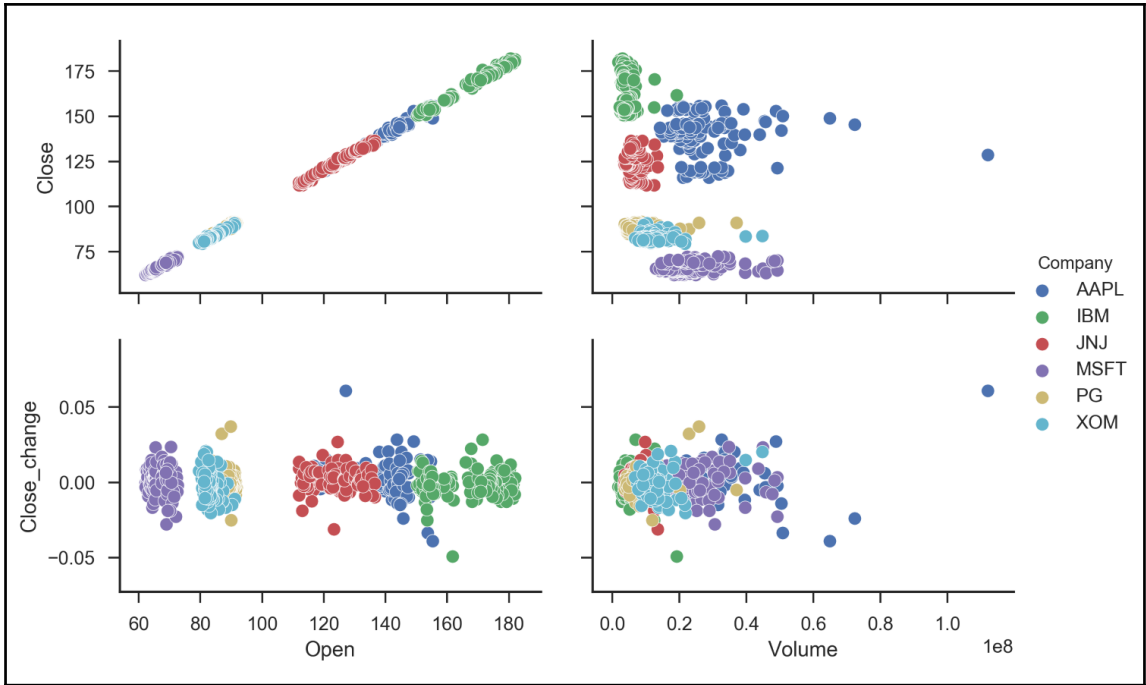


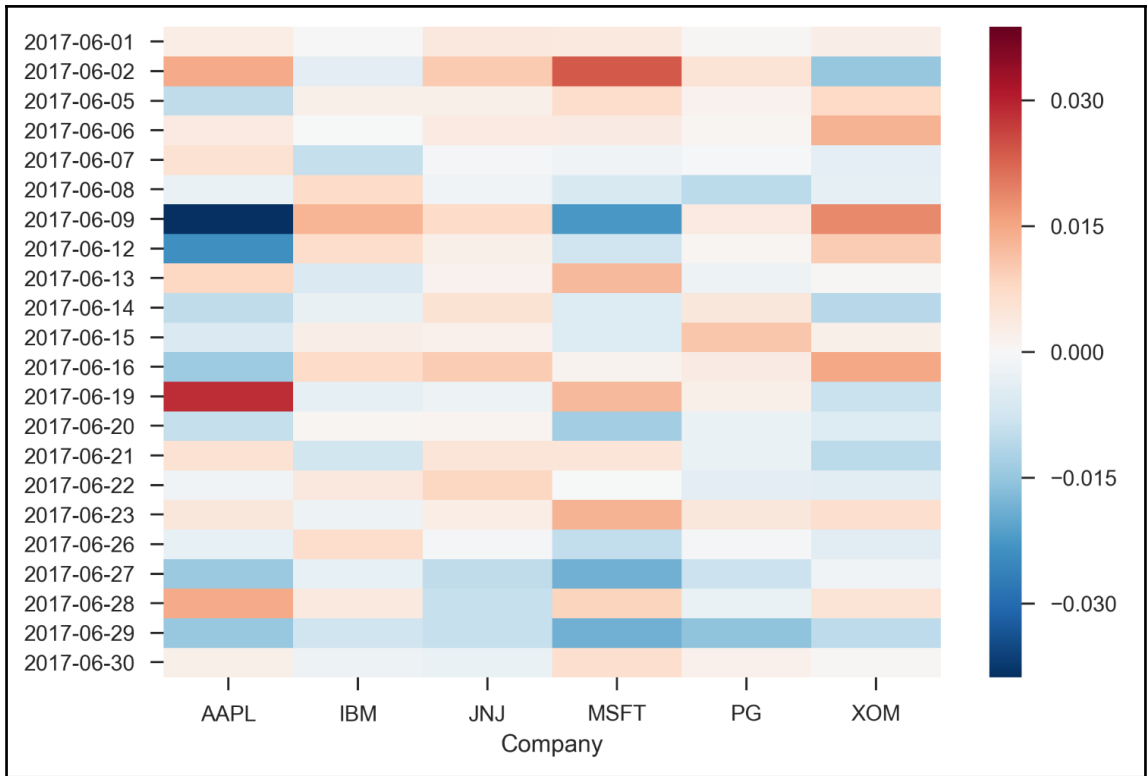


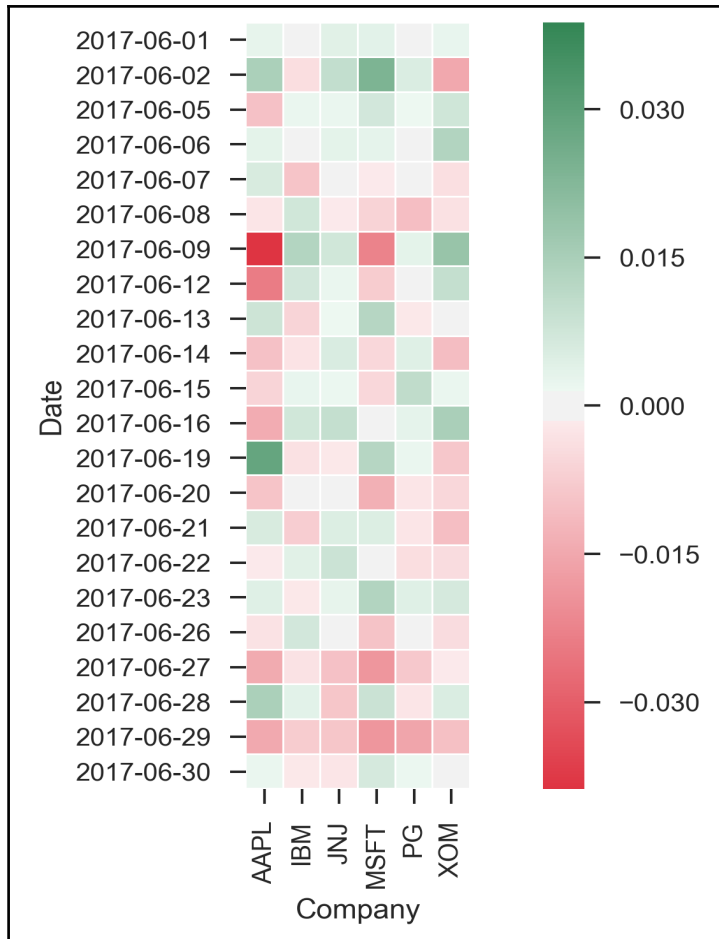




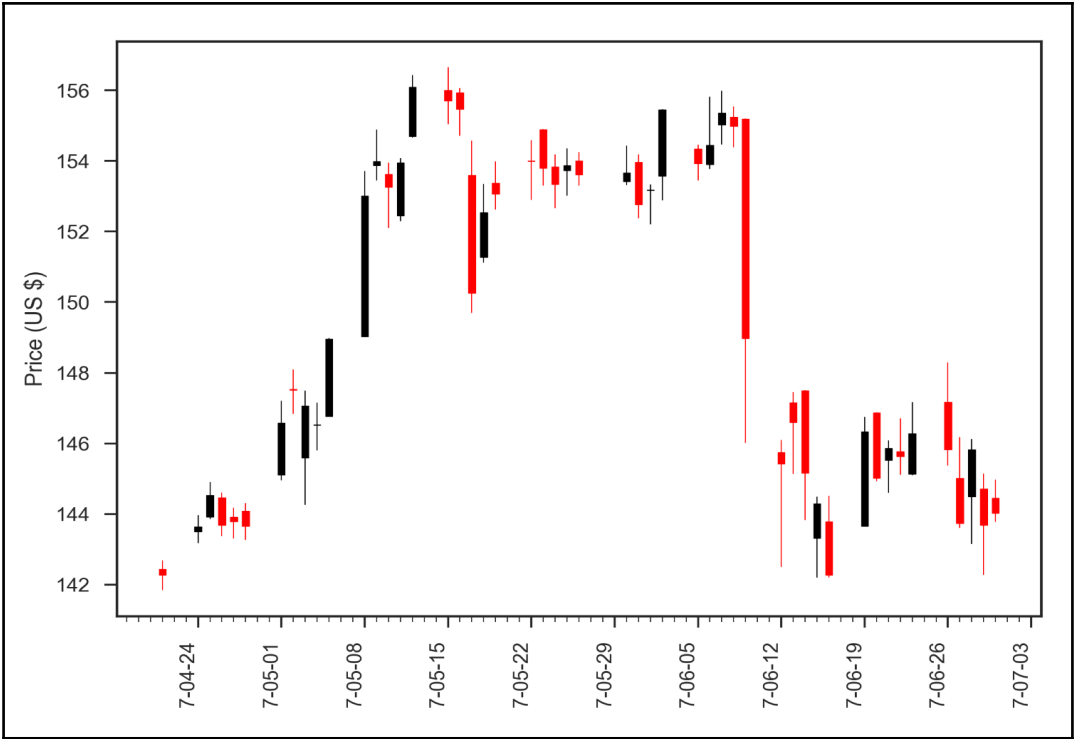


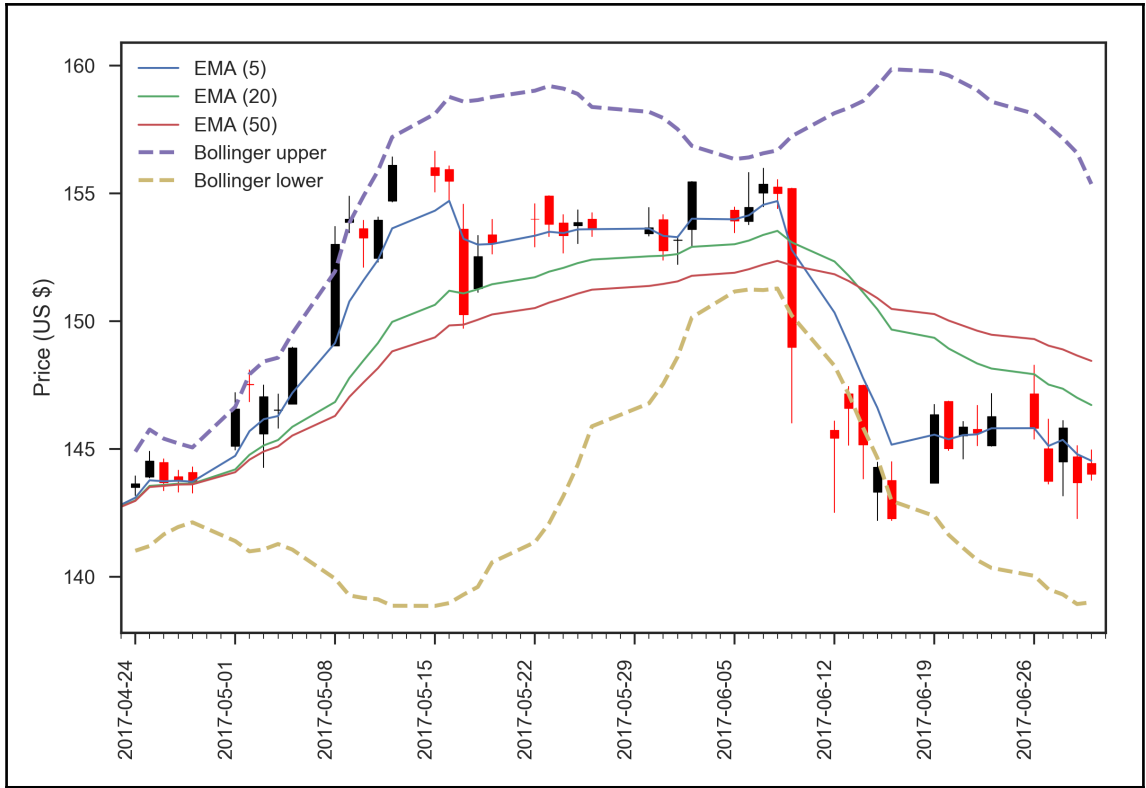


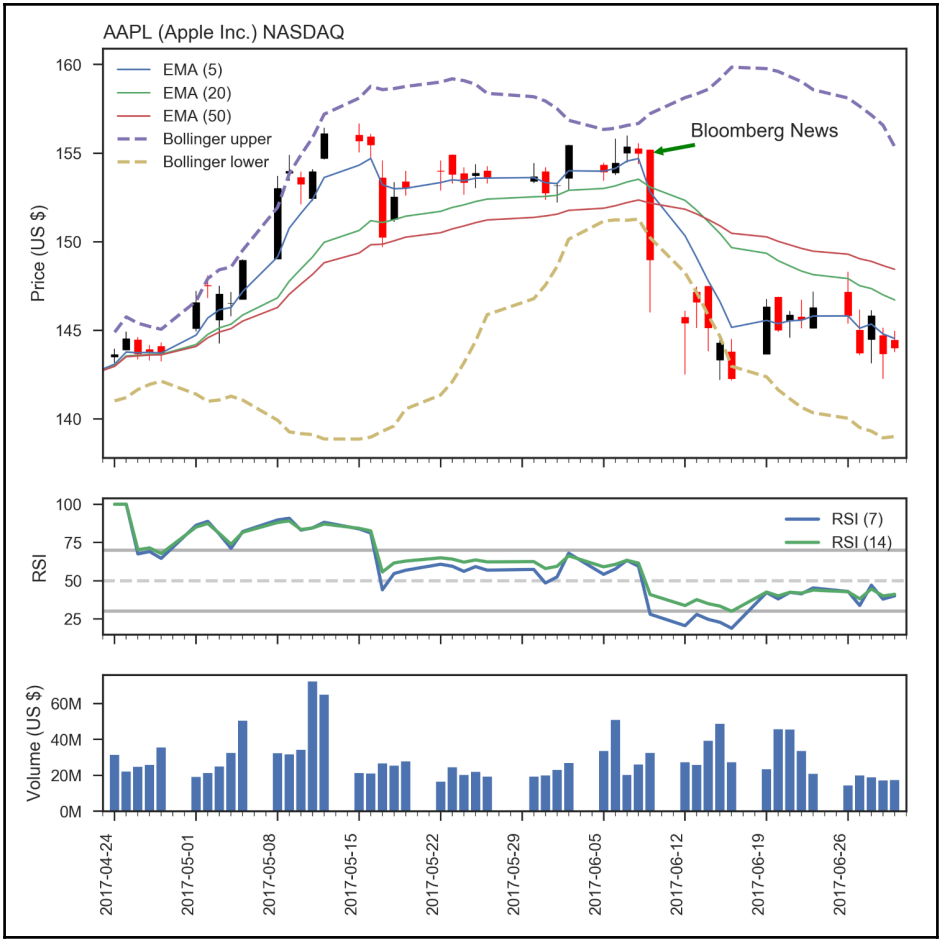


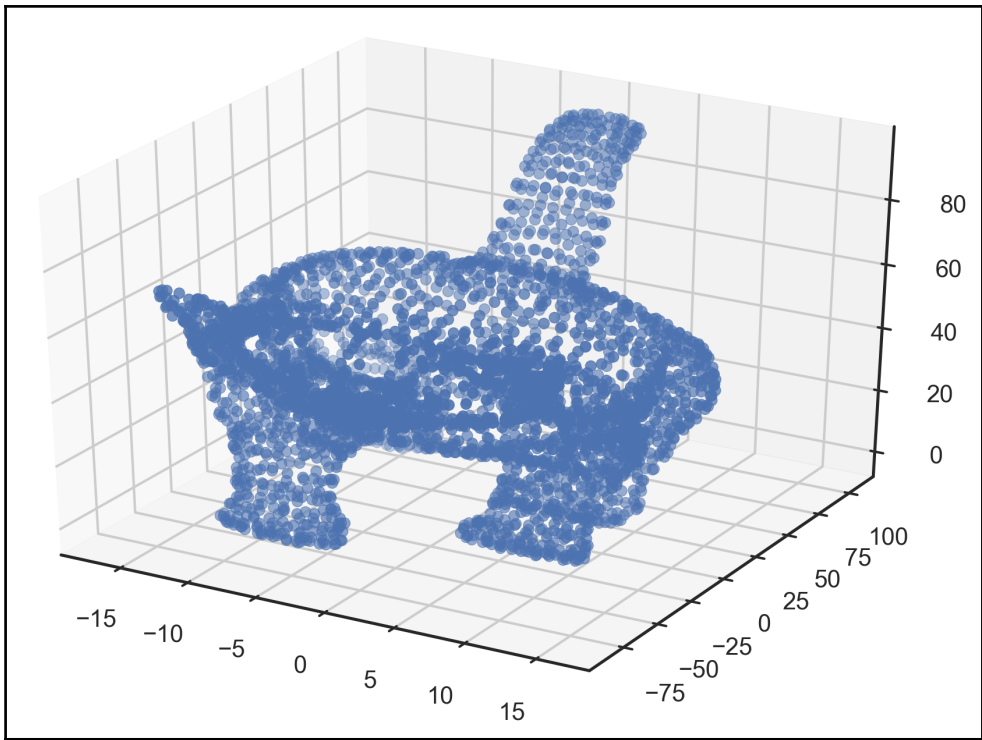


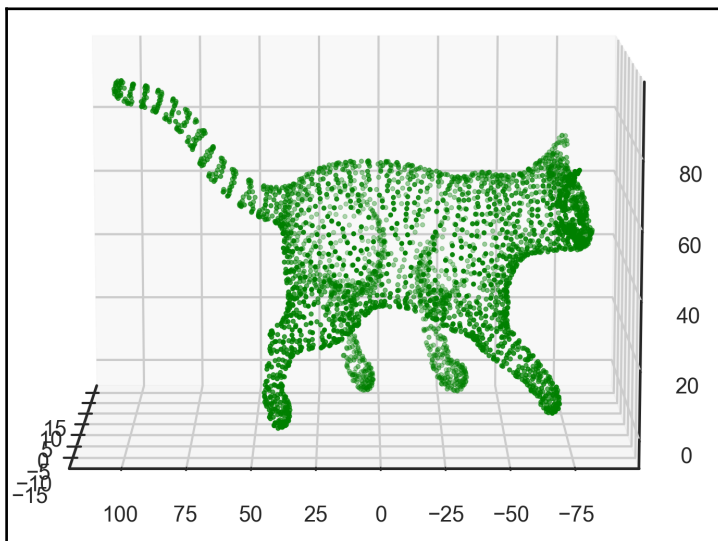
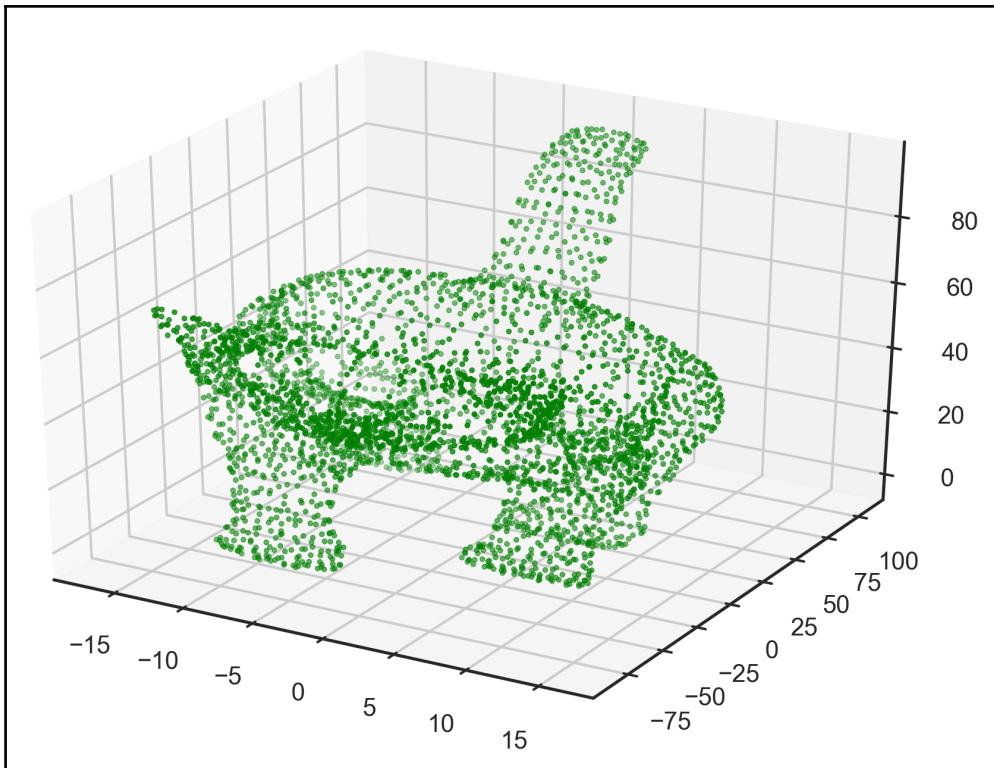
17-06-01	-0.27%	0.03%	0.41%	0.37%	0.05%	0.25%
17-06-02	1.48%	-0.41%	1.01%	2.37%	0.52%	-1.49%
17-06-05	-0.98%	0.24%	0.22%	0.72%	0.17%	0.78%
17-06-06	0.34%	-0.03%	0.36%	0.33%	0.07%	1.36%
17-06-07	0.60%	-0.91%	-0.06%	-0.18%	-0.03%	-0.37%
17-06-08	-0.24%	0.74%	-0.15%	-0.61%	-1.04%	-0.36%
17-06-09	-3.88%	1.31%	0.75%	-2.27%	0.35%	1.87%
17-06-12	-2.39%	0.70%	0.22%	-0.77%	0.09%	0.97%
17-06-13	0.80%	-0.60%	0.15%	1.25%	-0.20%	0.04%
17-06-14	-0.98%	-0.29%	0.57%	-0.54%	0.43%	-1.07%
17-06-15	-0.60%	0.27%	0.20%	-0.53%	1.06%	0.23%
17-06-16	-1.40%	0.75%	0.98%	0.14%	0.31%	1.50%
17-06-19	2.86%	-0.35%	-0.21%	1.24%	0.22%	-0.87%
17-06-20	-0.91%	0.07%	0.11%	-1.35%	-0.26%	-0.54%
17-06-21	0.59%	-0.75%	0.51%	0.51%	-0.26%	-1.06%
17-06-22	-0.16%	0.40%	0.85%	-0.01%	-0.41%	-0.44%
17-06-23	0.45%	-0.19%	0.28%	1.35%	0.44%	0.65%
17-06-26	-0.31%	0.73%	-0.07%	-0.95%	-0.07%	-0.45%
17-06-27	-1.43%	-0.31%	-0.98%	-1.87%	-0.84%	-0.16%
17-06-28	1.46%	0.37%	-0.88%	0.85%	-0.27%	0.52%
17-06-29	-1.47%	-0.77%	-0.88%	-1.88%	-1.56%	-1.02%
17-06-30	0.24%	-0.19%	-0.26%	0.64%	0.18%	0.04%
	AAPL	IBM	JNJ	MSFT	PG	XOM
	Company					

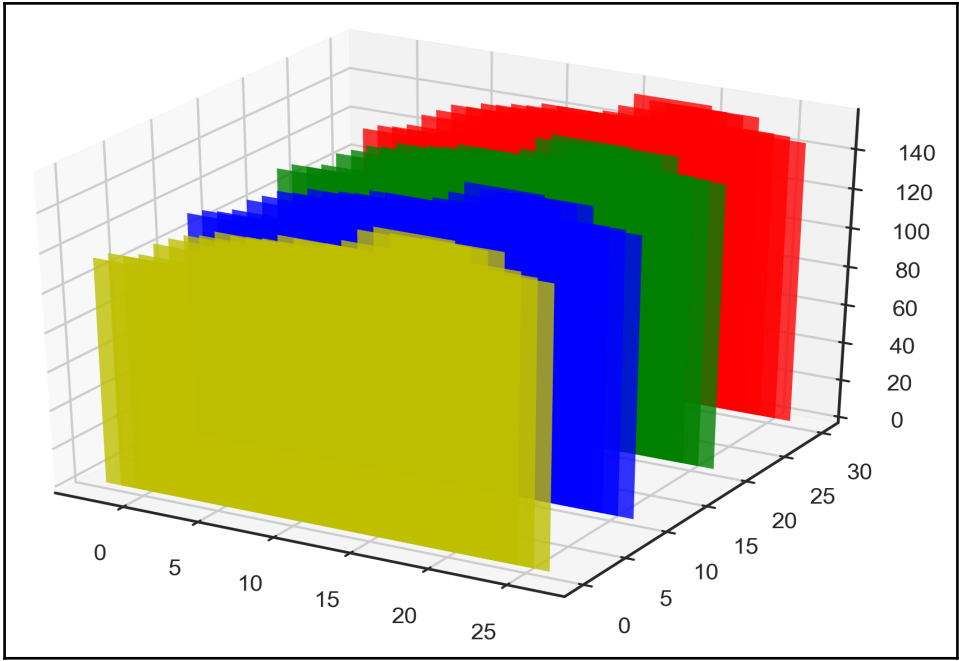


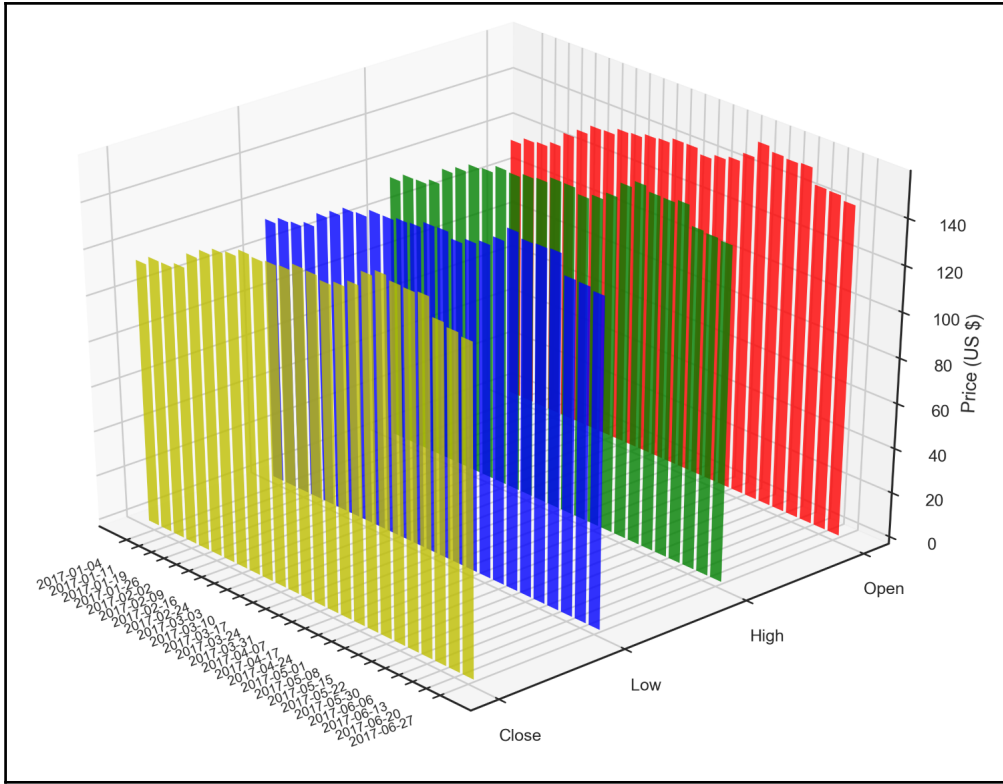


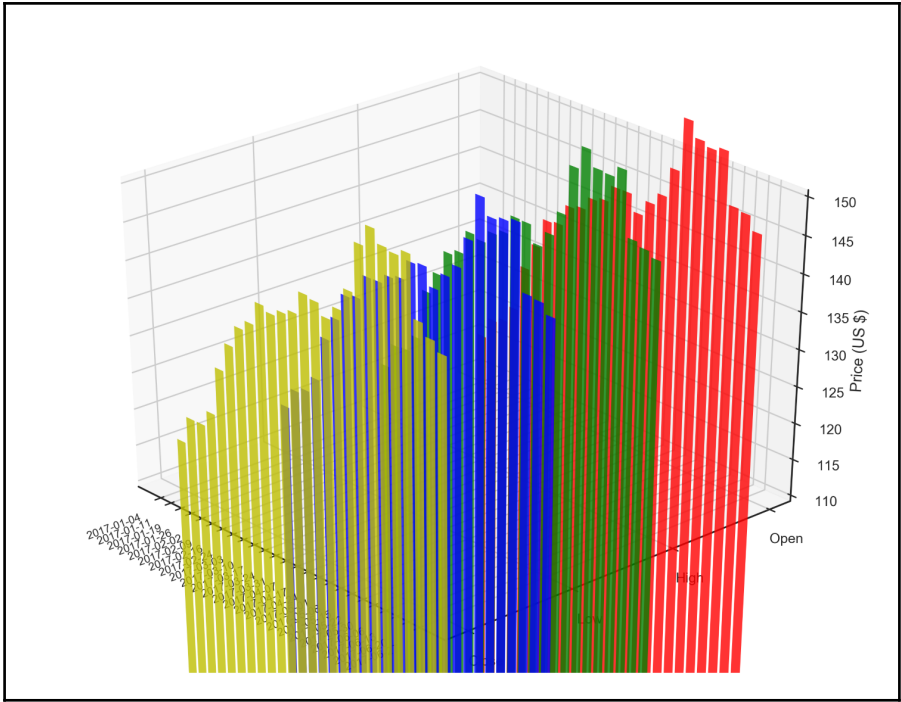


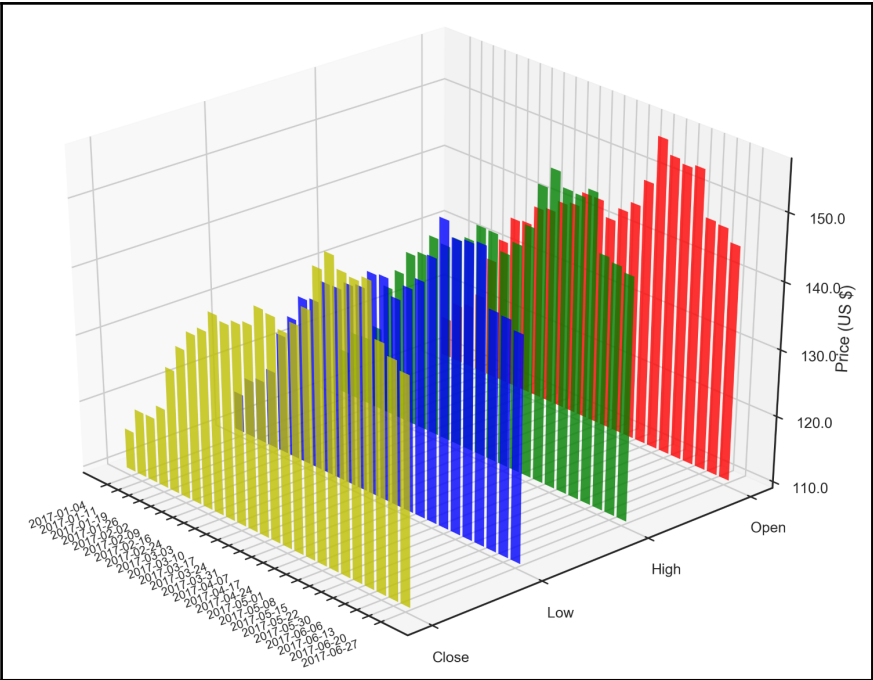












Chapter 6: Adding Interactivity and Animating Plots

The screenshot shows a web browser window displaying the Bureau of Labor Statistics website. The page title is "Unemployment rates and earnings by educational attainment, 2016". A table lists various educational attainment levels with their corresponding unemployment rates and median usual weekly earnings. A browser context menu is open over the table, showing options like Back, Forward, Reload, Save as..., Print..., Cast..., Translate to English, AdBlock, Take Webpage Screenshots Entirely - FireShot, View page source, and Inspect.

Educational attainment	Unemployment rate (%)	Median usual weekly
Doctoral degree	1.6	
Professional degree	1.6	
Master's degree	2.4	
Bachelor's degree	2.7	
Associate's degree	3.6	
Some college, no degree	4.4	
High school diploma	5.2	
Less than a high school diploma	7.4	
Total	4.0	

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: Current Population Survey, U.S. Department of Labor, U.S. Bureau of Labor Statistics.

These education categories reflect only the highest level of educational attainment. Training programs in the form of apprenticeships and other on-the-job training, which may allow for more information on training, see: https://www.bls.gov/emp/ep_education_training.

BLS has some data on the [employment status](#) of the civilian noninstitutional population 25 years and over by educational attainment, sex, race, and Hispanic origin online.

The Census Bureau also has some data on [educational attainment](#) online.

Unemployment rates and earnings by educational attainment

https://www.bls.gov/emp/ep_table_001.htm

UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

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Employment Projections

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Unemployment rates and earnings by educational attainment, 2016

Educational attainment	Unemployment rate (%)	Median usual weekly earnings (\$)
Doctoral degree	1.6	1,664
Professional degree	1.6	1,745
Master's degree	2.4	1,380
Bachelor's degree	2.7	1,156
Associate's degree	3.6	819
Some college, no degree	4.4	756
High school diploma	5.2	692
Less than a high school diploma	7.4	504
Total	4.0	885

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: Current Population Survey, U.S. Department of Labor, U.S. Bureau of Labor Statistics

Elements Console Sources Network Performance Memory Application Security Audits AdBlock

```

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  <tbody>
    <tr>
      <td id="secondary-nav-td">...</td>
      <td id="main-content-td" class="main-content">
        <div id="bodytext" class="verdana md">
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          <!-- no_index_end -->
          <!-- MAIN CONTENT BEGIN -->
          <h1>Unemployment rates and earnings by educational attainment</h1>
          <!-- ***** Table: ep_table_001 ***** -->
          <!-- ***** HEAD ***** -->
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            <caption>...</caption>
            <thead>...</thead>
            <tbody>...</tbody>
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      </td>
    </tr>
  </tbody>
</table>

```

Styles Computed Event Listeners

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  width: auto !important;
}
table.regular {
  width: 96%;
  background-color: #ffff;
  border: 1px solid #aaa;
  font-family: tahoma, arial, sans-serif;
  font-size: 92%;
  border-collapse: collapse;
  empty-cells: show;
  margin: 1em 0;
}

```

Unemployment rates and earnings by educational attainment

570.29 x 223.71

UNEMPLOYMENT RATES AND EARNINGS BY EDUCATIONAL ATTAINMENT, 2016

Educational attainment	Unemployment rate (%)	Median usual weekly earnings (\$)
Doctoral degree	1.6	1,664
Professional degree	1.6	1,745
Master's degree	2.4	1,380
Bachelor's degree	2.7	1,156
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Less than a high school diploma	7.4	504
Total	4.0	885

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.
Source: Current Population Survey, U.S. Department of Labor, U.S. Bureau of Labor Statistics

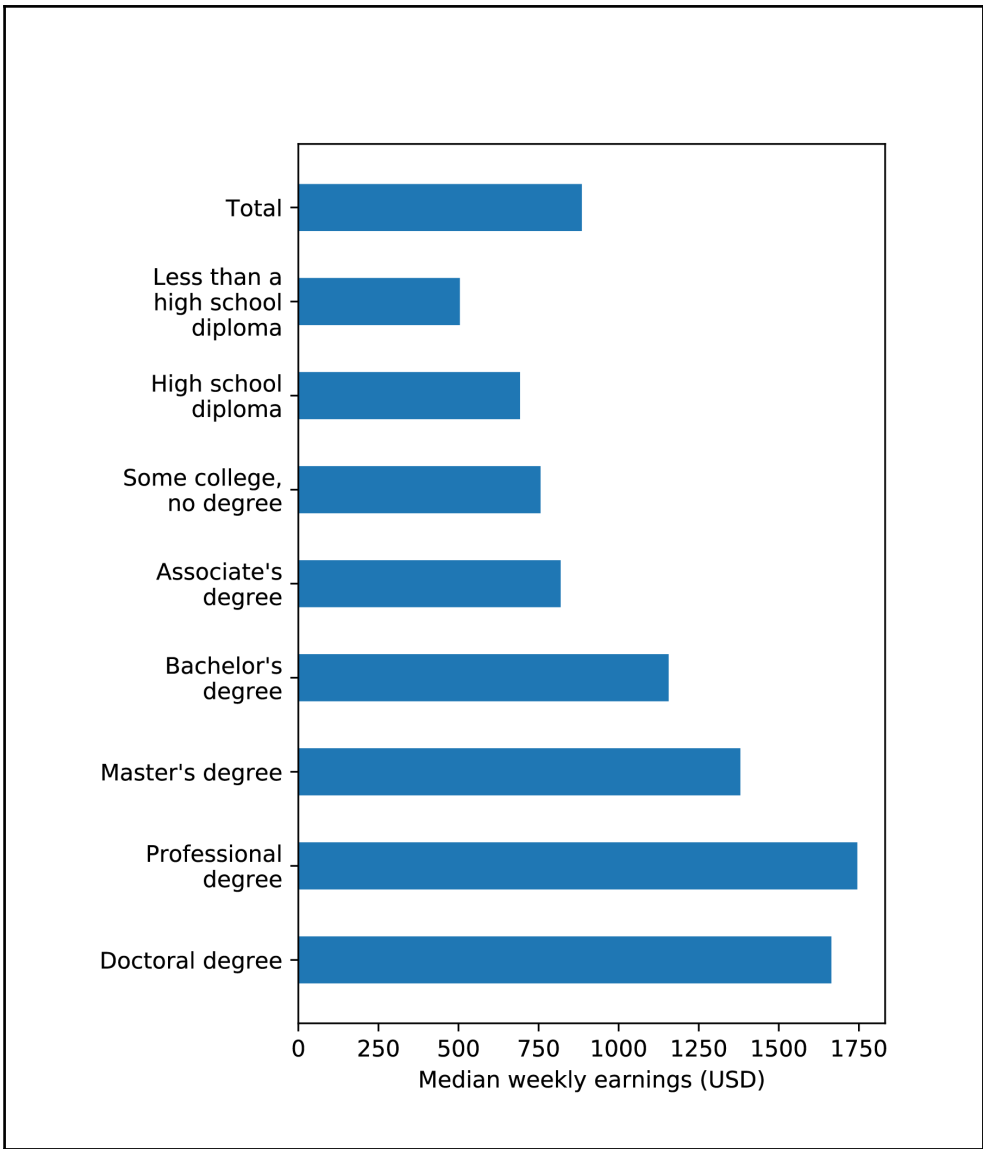
UNEMPLOYMENT RATES AND EARNINGS BY EDUCATIONAL ATTAINMENT, 2016

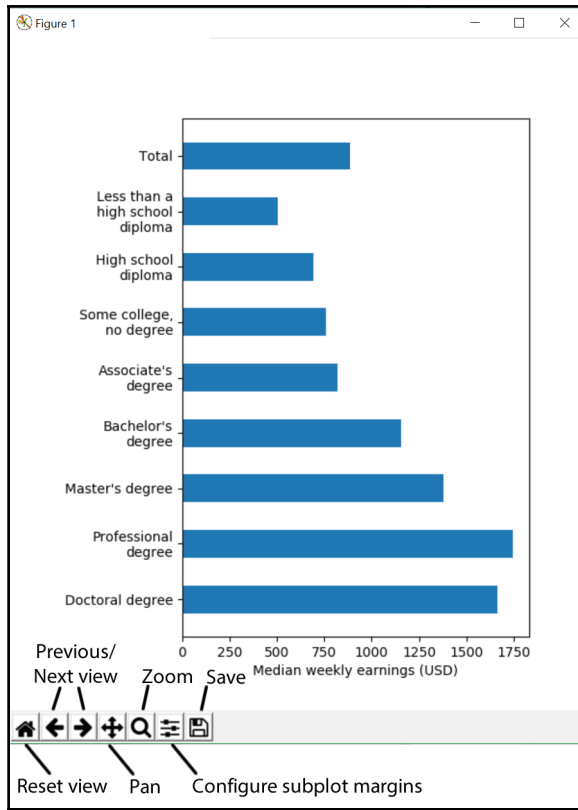
Table: ep_table_001

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      <th scope="c"><strong>Unemployment rate (%)</strong></th>
      <th scope="c"><strong>Median usual weekly earnings ($)</strong></th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>Doctoral degree</td>
      <td>1.6</td>
      <td>1,664</td>
    </tr>
    <tr>
      <td>Professional degree</td>
      <td>1.6</td>
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      <td>Master's degree</td>
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      <td>Bachelor's degree</td>
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      <td>Some college, no degree</td>
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      <td>Less than a high school diploma</td>
      <td>7.4</td>
      <td>504</td>
    </tr>
    <tr>
      <td>Total</td>
      <td>4.0</td>
      <td>885</td>
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</table>

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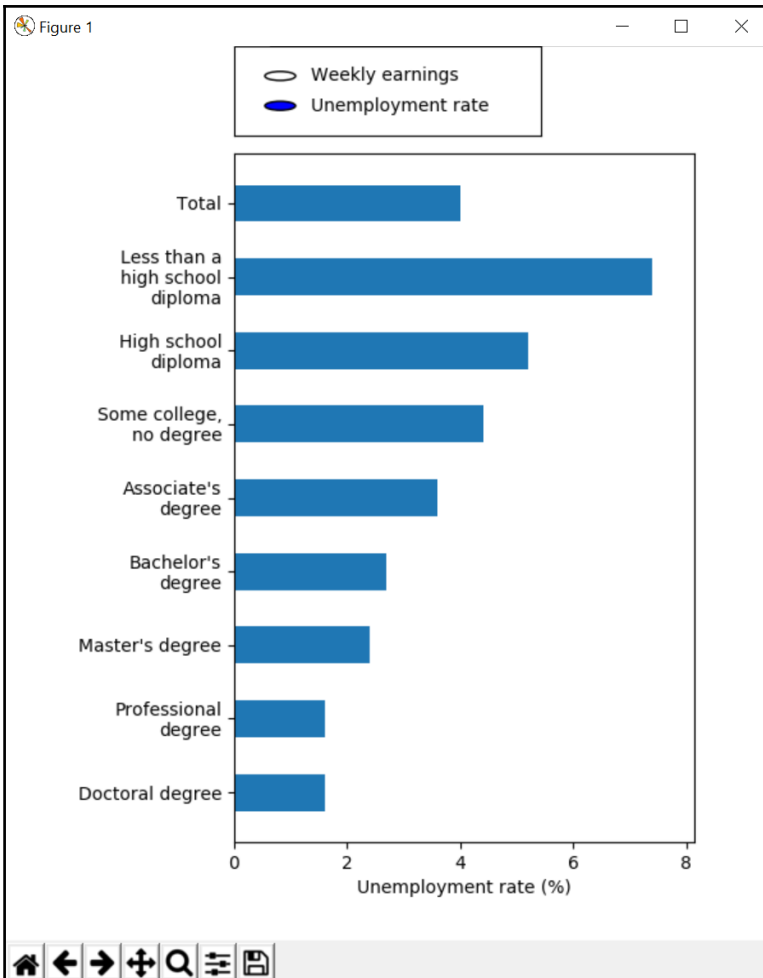
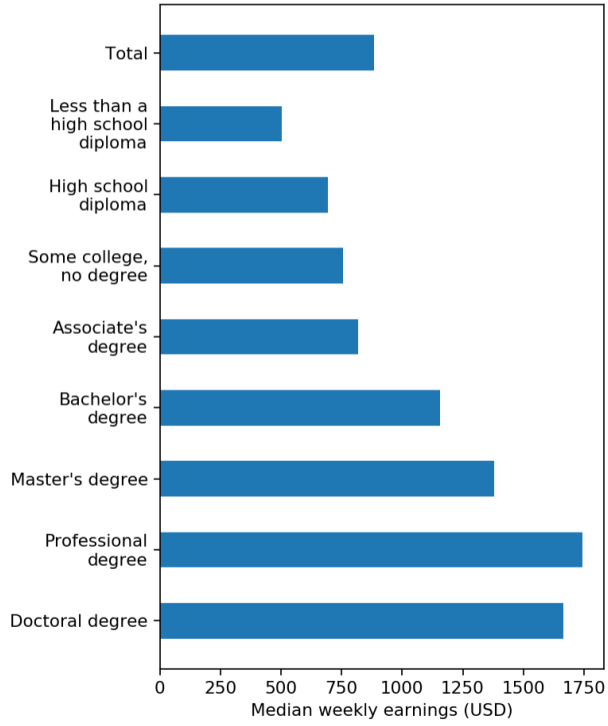
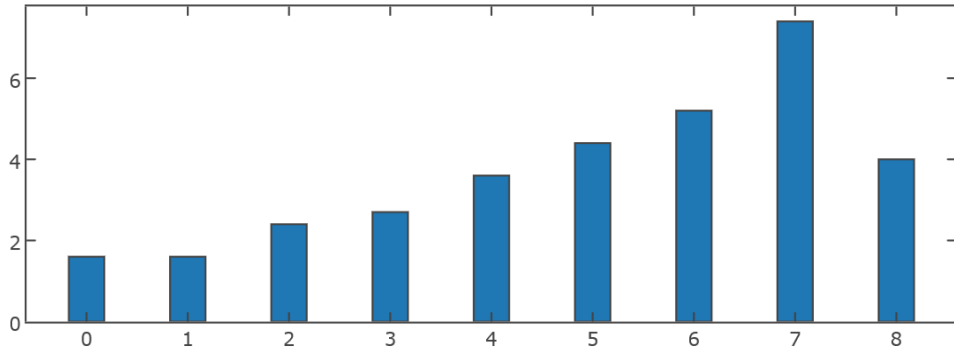
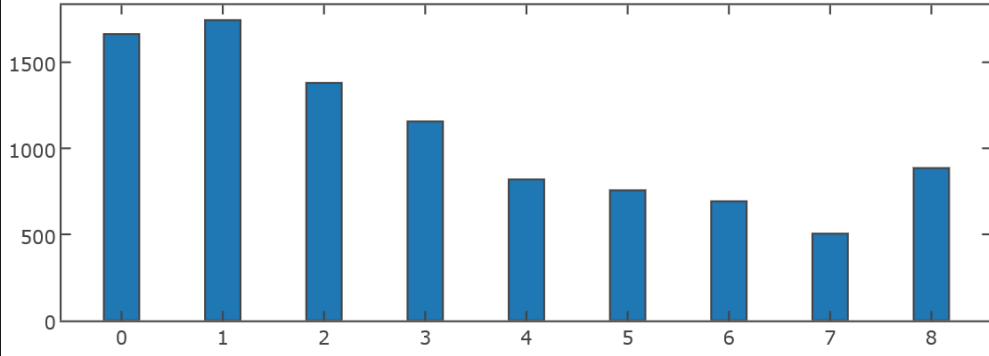


Figure 1



x=1665.36 y=




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3.3.2	32-bit	Shared
		Dev

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System

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- Advanced system settings**

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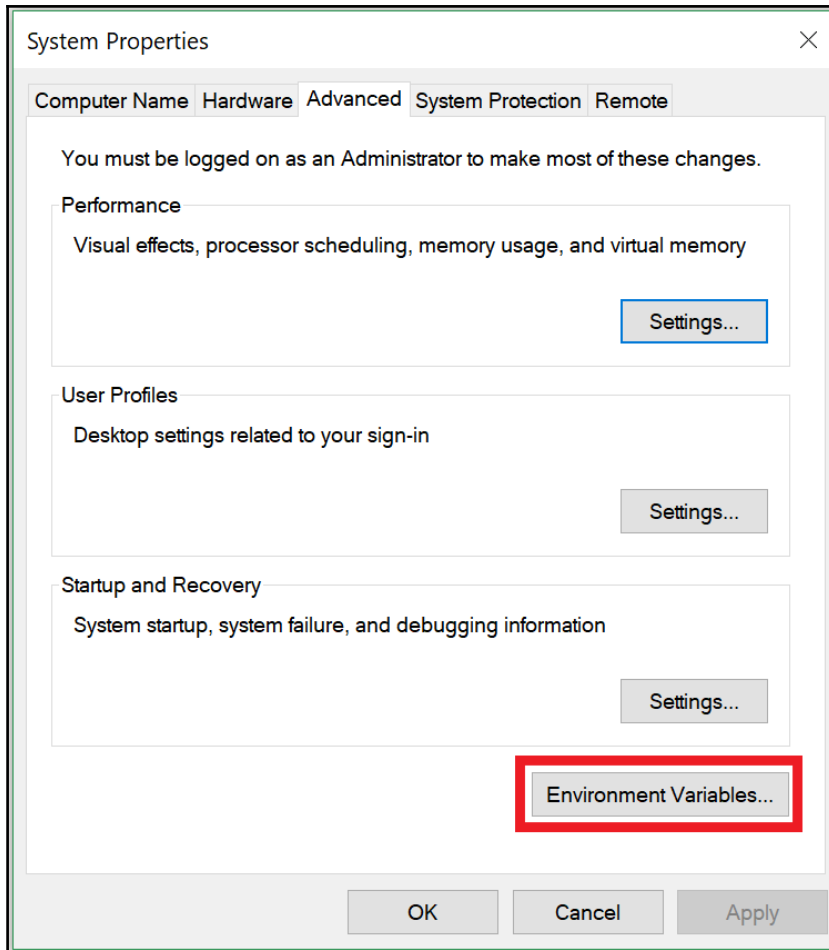
Windows edition

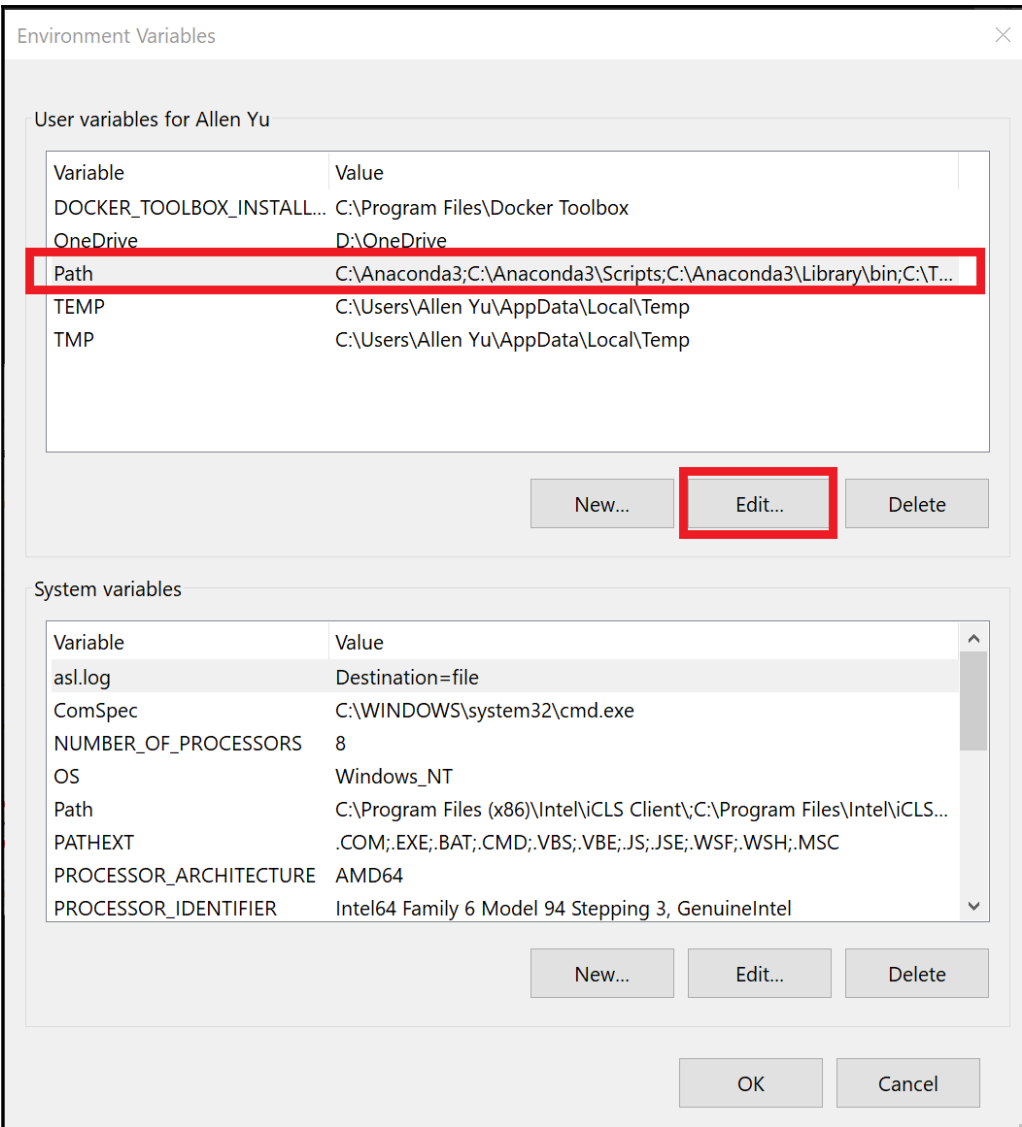
Windows 10 Enterprise

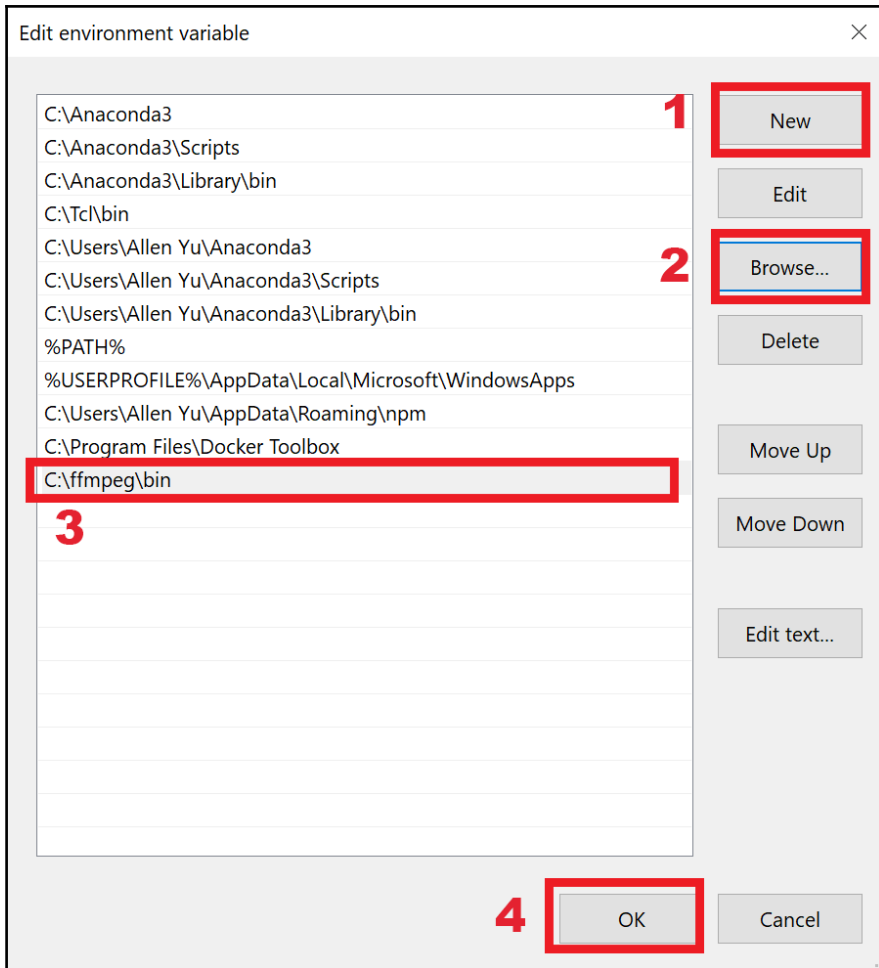
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System

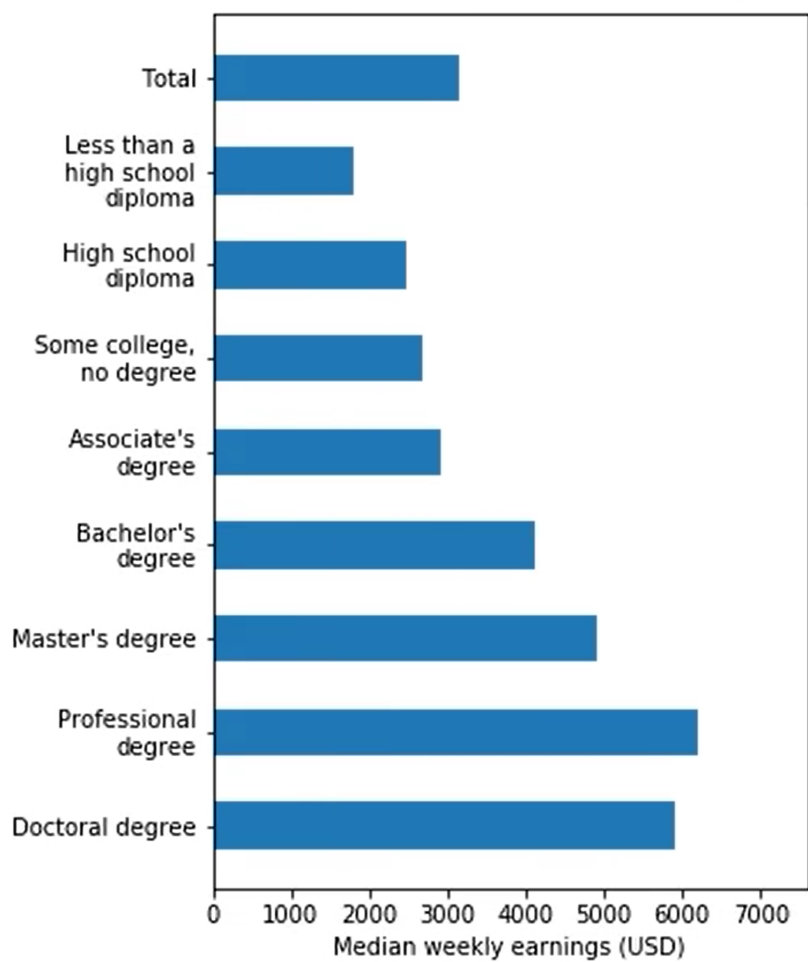
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Installed memory (RAM):	32.0 GB
System type:	64-bit Operating System, x64-based processor
Pen and Touch:	No Pen or Touch Input is available for this Display



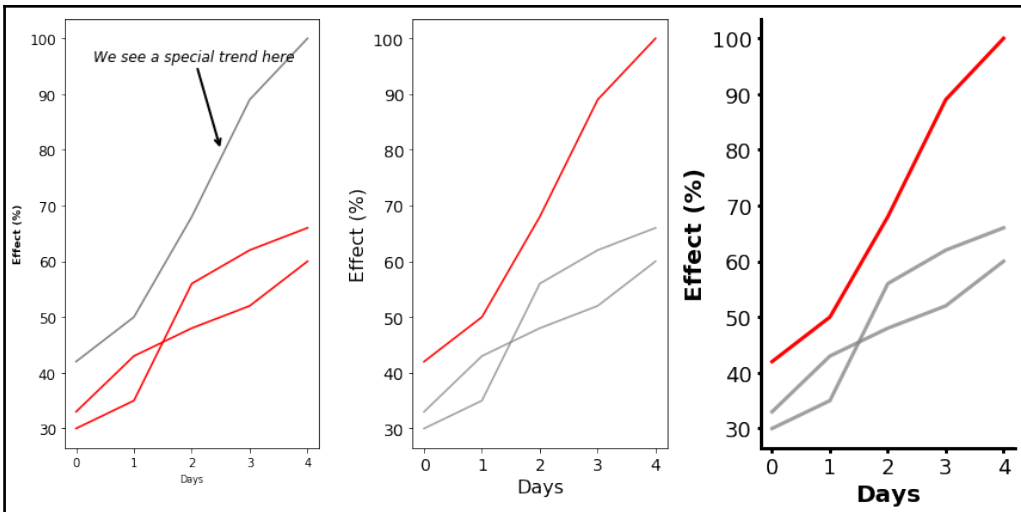
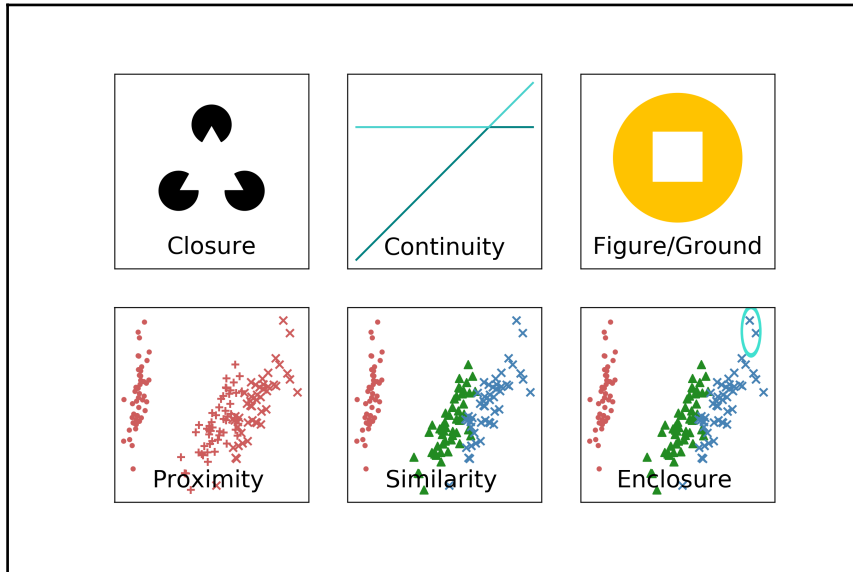


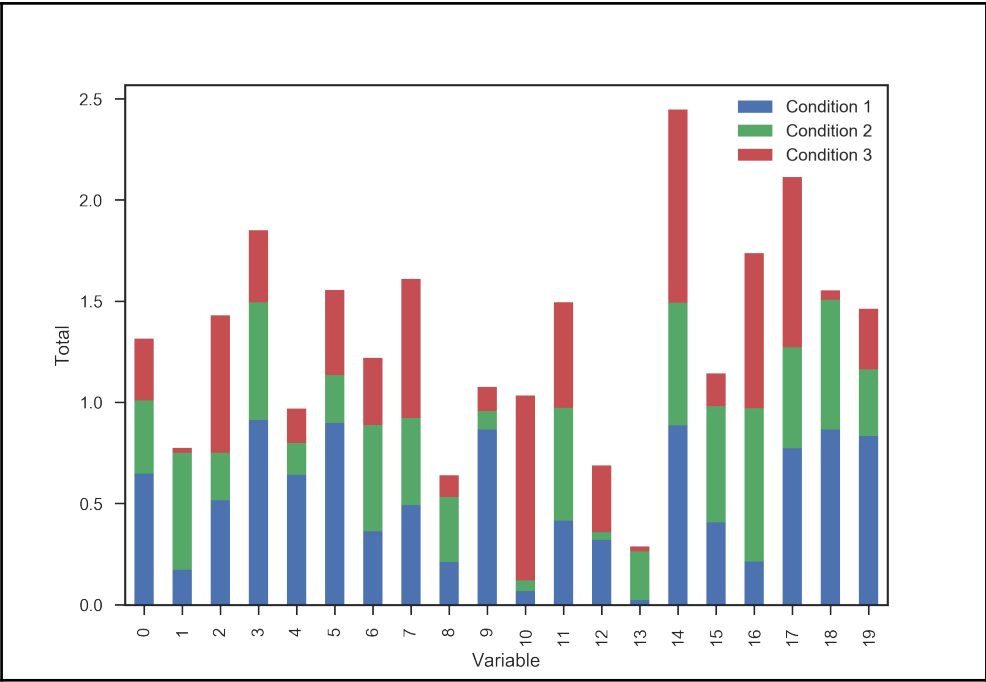


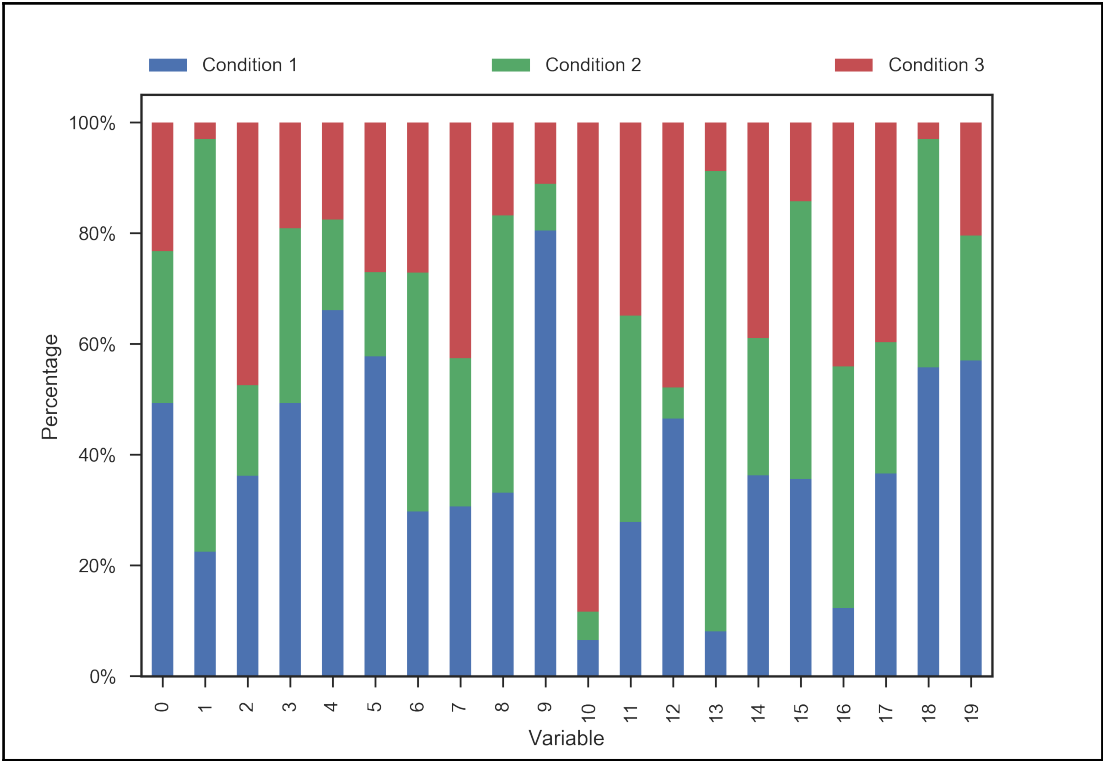
Median weekly earnings (USD) in 2042

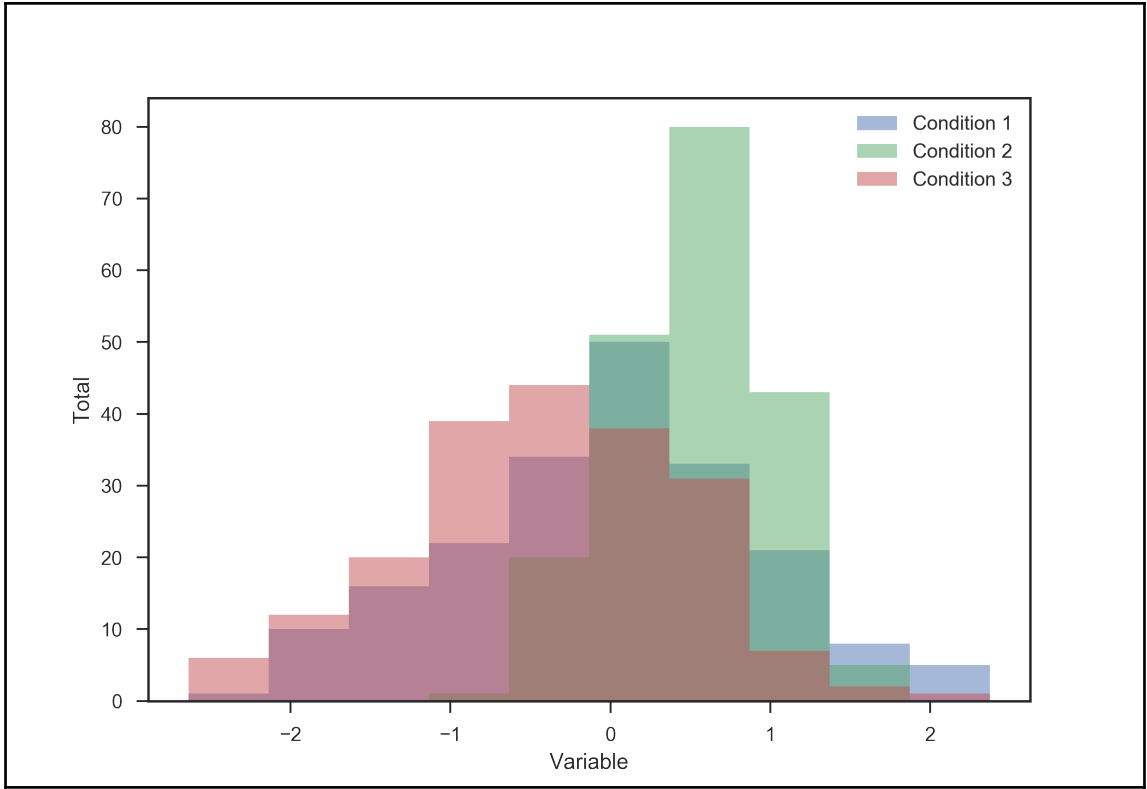


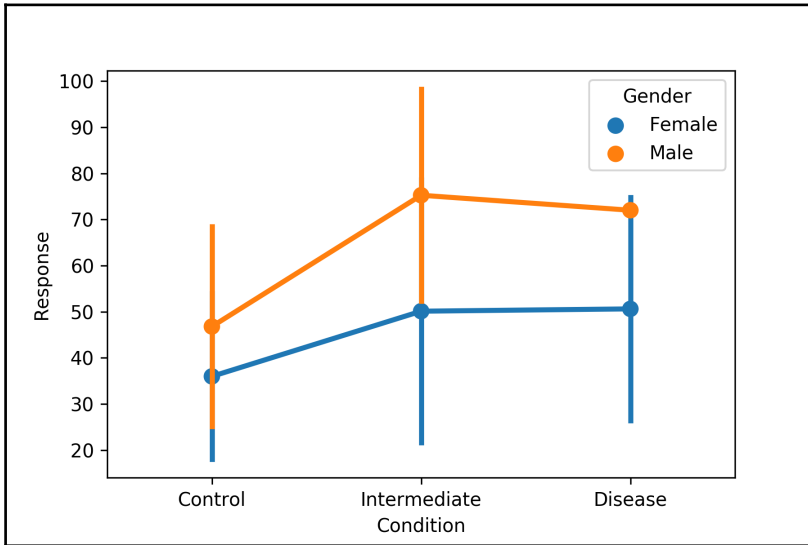
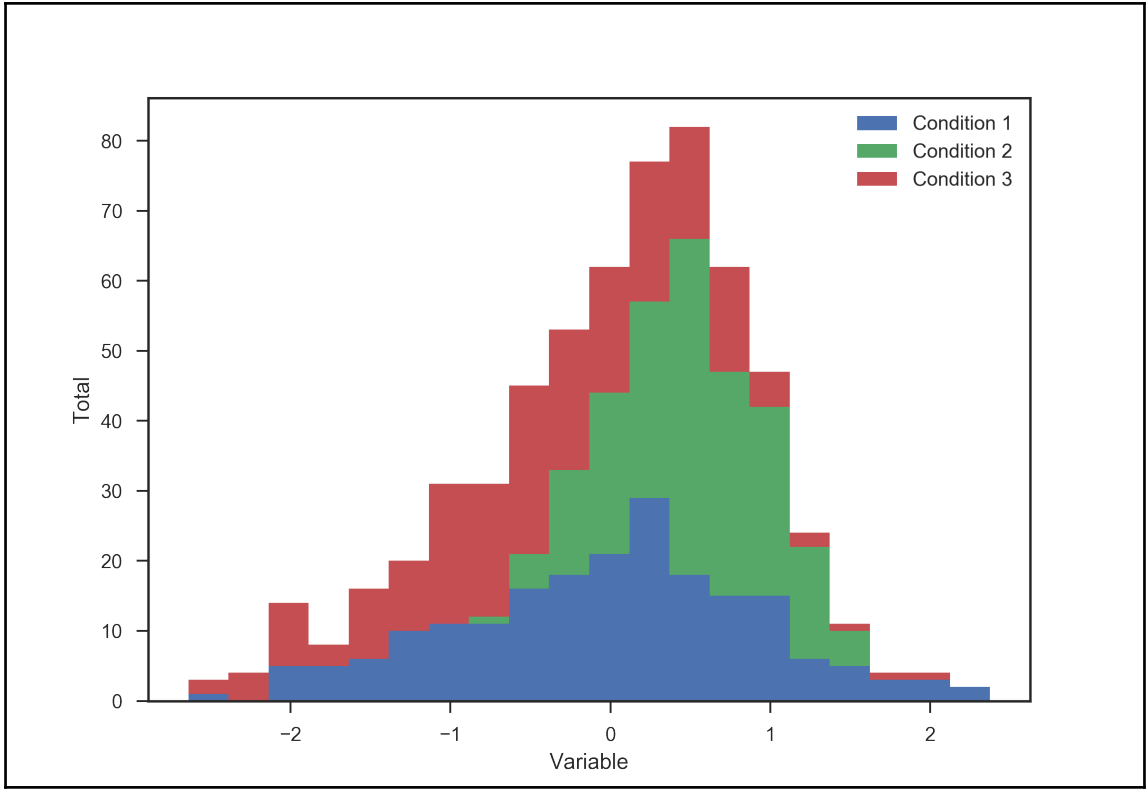
Chapter 7: A Practical Guide to Scientific Plotting

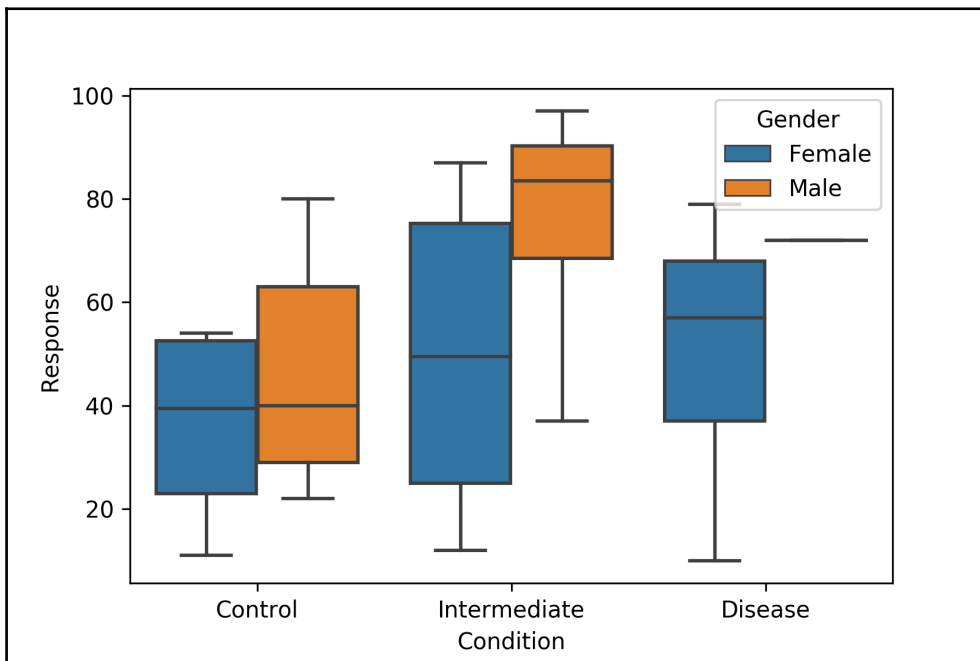
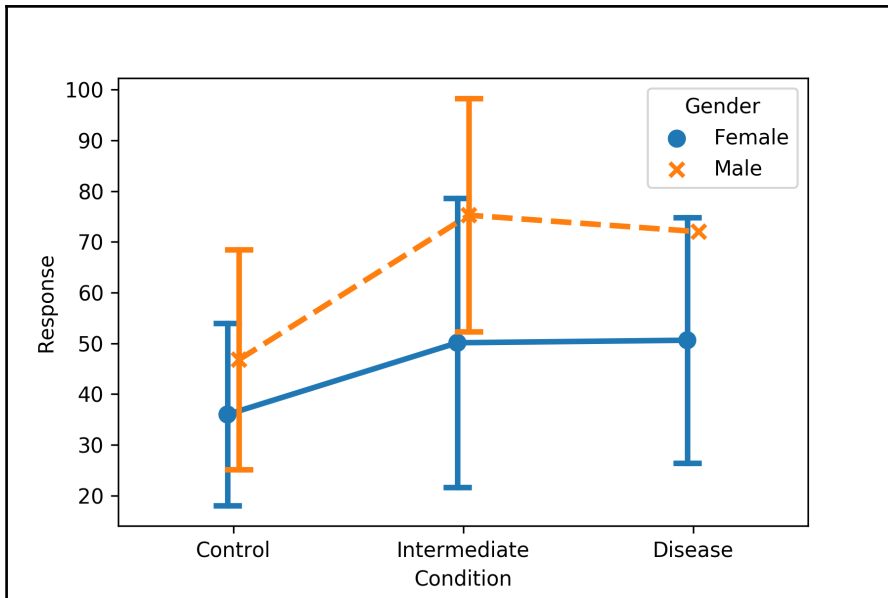


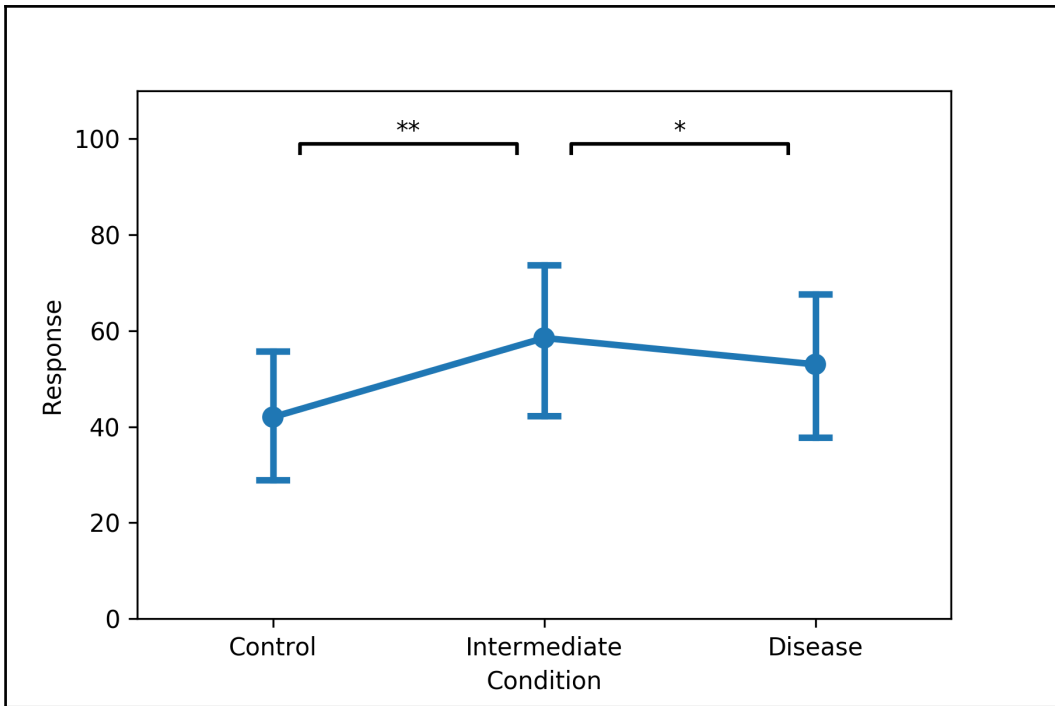




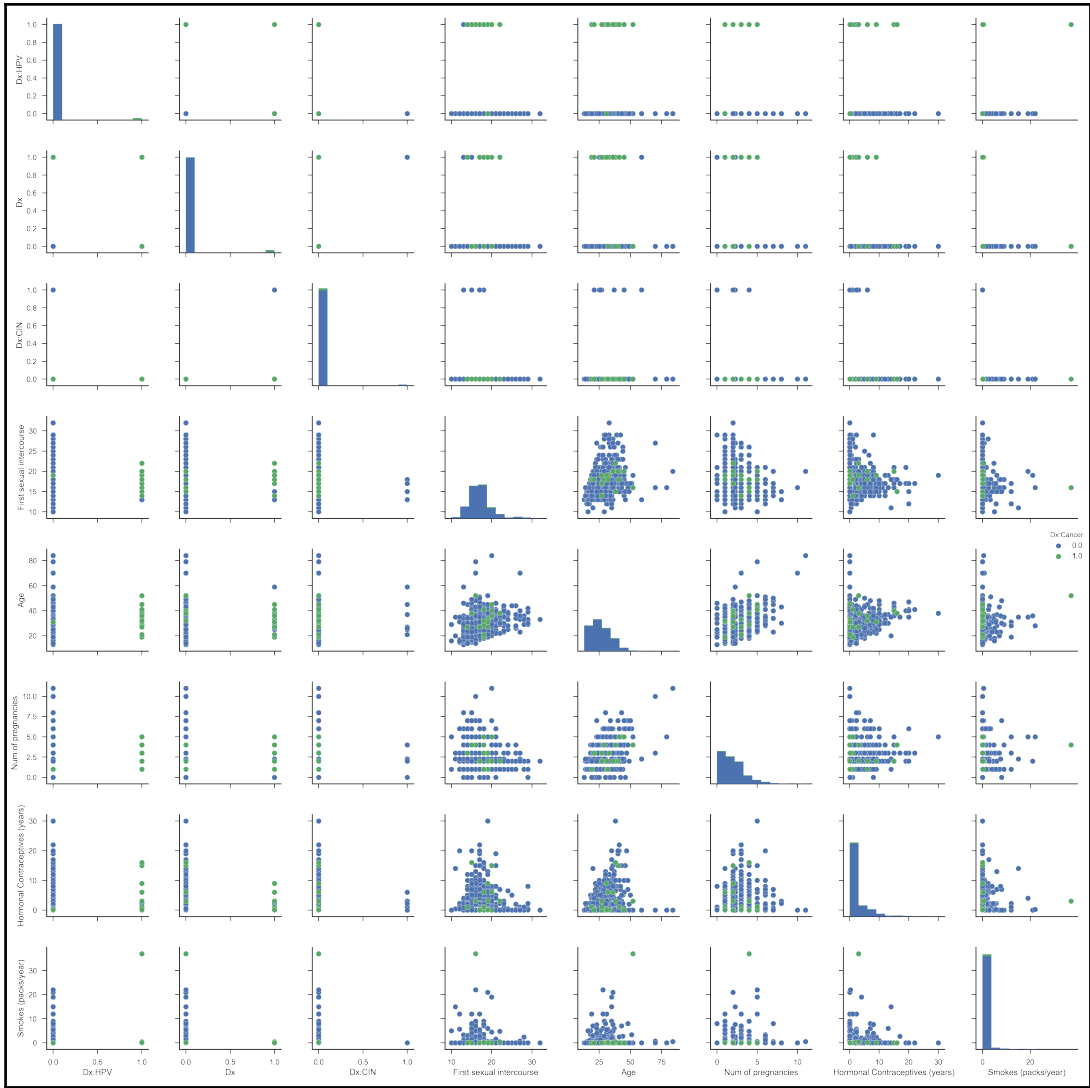












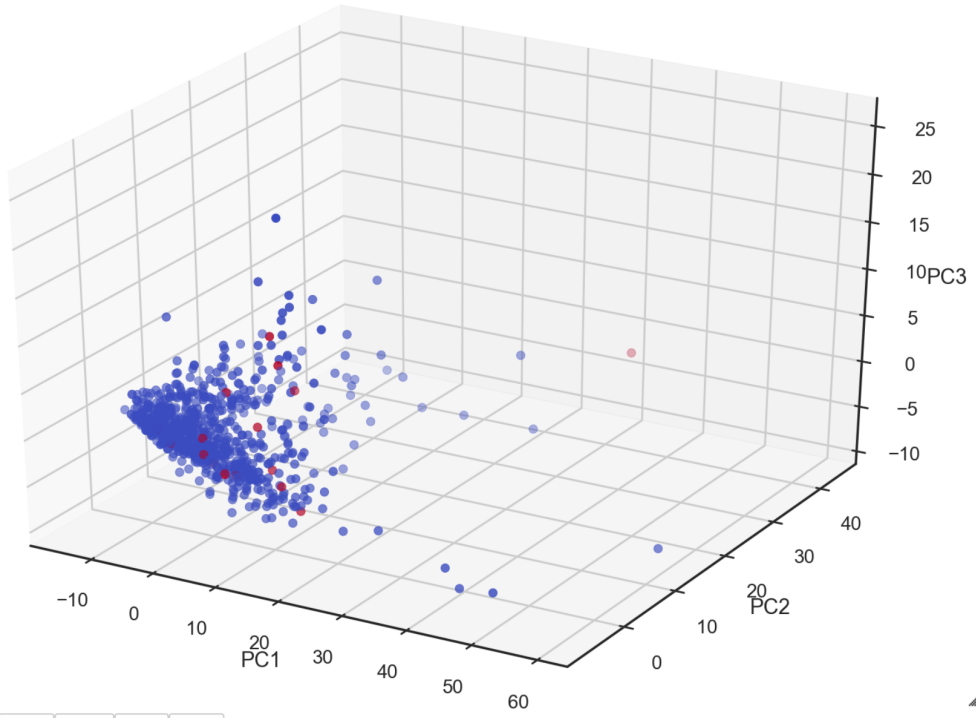
Explained variance:

PC1 59.41%

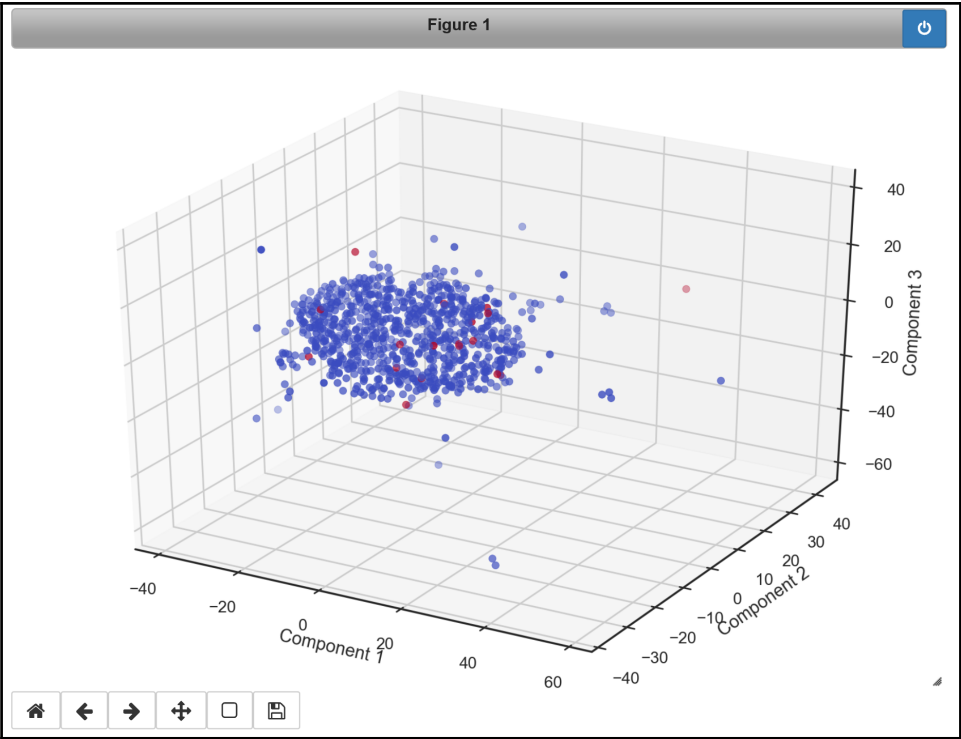
PC2 14.59%

PC3 9.02%

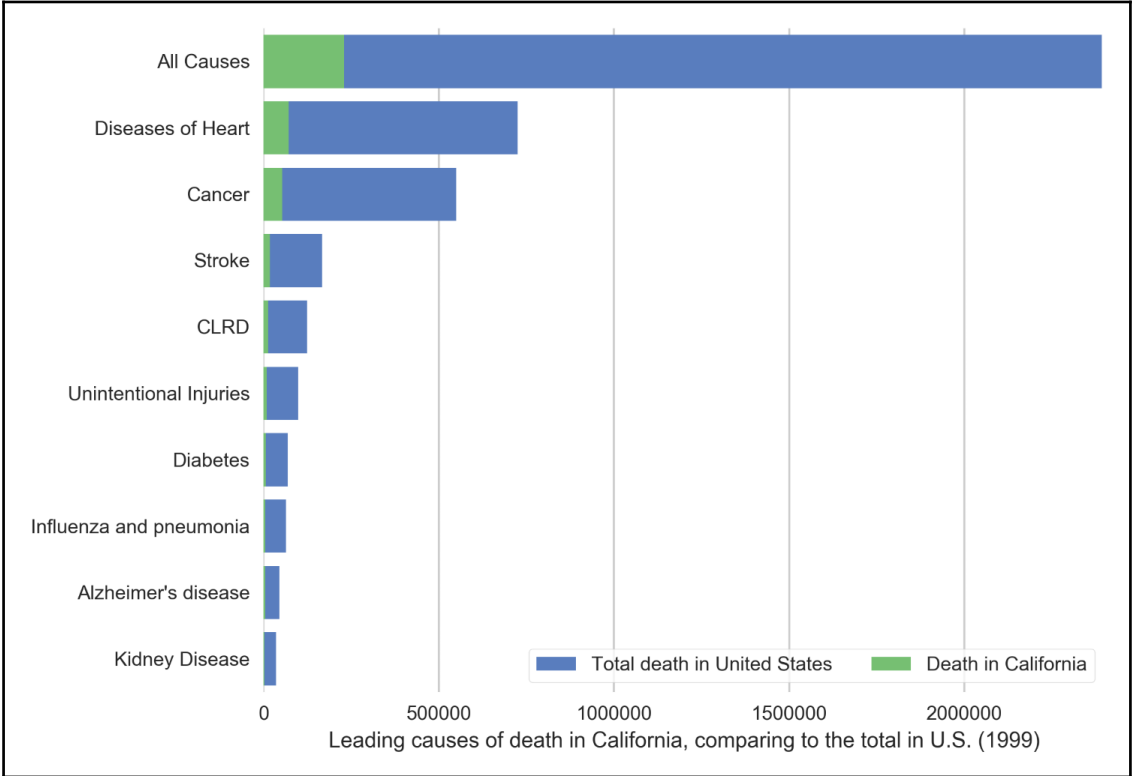
Figure 1

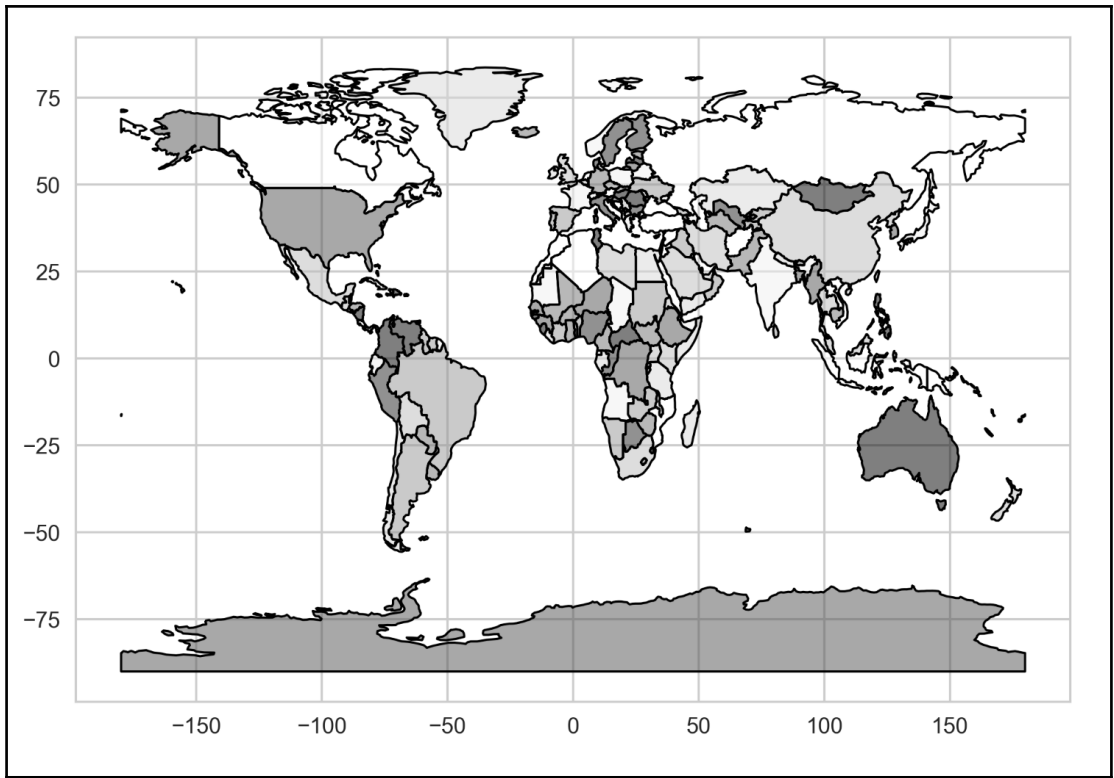


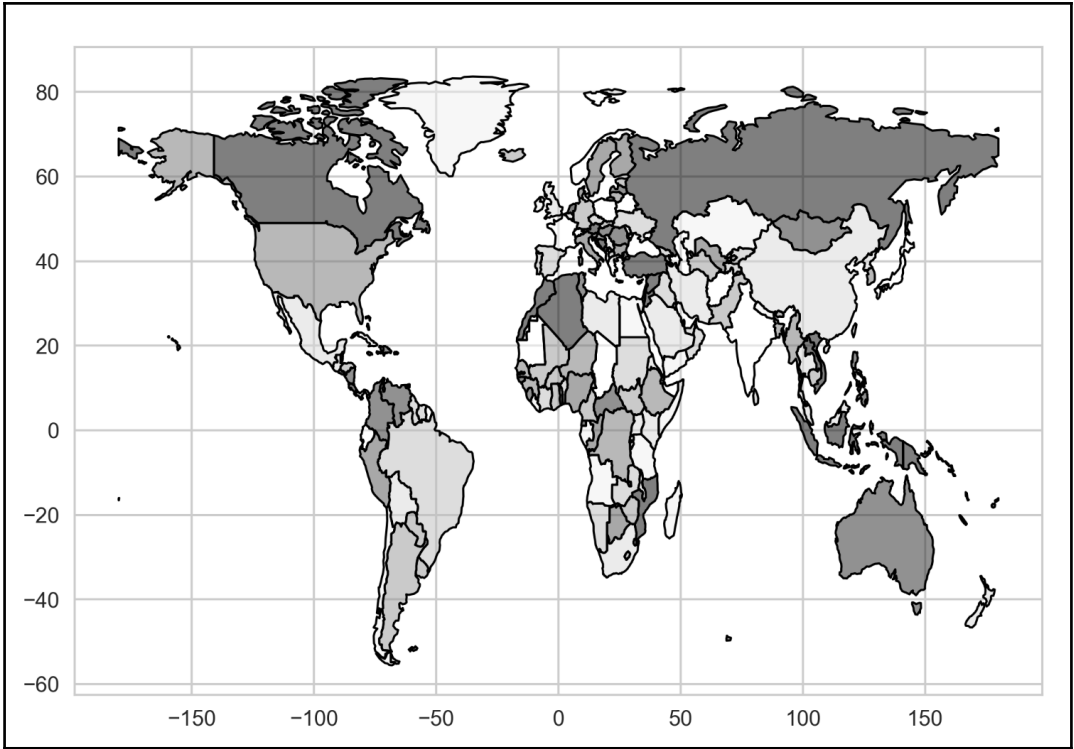
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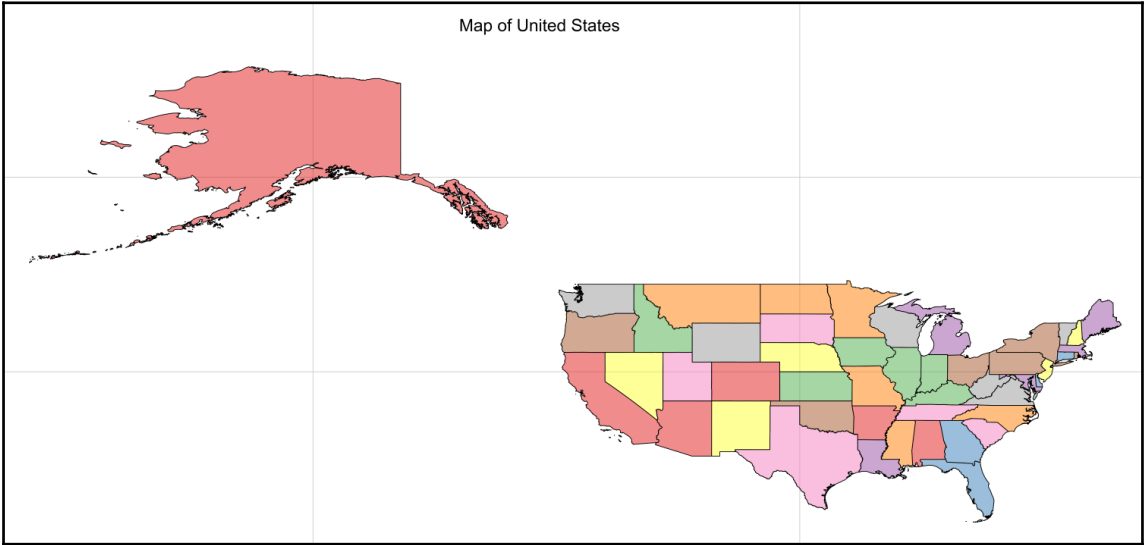
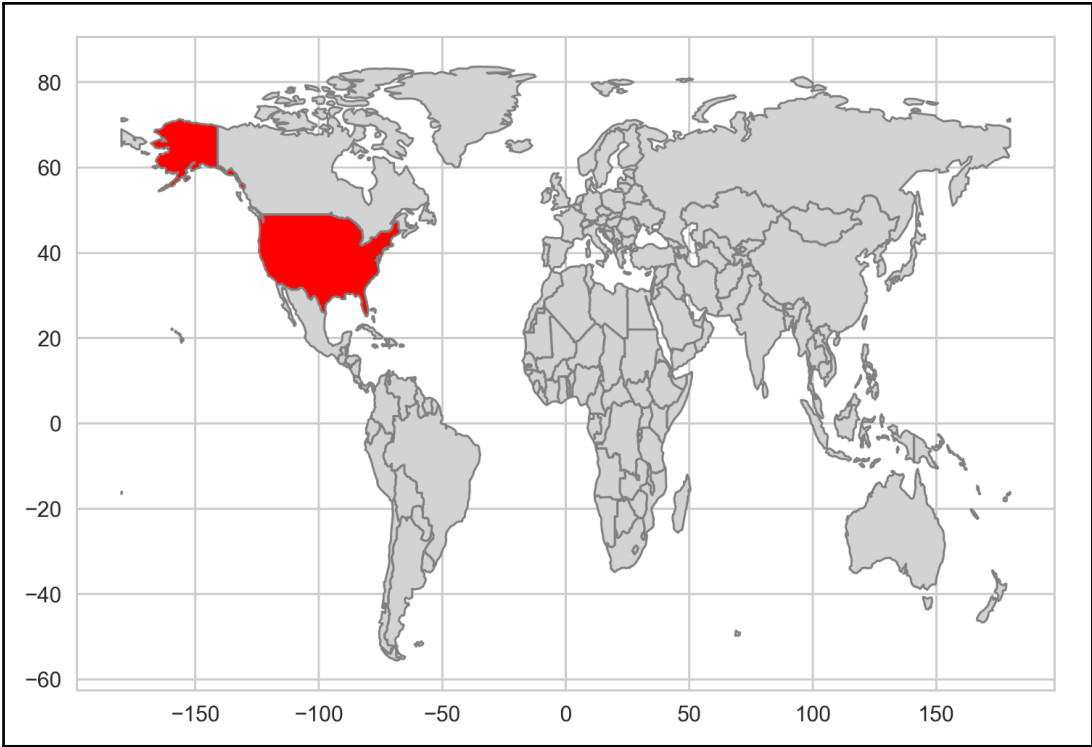


Chapter 8: Exploratory Data Analytics and Infographics

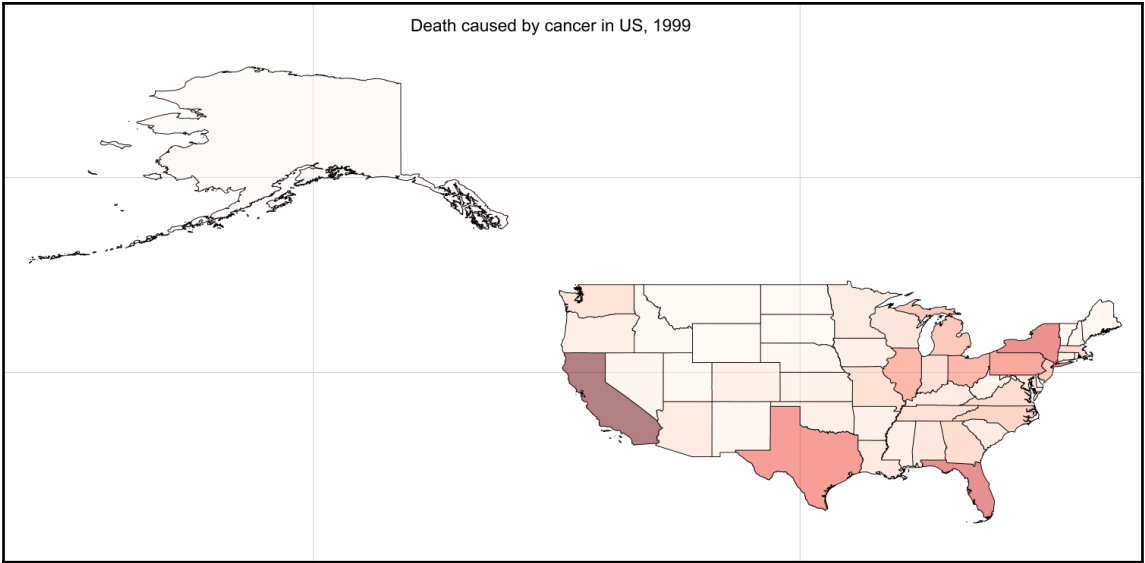




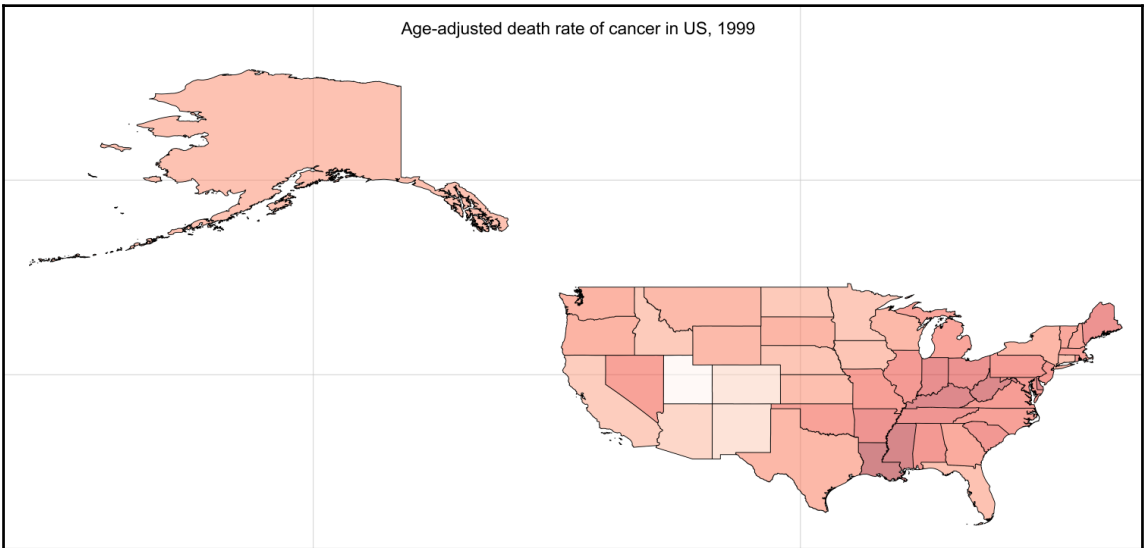




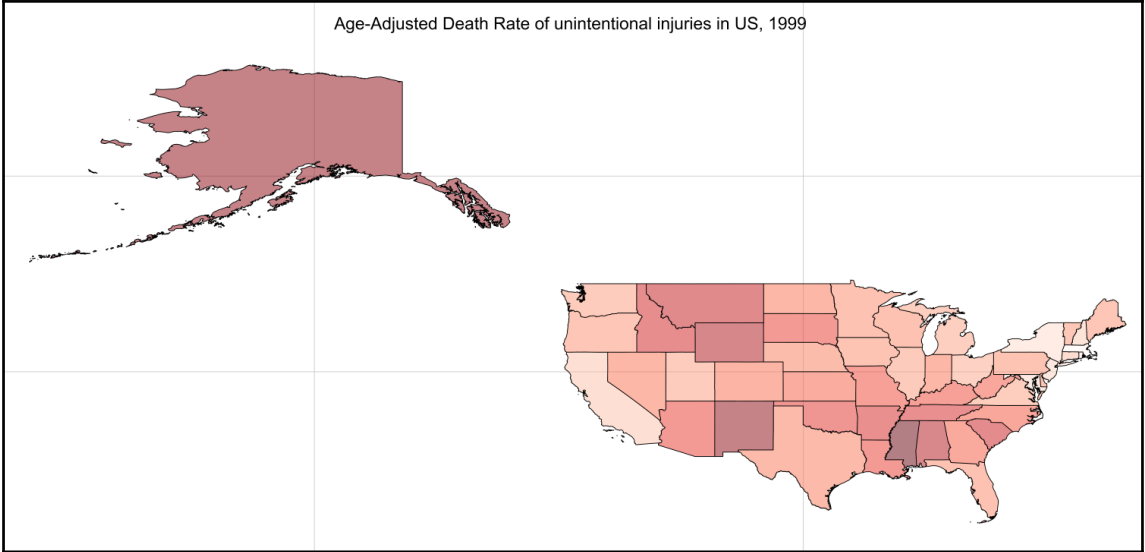
Death caused by cancer in US, 1999



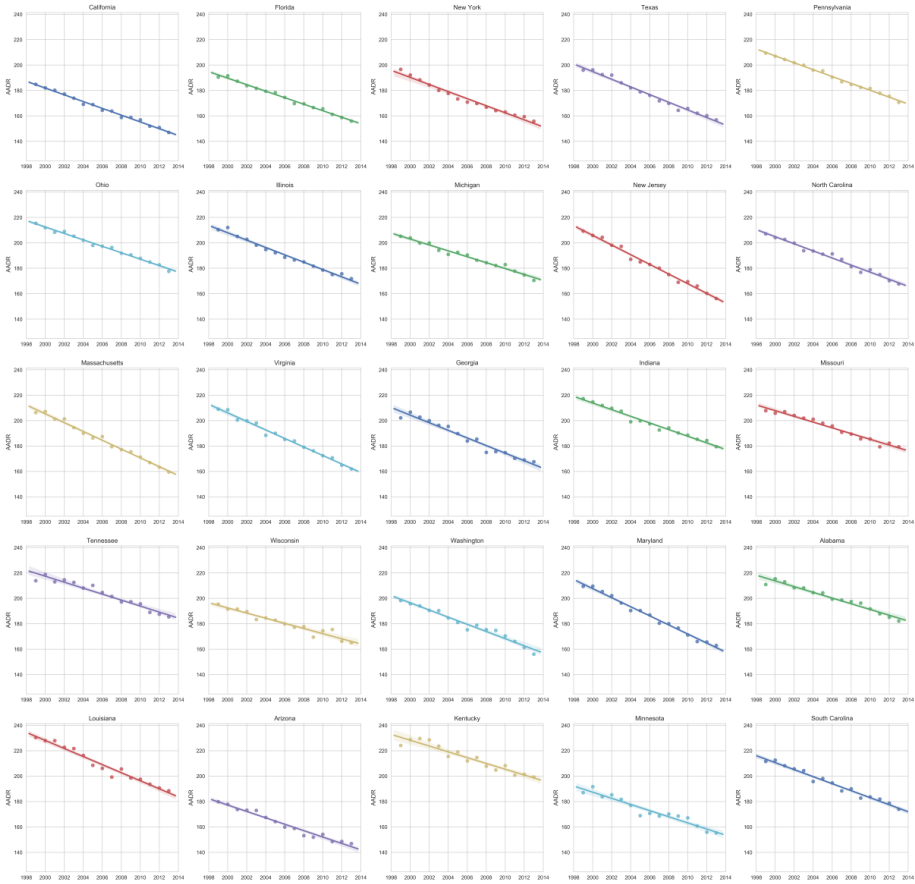
Age-adjusted death rate of cancer in US, 1999



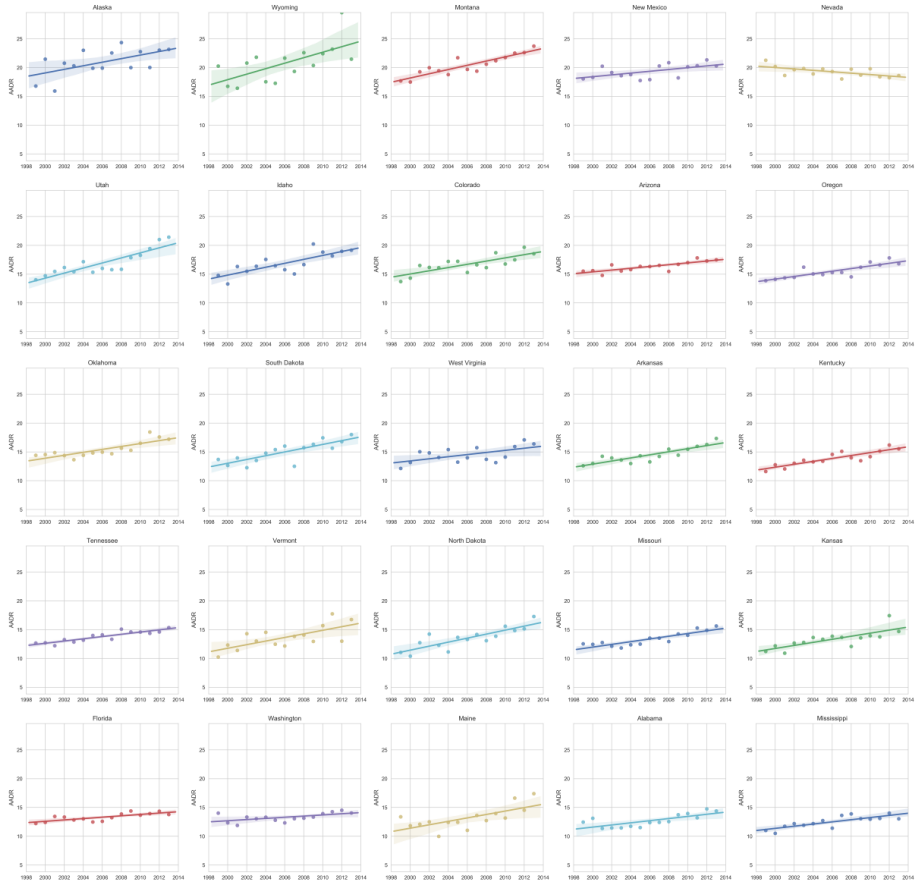
Age-Adjusted Death Rate of unintentional injuries in US, 1999



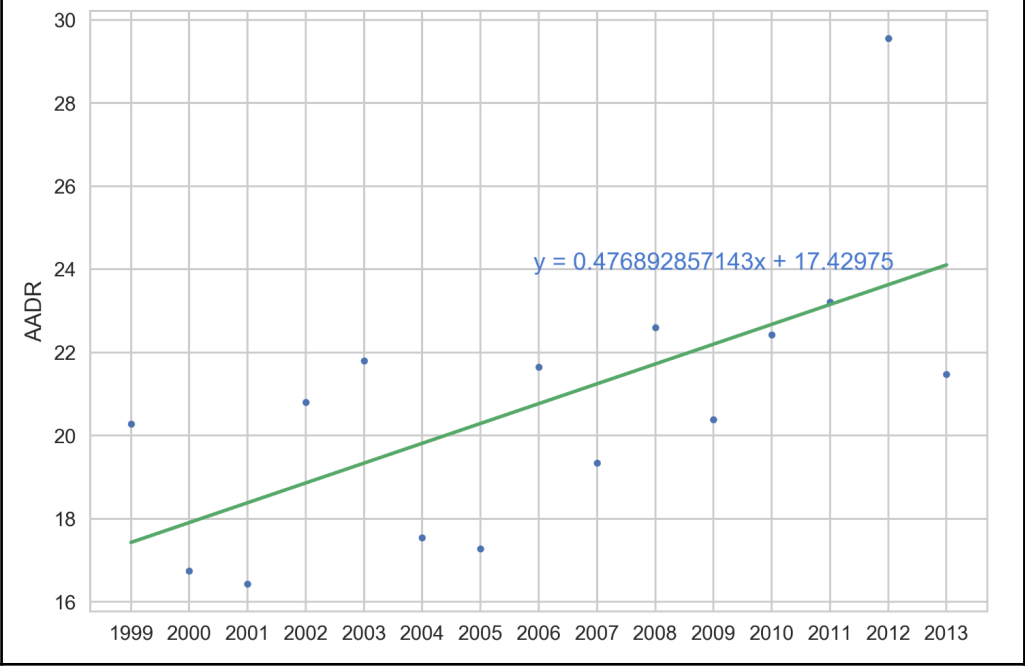
Age-adjusted death rate of cancer in 25 states from 1999-2013



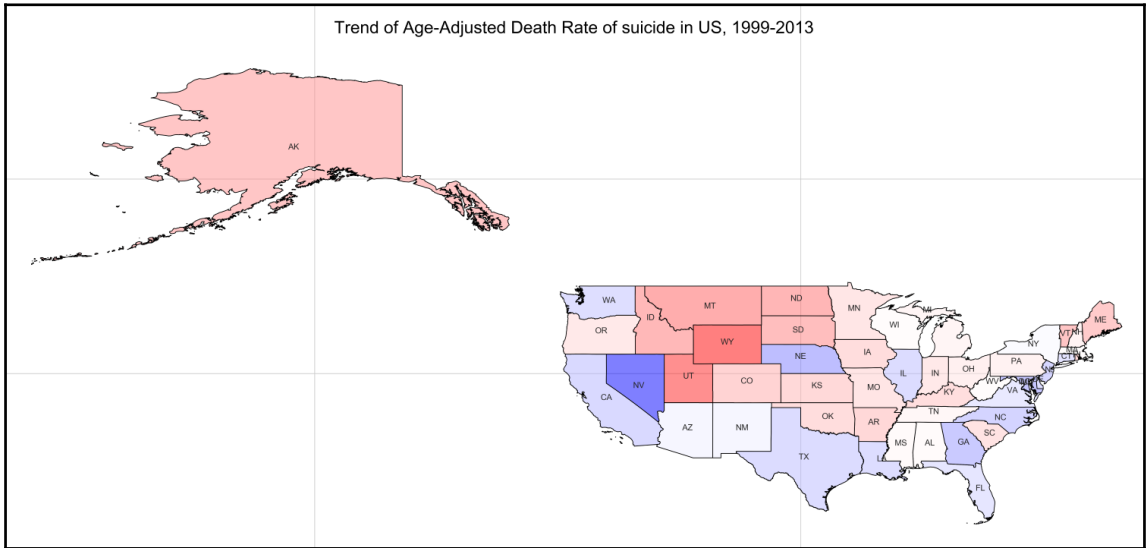
Age-adjusted death rate of suicide in 25 states from 1999-2013



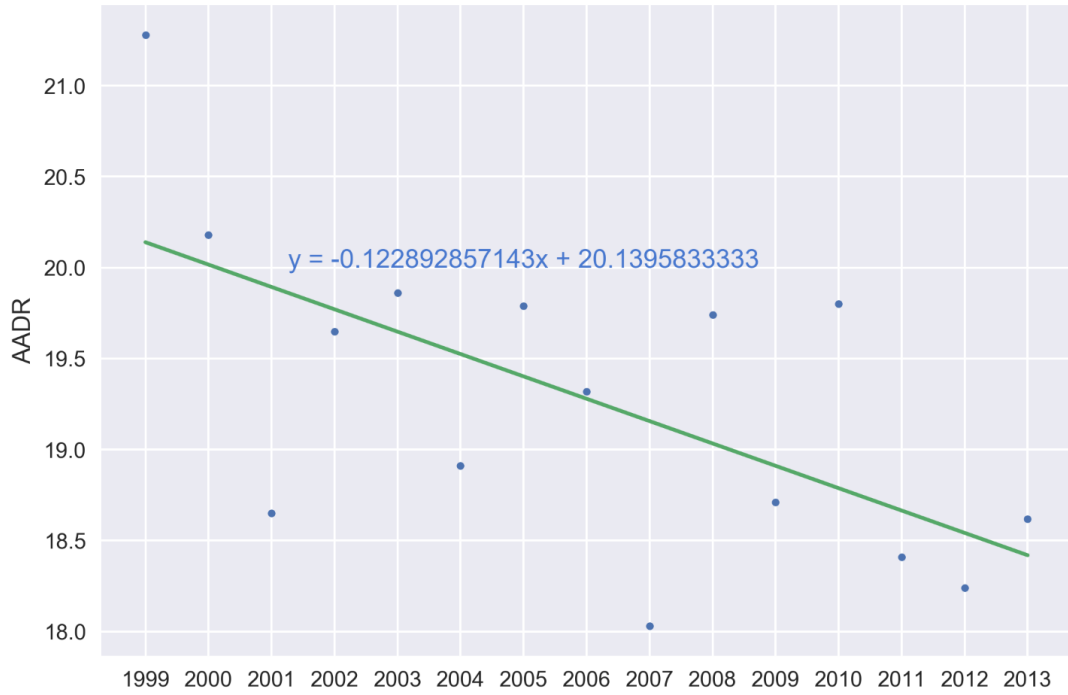
Age-adjusted death rate of suicide in Wyoming from 1999-2013



Trend of Age-Adjusted Death Rate of suicide in US, 1999-2013



Age-adjusted death rate of suicide in Nevada from 1999-2013



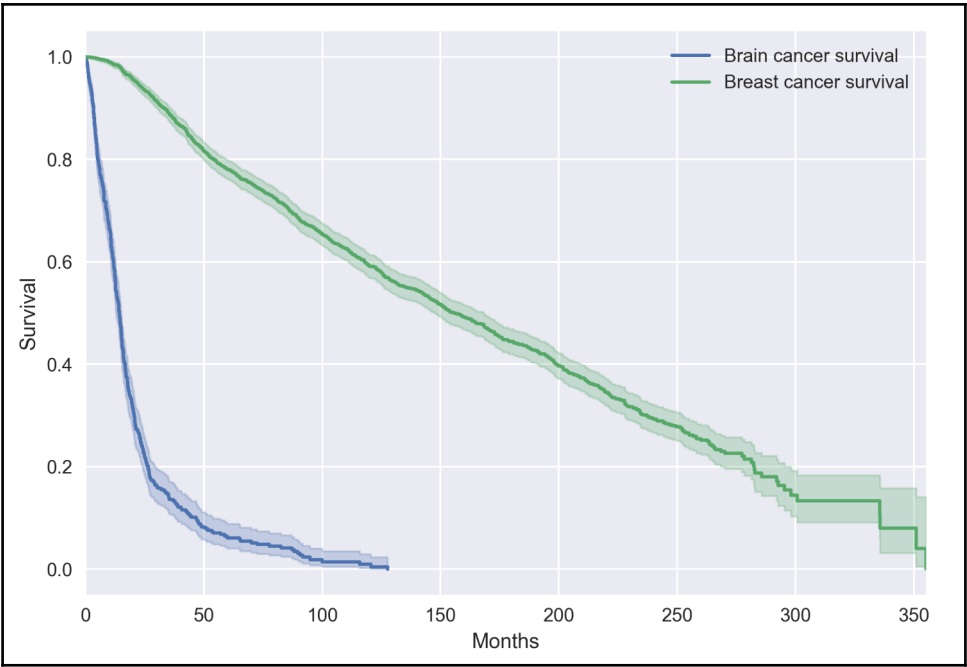


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