Law of Large Numbers

December 1, 2017

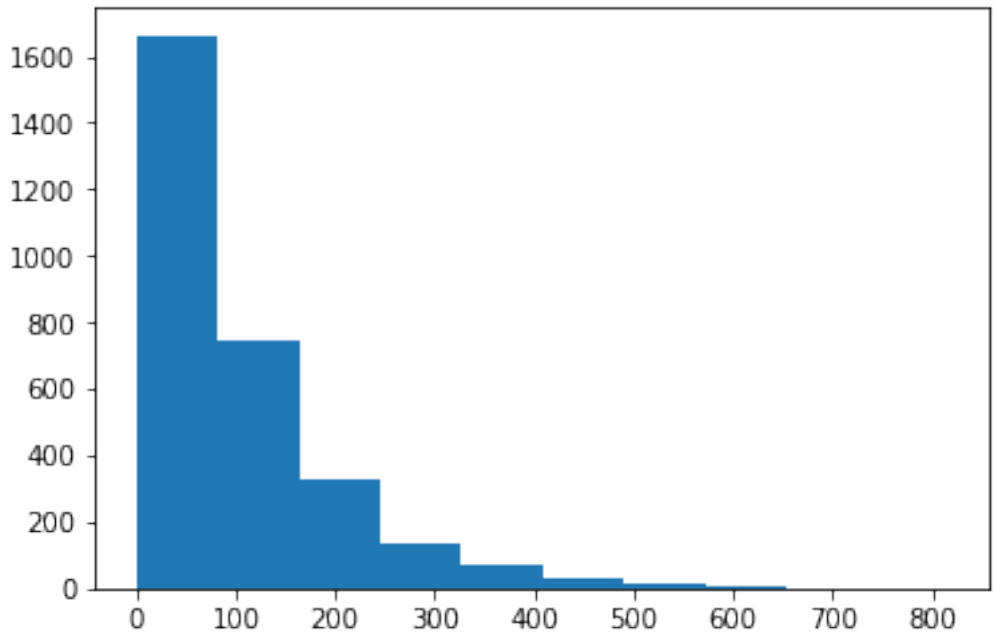
0.0.1 Law of Large Numbers Example

Use the dataset below stored in `pop_data` to answer the following questions, and complete the following quiz questions.

```
In [1]: import numpy as np
        import matplotlib.pyplot as plt

        %matplotlib inline
        np.random.seed(42)

        pop_data = np.random.gamma(1,100,3000)
        plt.hist(pop_data);
```



1. What is the the number of data values in our population dataset?

```
In [2]: pop_data.shape[0]
```

```
Out[2]: 3000
```

2. What is the population mean?

```
In [3]: pop_data.mean()

Out[3]: 100.35978700795846
```

3. Use numpy's **random.choice** to simulate 5 draws from the `pop_data` array. What is sample mean?

```
In [4]: np.random.choice(pop_data, size=5).mean()

Out[4]: 27.685829640608965
```

4. Use numpy's **random.choice** to simulate 20 draws from the `pop_data` array. What is sample mean?

```
In [5]: np.random.choice(pop_data, size=20).mean()

Out[5]: 163.3701520126447
```

5. Use numpy's **random.choice** to simulate 100 draws from the `pop_data` array. What is sample mean?

```
In [6]: np.random.choice(pop_data, size=100).mean()

Out[6]: 119.55076984115861

In [7]: np.random.choice(pop_data, size=3000).mean()

Out[7]: 100.45500027227271
```