Law of Large Numbers

April 15, 2019

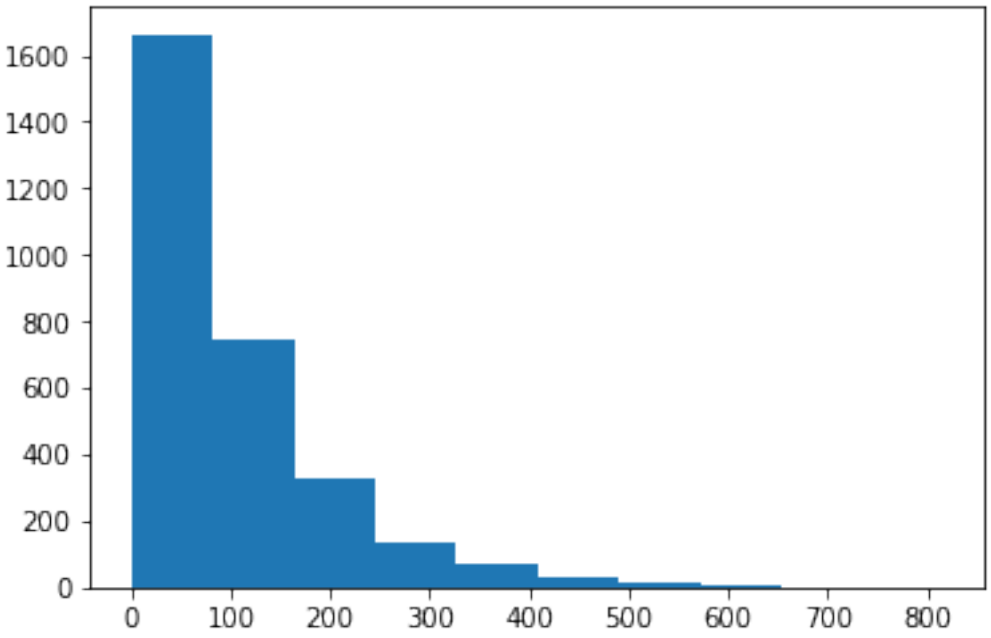
0.0.1 Law of Large Numbers Example

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)

# This is just setting up some random data in pop_data
# The functionality of the gamma distribution is not relevant
# for this class.
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 [5]: len(pop_data)

Out[5]: 3000
```

2. What is the population mean?

```
In [15]: pop_data.mean()

Out[15]: 100.35978700795846
```

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

```
In [16]: pop_5 = np.random.choice(pop_data, size=5)
         pop_5.mean()

Out[16]: 98.223660458950761
```

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

```
In [20]: pop_20 = np.random.choice(pop_data, size=20)
         pop_20.mean()

Out[20]: 143.02503277926343
```

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

```
In [21]: pop_100 = np.random.choice(pop_data, size=100)
         pop_100.mean()

Out[21]: 93.255897874265841

In [ ]:
```