Lecture 17
Simulation
Announcements

- Project 1, Part 2 due Friday 3/26, 5:59PM
```python
grades.hist('Total Score', bins=np.arange(30, 101, 5))
```

![Histogram of Total Scores]

```python
np.average(grades.column('Total Score'))
```

```
79.33823529411765
```

```python
np.std(grades.column('Total Score'))
```

```
12.670148211814356
```
Simulation Structure
Mendel’s Pea Plants
Gregor Mendel (1822-1884)

- Founder of the modern field of genetics
- Theorized that pea plants will bear purple or white flowers at random, in the ratio 3:1
- Planted 929 plants and observed their colors
- Let’s simulate that...
Assume Mendel's theory is correct, and the fraction of purple plants is .75. What kind of a number is that?

Population parameter
Population statistic
Sample parameter
Sample statistic
None of the above
Mendel's Observations

- Mendel observed 705 of the 929 plants had purple flowers
- Is that consistent with our simulation?
Different Statistics

The statistic was "proportion of plants with purple flowers". We could have chosen a different statistic, and predicted the values of that statistic.
Swain v. Alabama
United States Jury Act of 1968: [A]ll litigants in Federal courts entitled to trial by jury shall have the right to...juries selected at random from a fair cross section of the community in the district or division wherein the court convenes.
Robert Swain v. Alabama

1965 Supreme Court case about jury selection
- In Talladega, Alabama, 26% of residents were Black
- In Swain's jury panel, 8 of 100 panelists were Black
- All 8 were struck from the jury by the prosecution (using peremptory challenges)

Ruling: "The overall percentage disparity has been small and reflects no studied attempt to include or exclude a specified number of [Black men]."

(Demo)