

# MA103: Mathematical Modeling & Intro to Calculus

## Descriptive Modeling of a Data Set 1

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**Lesson Objectives:** Cadets will

1. calculate and describe the center of a dataset using mean and median by hand and with Excel.
  2. calculate and describe the spread of a dataset using sample standard deviation by hand and with Excel.
  3. visualize a dataset using a histogram in Excel and describe the shape of the dataset.
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## 1 Admin Notes

- Discuss readings by lesson and green book vs. section book
- Assignment due **NEXT CLASS!**

ID	SDC	MDL	Run	Age
2901	124	225	15:30	18
2902	110	275	14:45	20
2903	130	0	970	210
2904	118	250	14:30	21
2905	105	300	13:50	19
2906	140	185	17:00	19
2907	11	265	15:00	22

**Assumptions Exercise:** Purpose data cleaning for the above data set. Provide the data point at issue, and propose a solution.

**Understanding a Dataset:** describe the difference between a population and sample. Do you think the above data set a population or sample?

**Exploring a Dataset - Visualizations:**

- Create histogram, by age for the data set above.
- Now do it for MDL.

- Measure is showing a higher deviation?
- How can we measure this deviation?

**Measures of center (average) and spread (standard deviation)**

- In your own words describe what a mean or average tells us about a data set. What information is missing? What is the relevant equation?

- In your own words describe what a standard deviation tells us about a data set. What is the relevant equation?