Distributions and outliers

EXPLORATORY DATA ANALYSIS IN POWER BI

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What are distributions?

Definition: *set of all possible values of the variable and the associated frequencies.*

What are distributions?

Continuous

Age	Frequency
18	7
19	11
20	13
21	19
22	12

What are distributions?

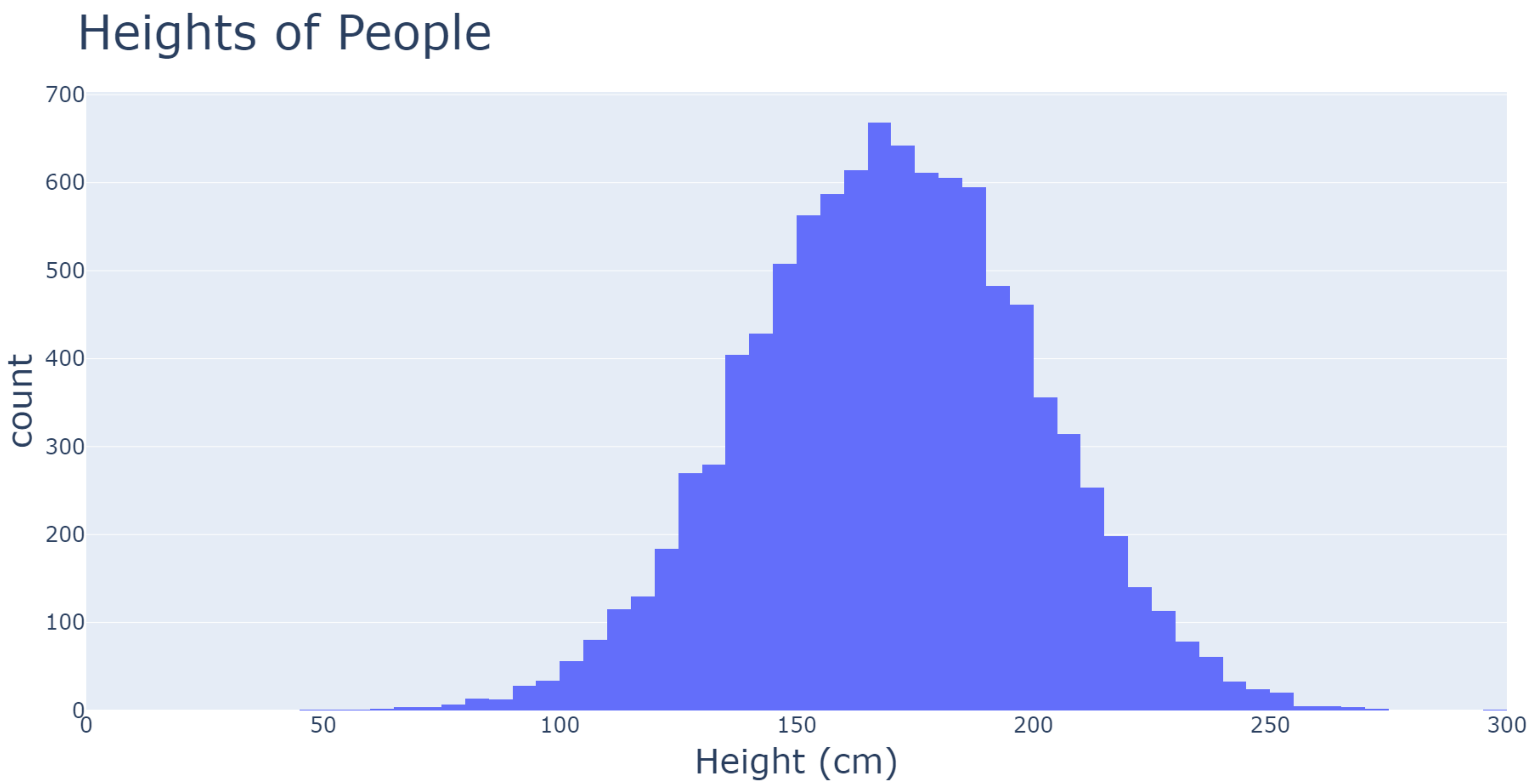
Continuous

Age	Frequency
18	7
19	11
20	13
21	19
22	12

Categorical

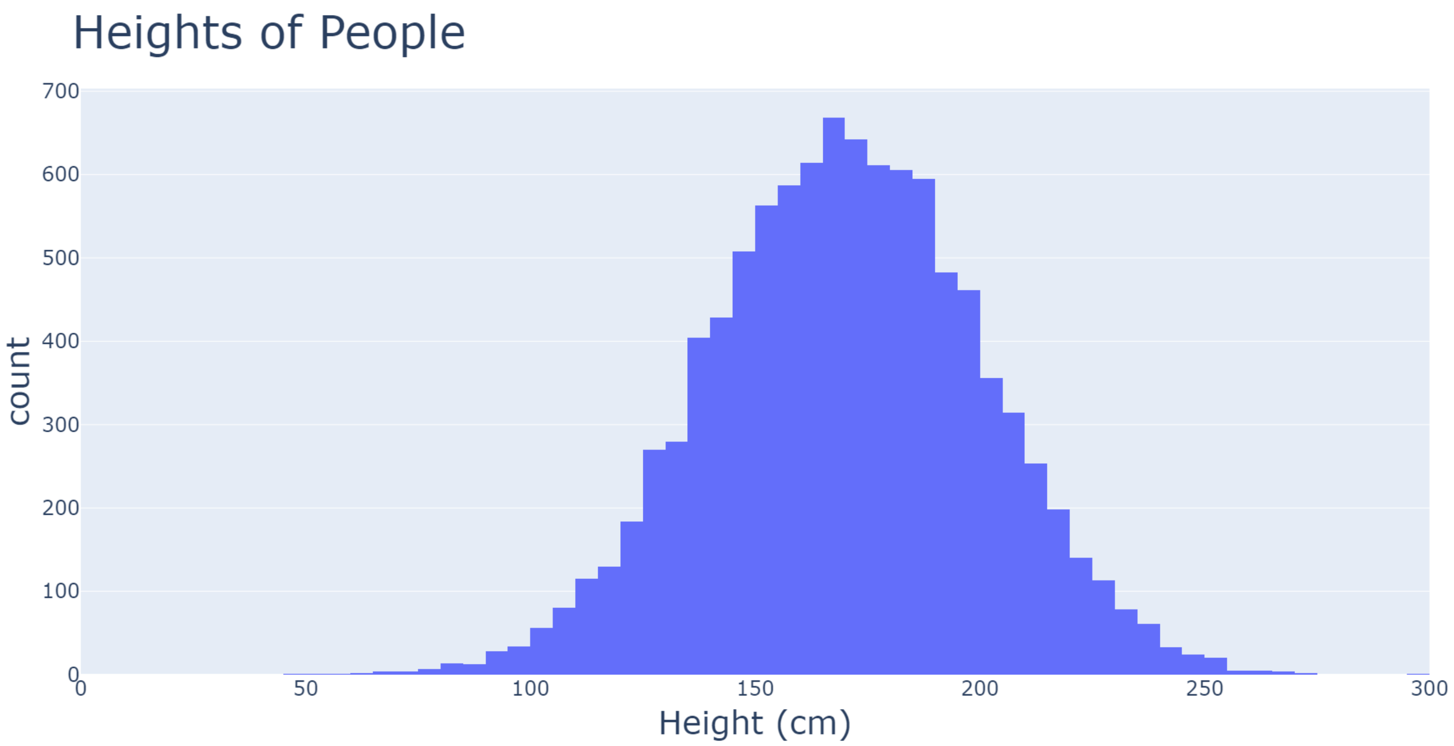
Hair Color	Frequency
Blonde	30
Brown	50
Black	40
Red	20
Grey	20

What are histograms?

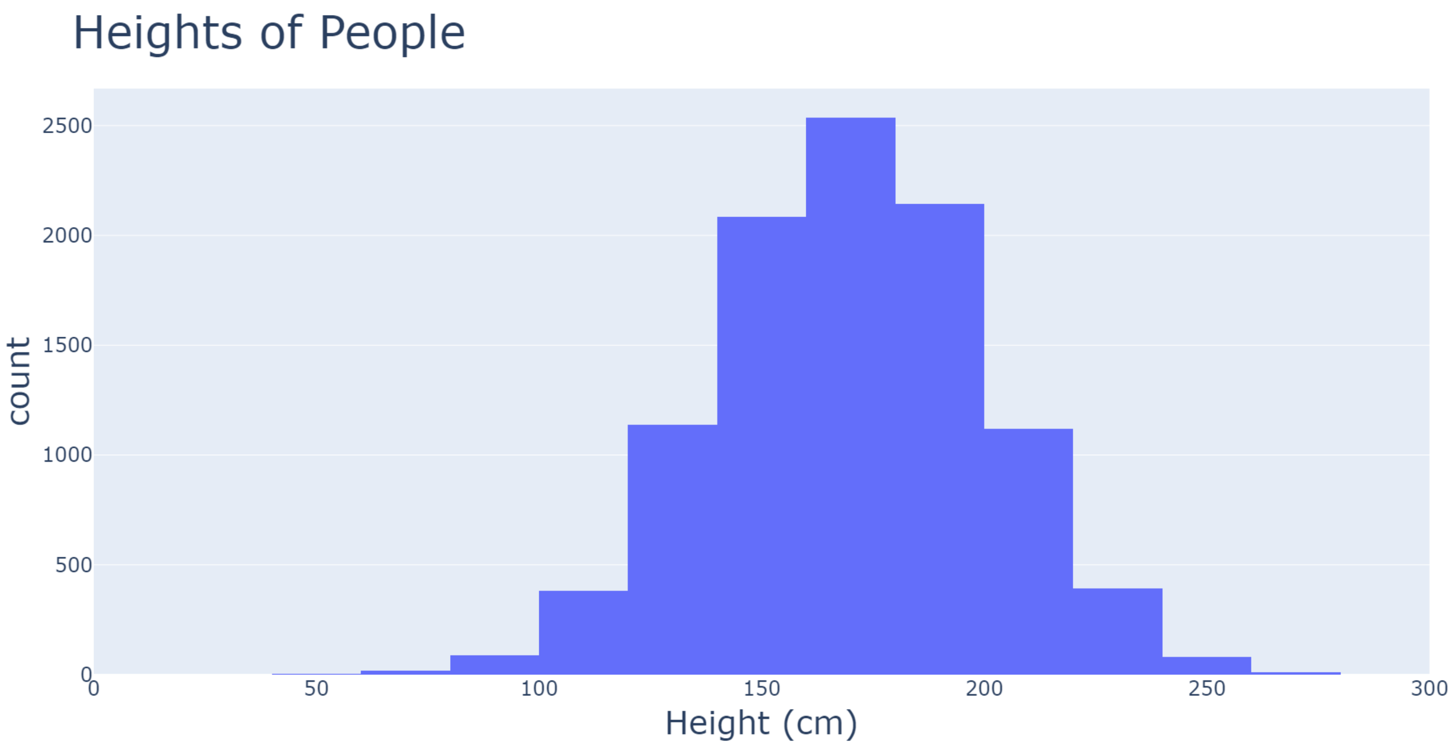


What are histogram? - bins

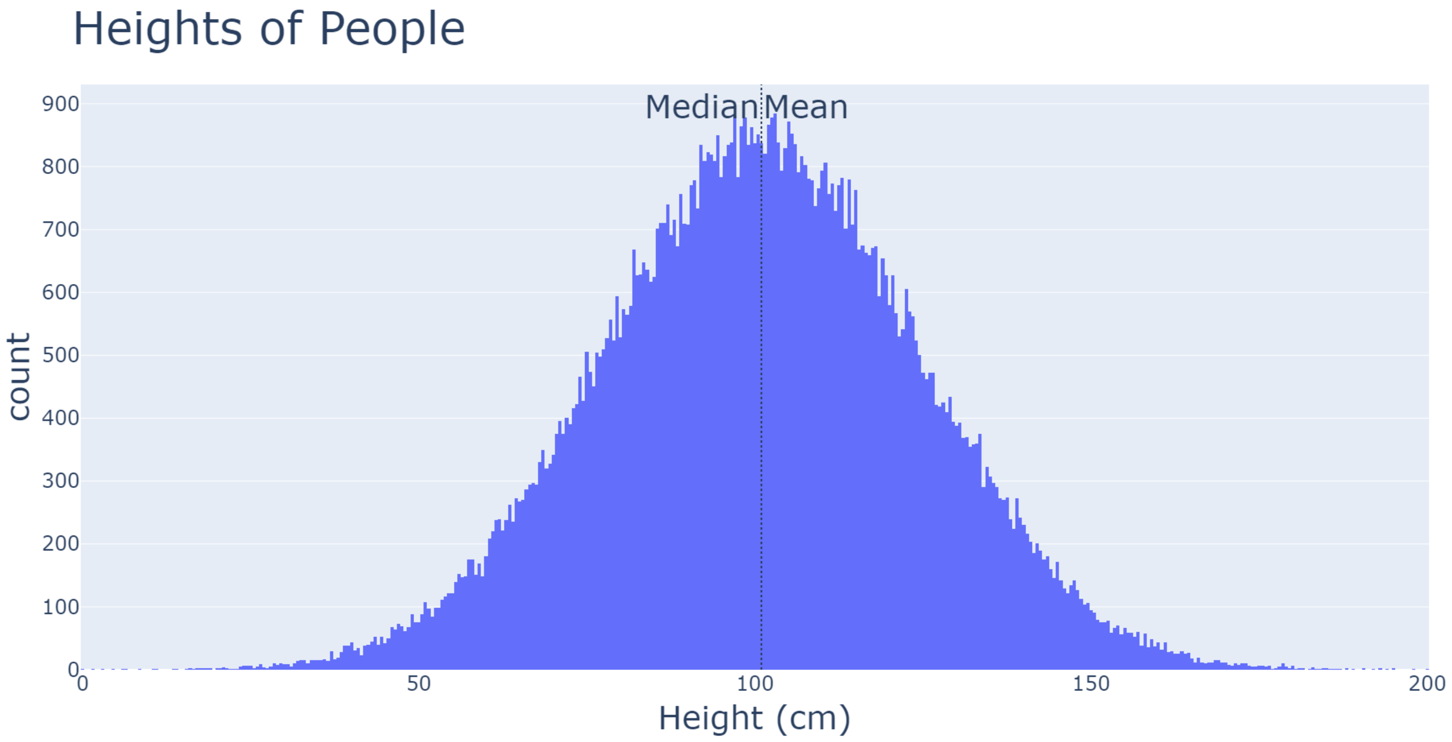
Histogram with 100 bins

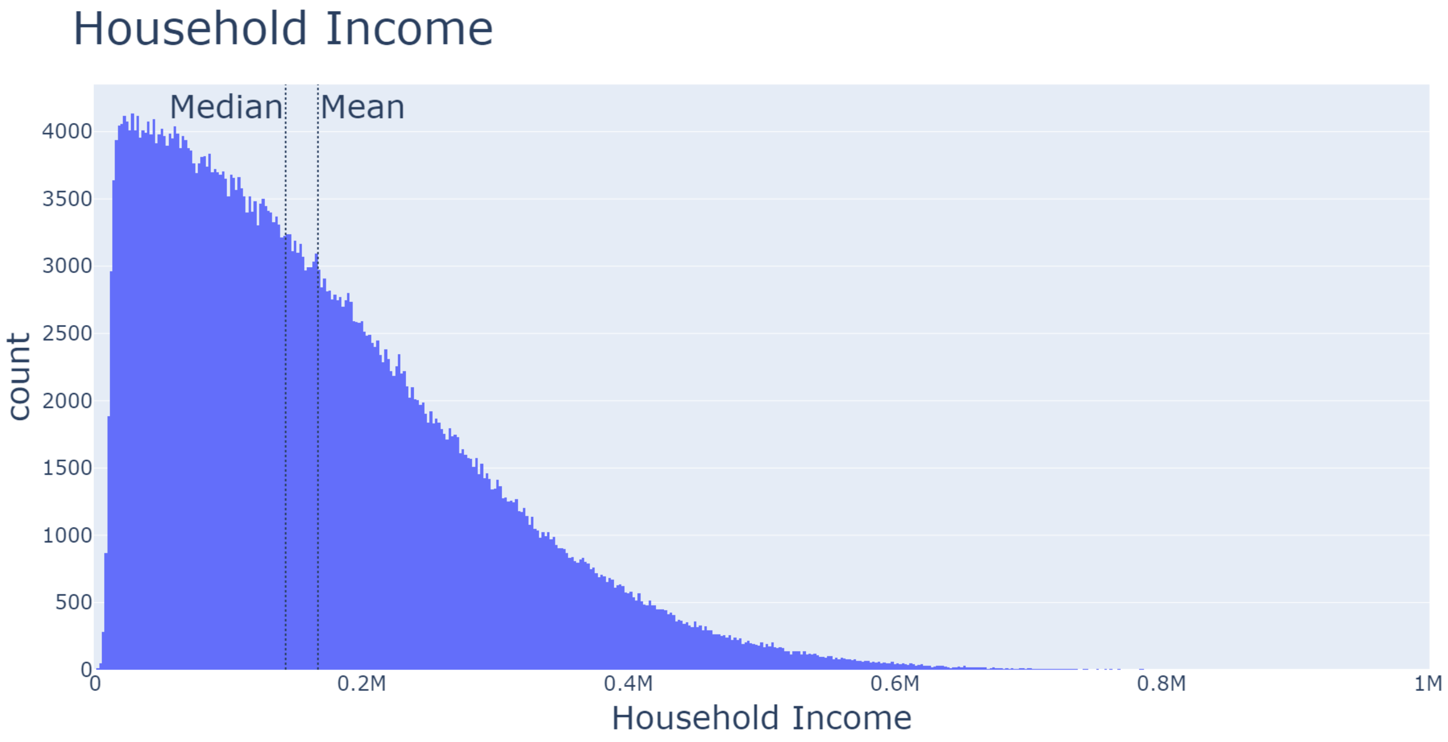


Histogram with 20 bins



Reading histograms - centrality and skewness



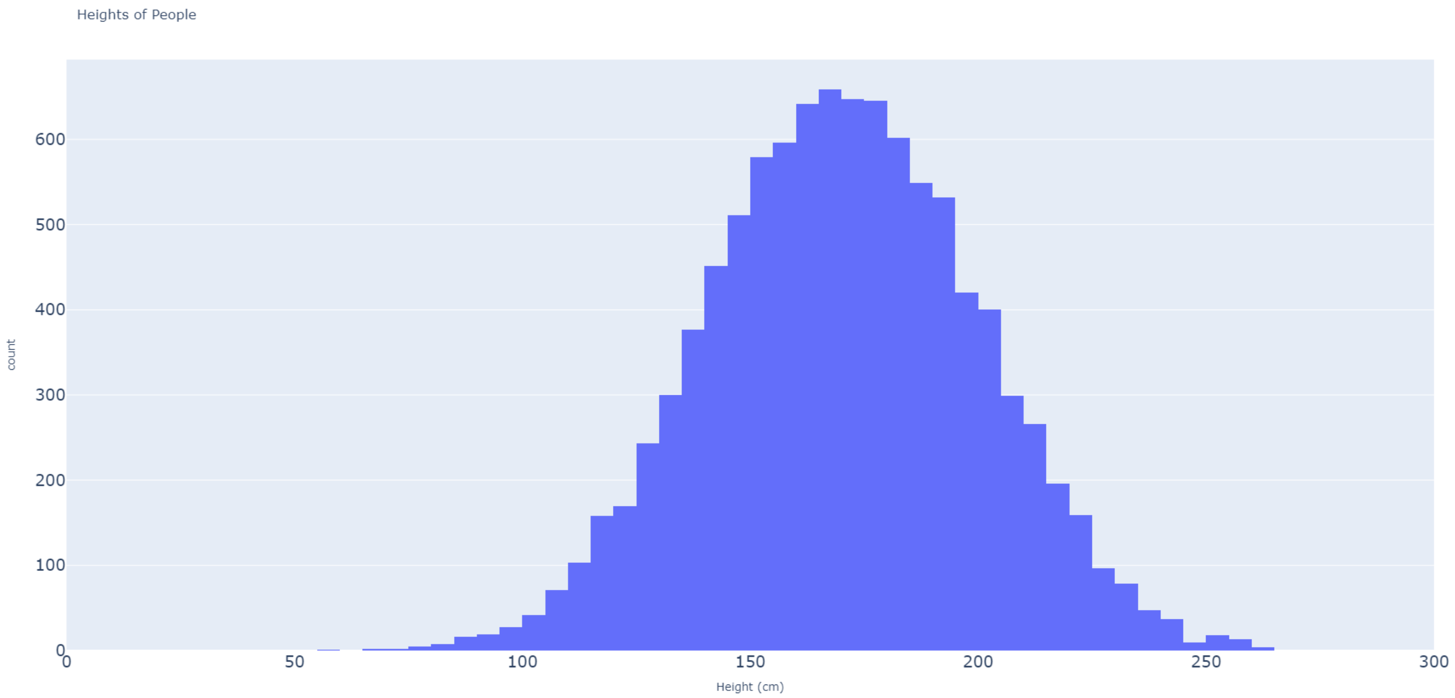


Normal distribution

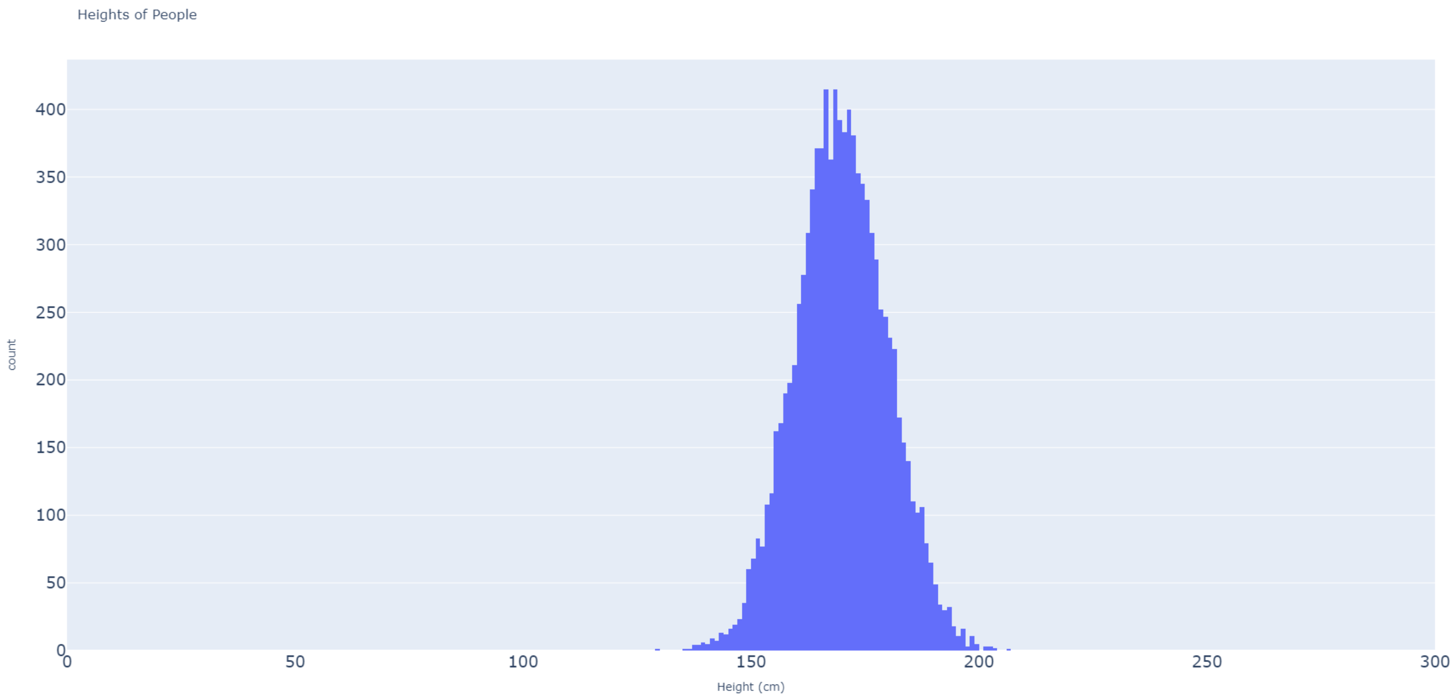
Right-skewed distribution

Reading histograms - spread

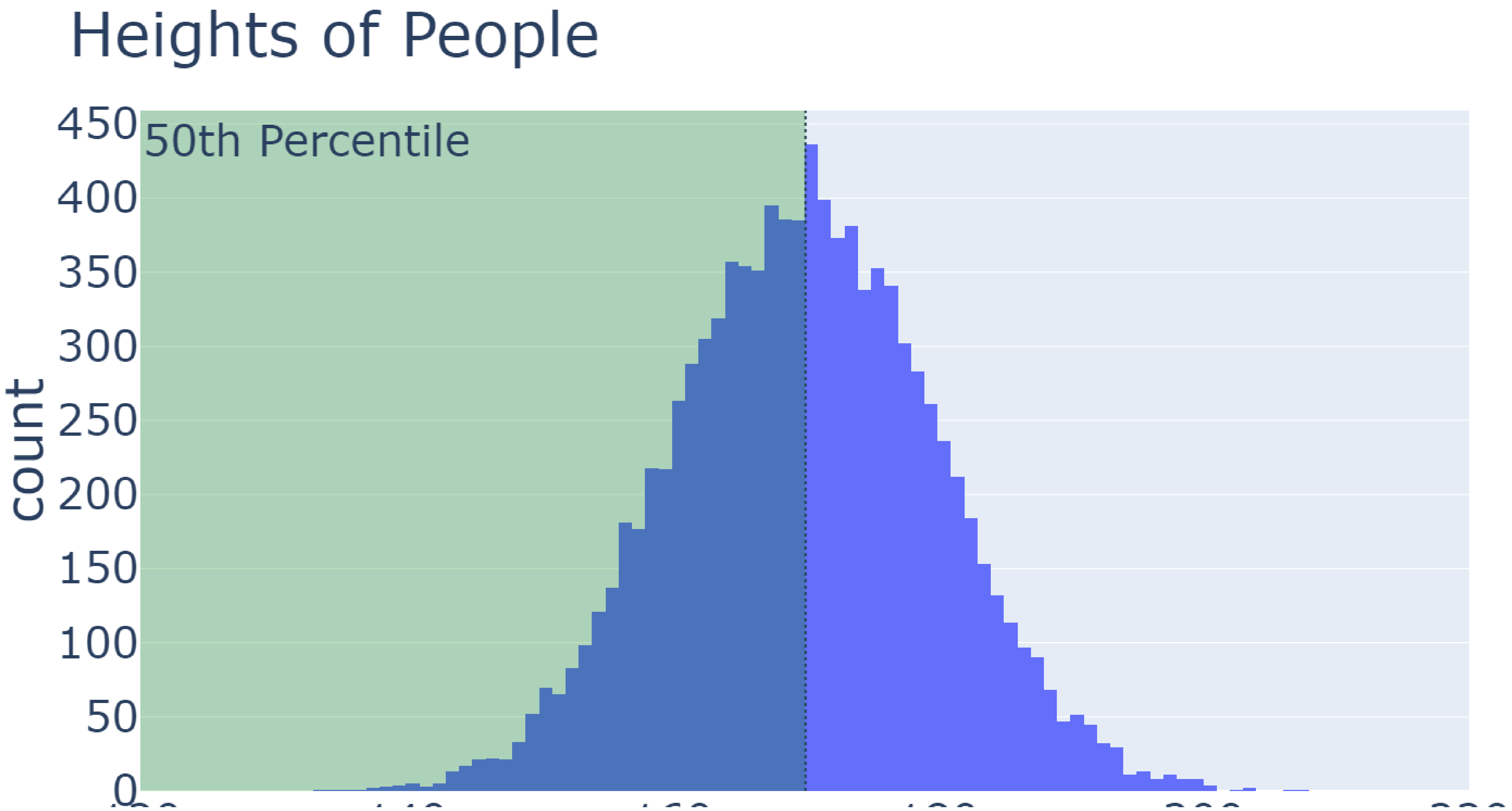
Larger standard deviation



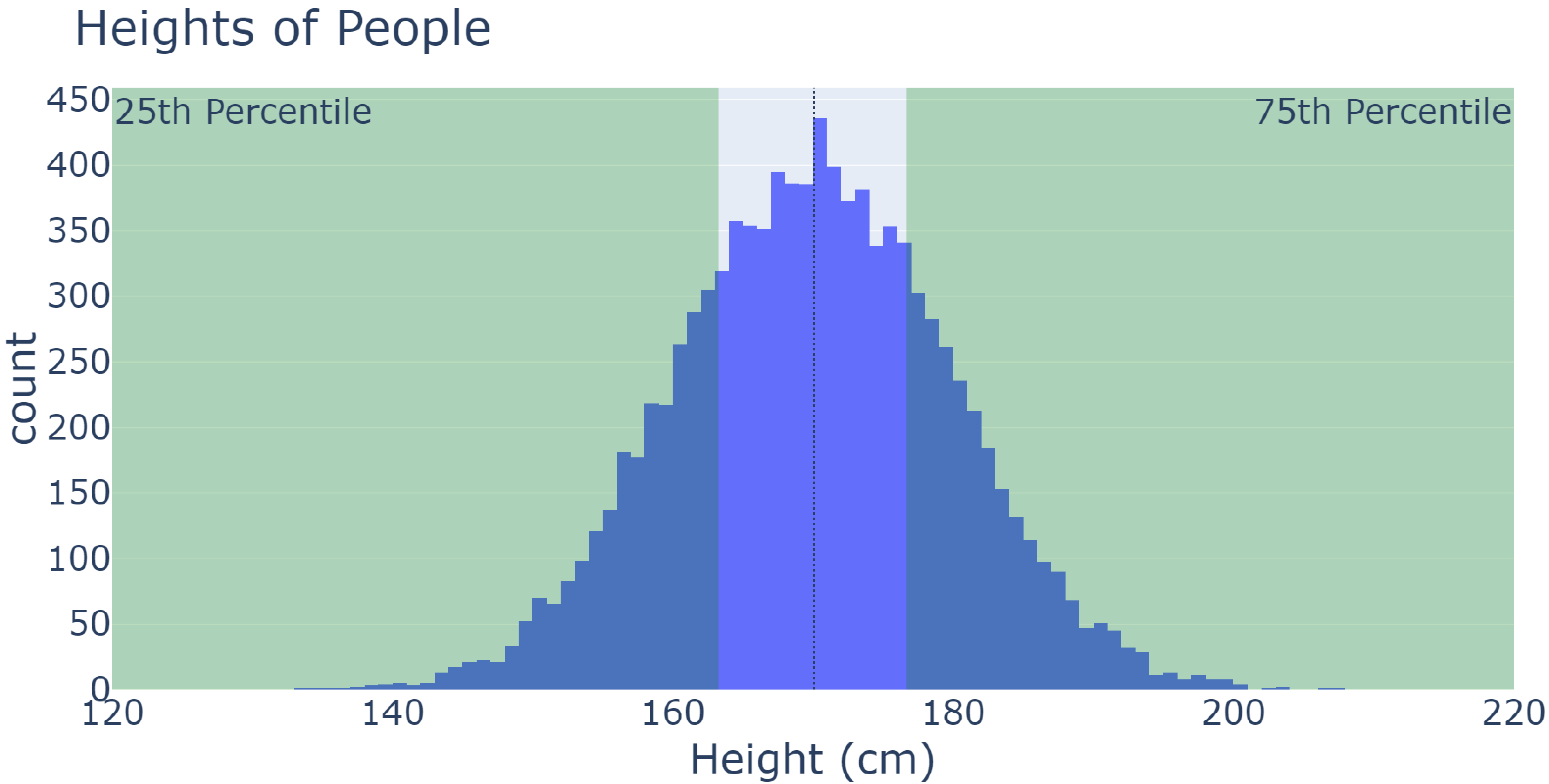
Smaller standard deviation



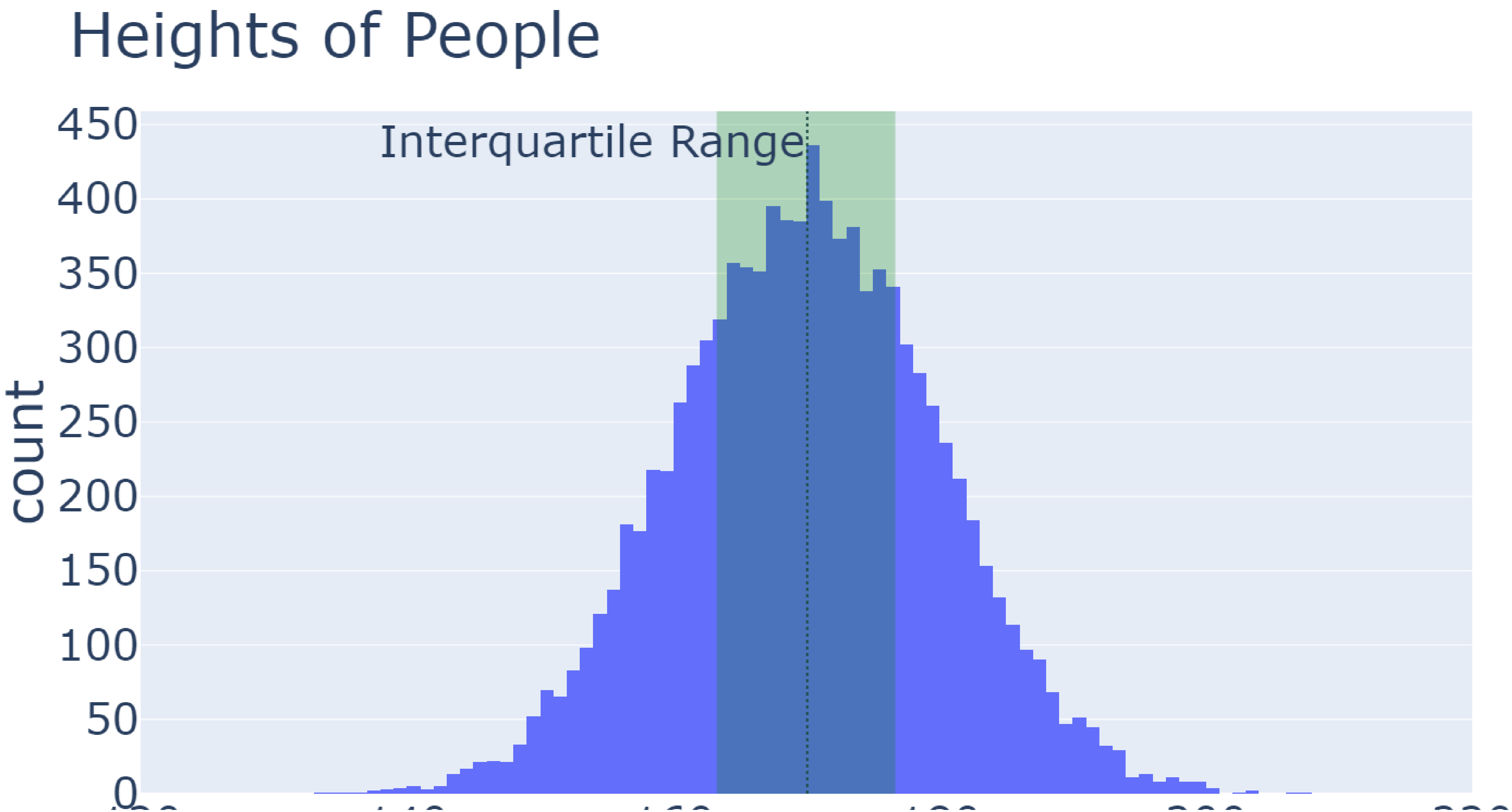
Reading histograms - percentiles



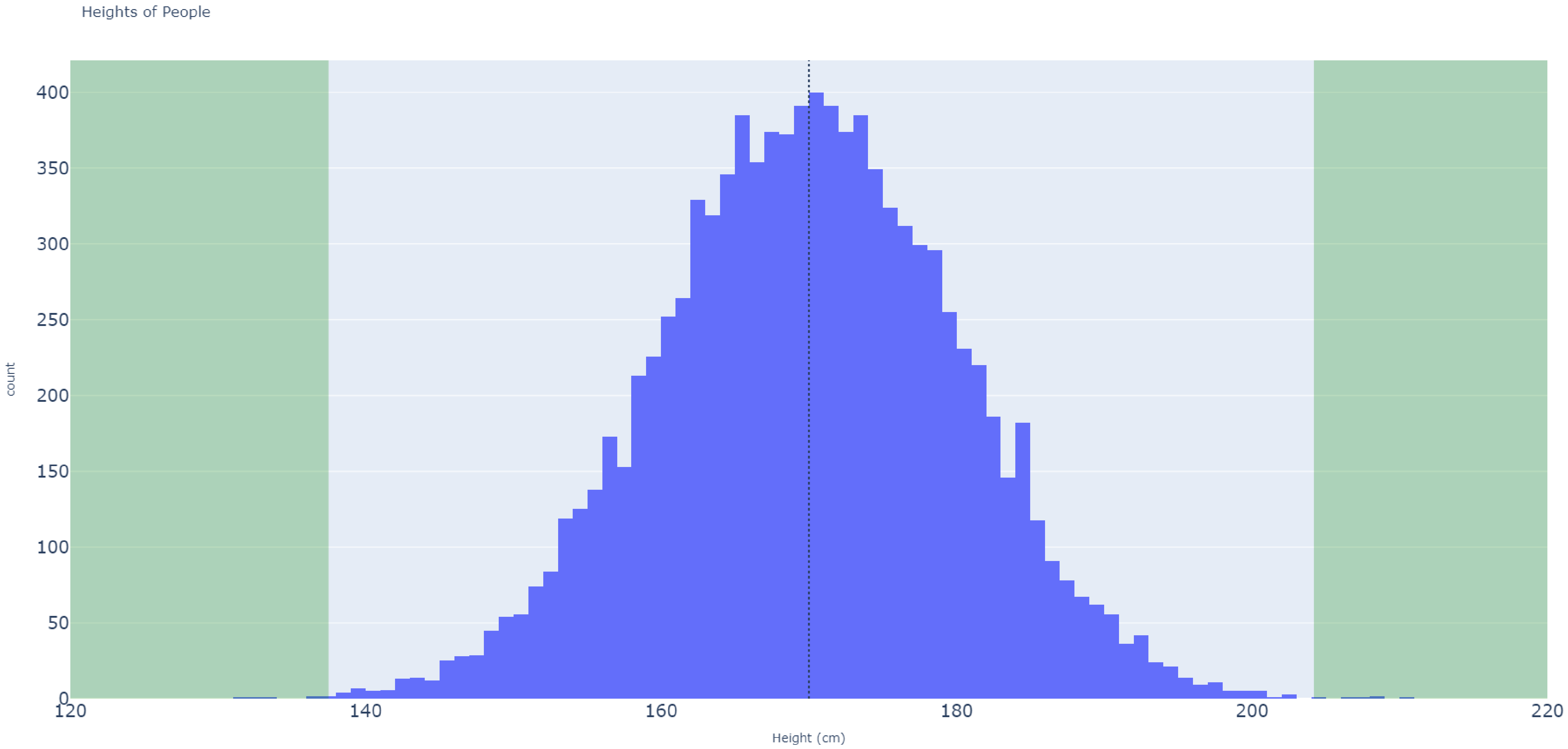
Reading histograms - 25th & 75th percentiles



Reading histograms - interquartile range



What is an outlier?



Finding outliers

Using standard deviation

$$lower = -3 * SD$$

$$upper = 3 * SD$$

Outlier when

$value < lower$ OR $value > upper$

Interquartile Range (IQR)

$$lower = 25percentile - (1.5 * IQR)$$

$$upper = 75percentile + (1.5 * IQR)$$

Outlier when

$value < lower$ OR $value > upper$

Addressing outliers

1. Remove observations
2. Imputation

Winsorizing

IF *value < 5th percentile* **THEN** *value = 5th percentile*

IF *value > 95th percentile* **THEN** *value = 95th percentile*

Let's practice!

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Histograms and outliers in AirBnB listings

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