

# 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?

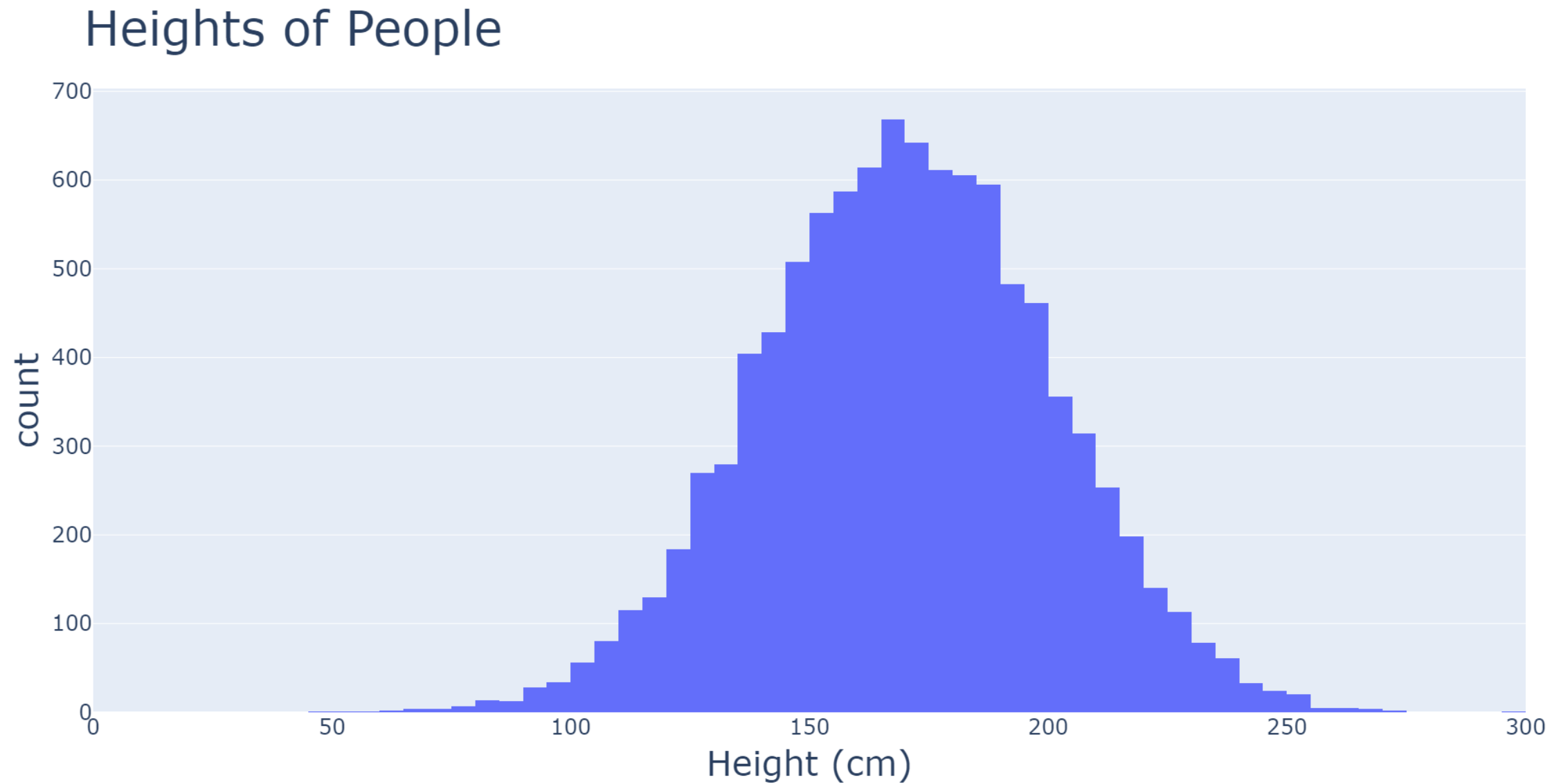
## Continuous

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

## Categorical

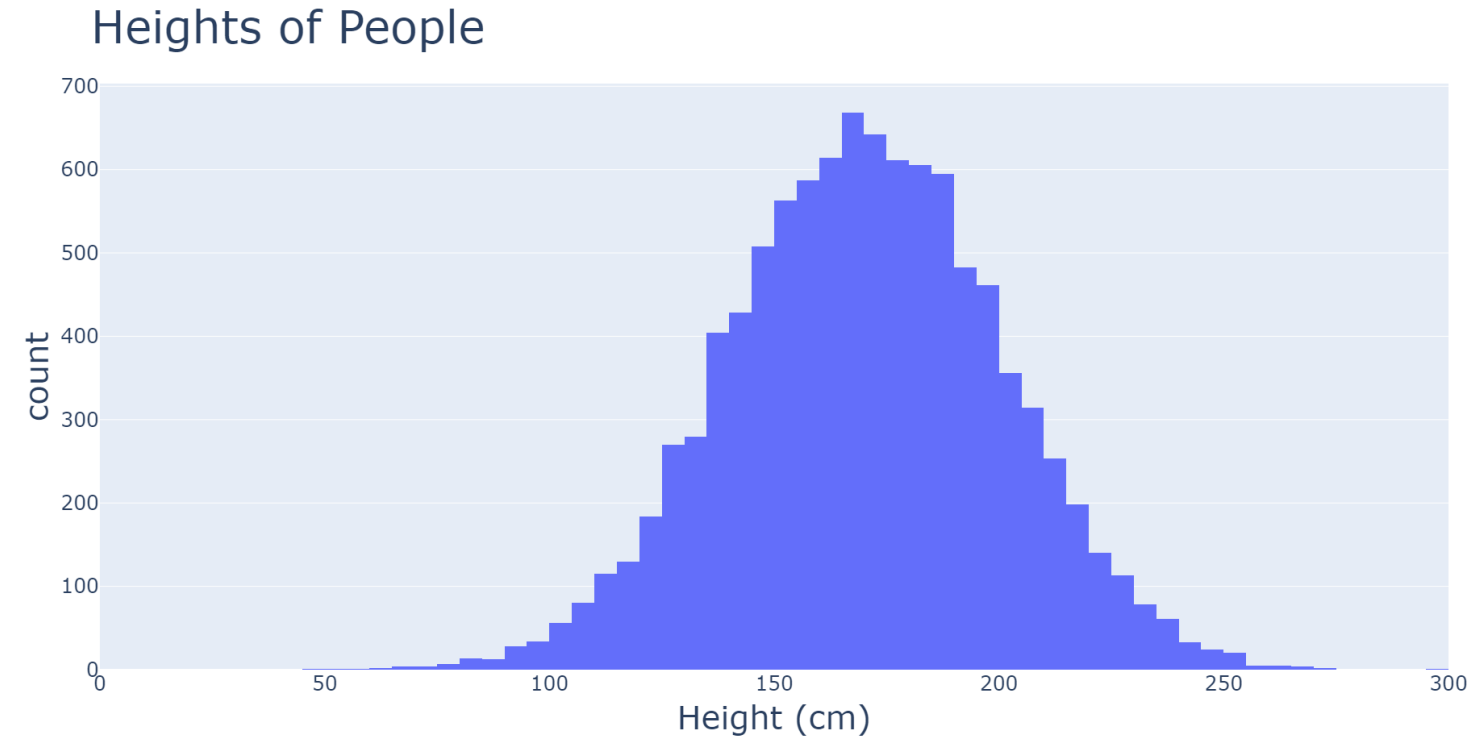
Hair Color	Frequency
Blonde	30
Brown	50
Black	40
Red	20
Grey	20

# What are histograms?

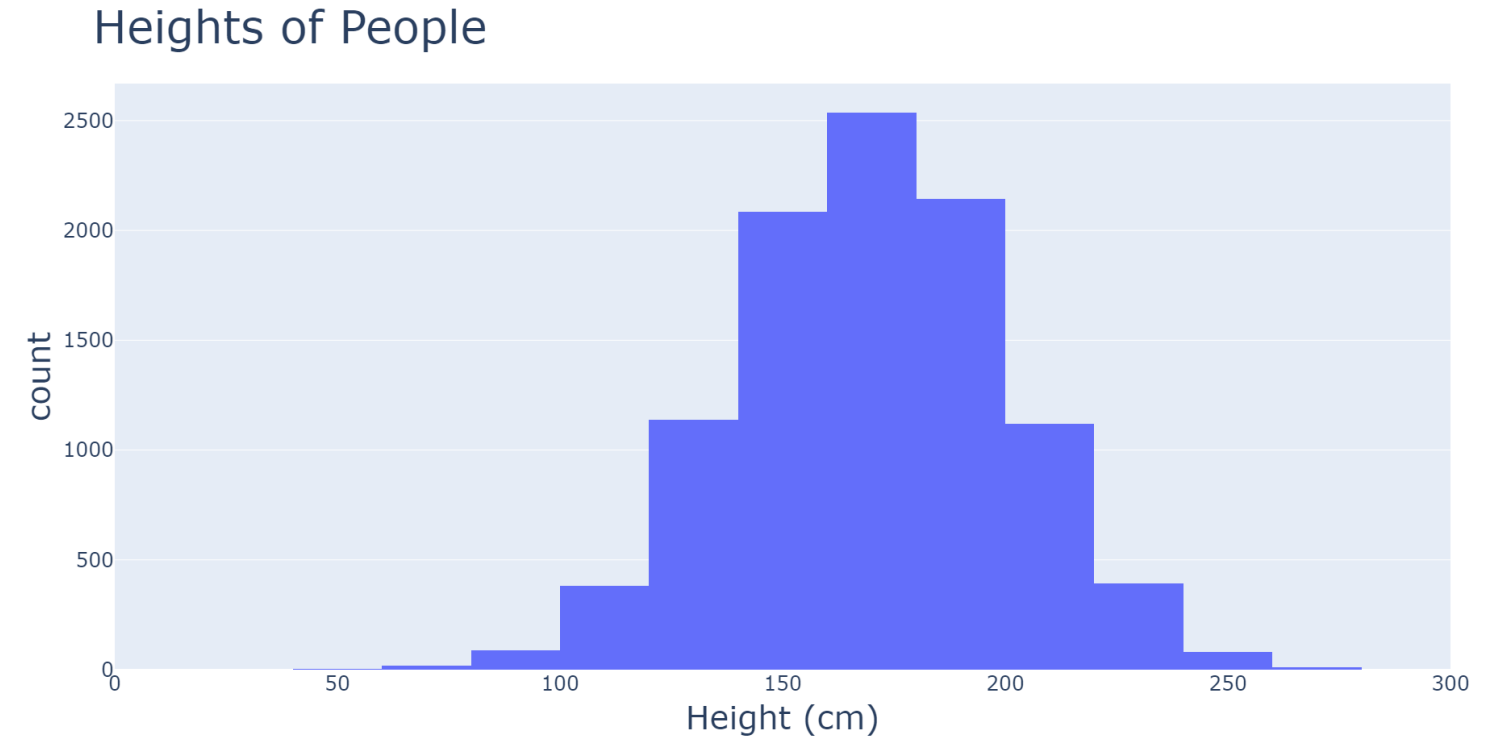


# What are histogram? - bins

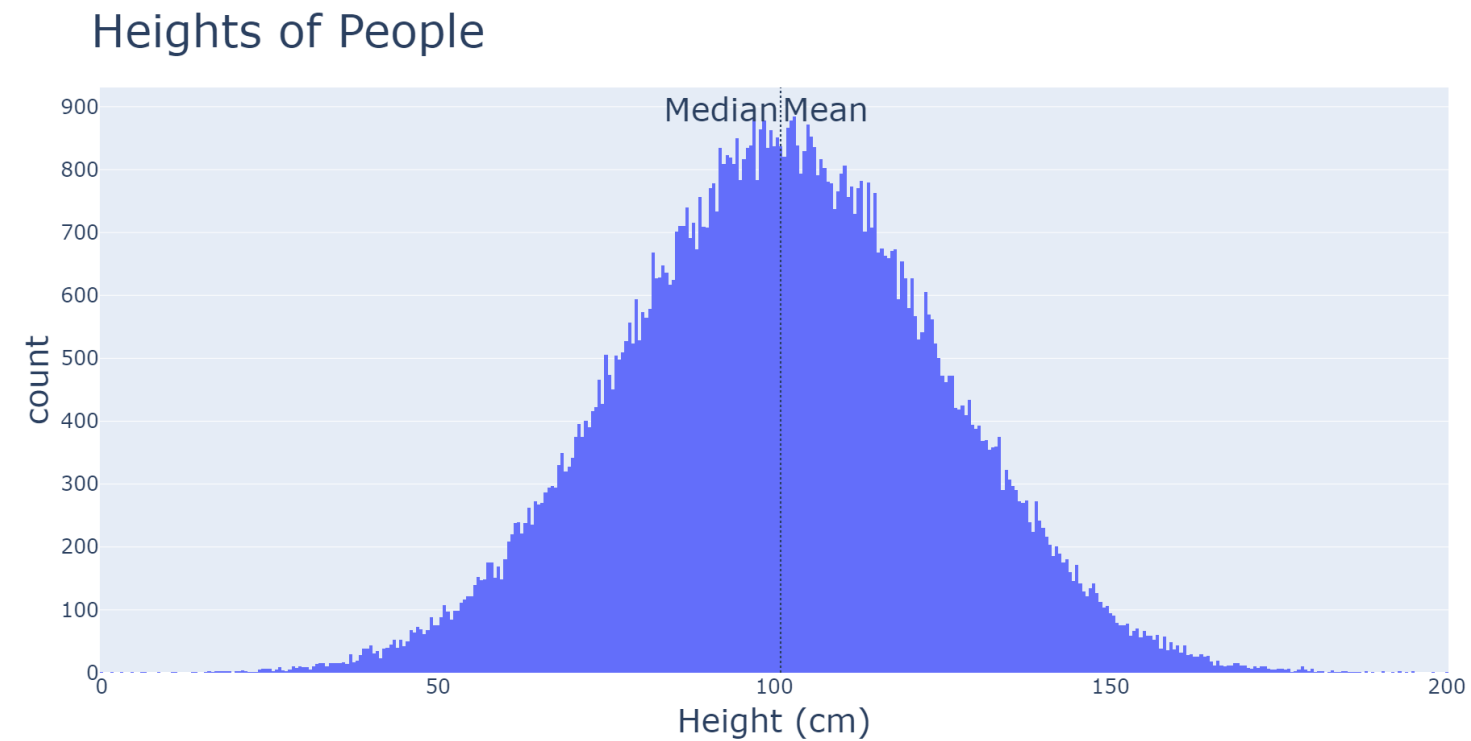
Histogram with 100 bins



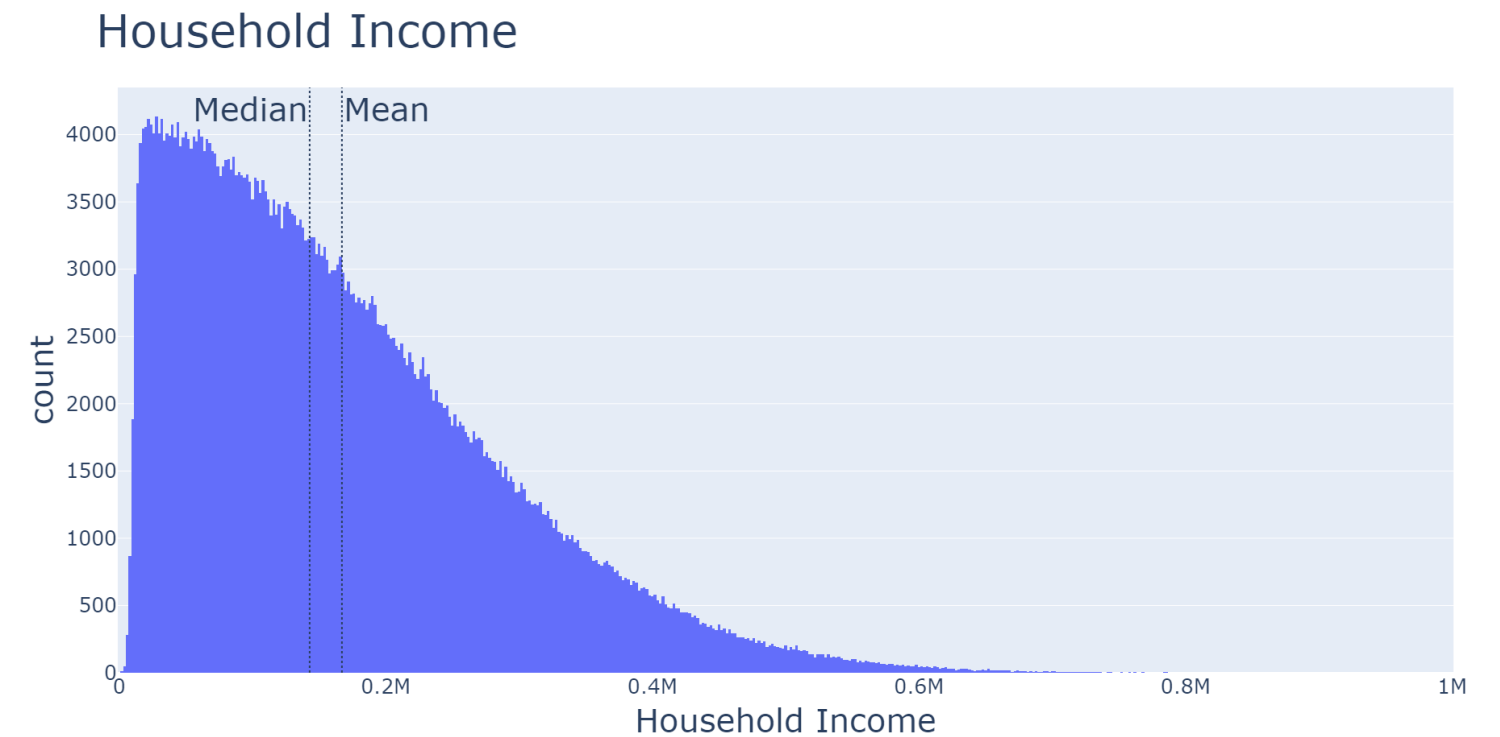
Histogram with 20 bins



# Reading histograms - centrality and skewness



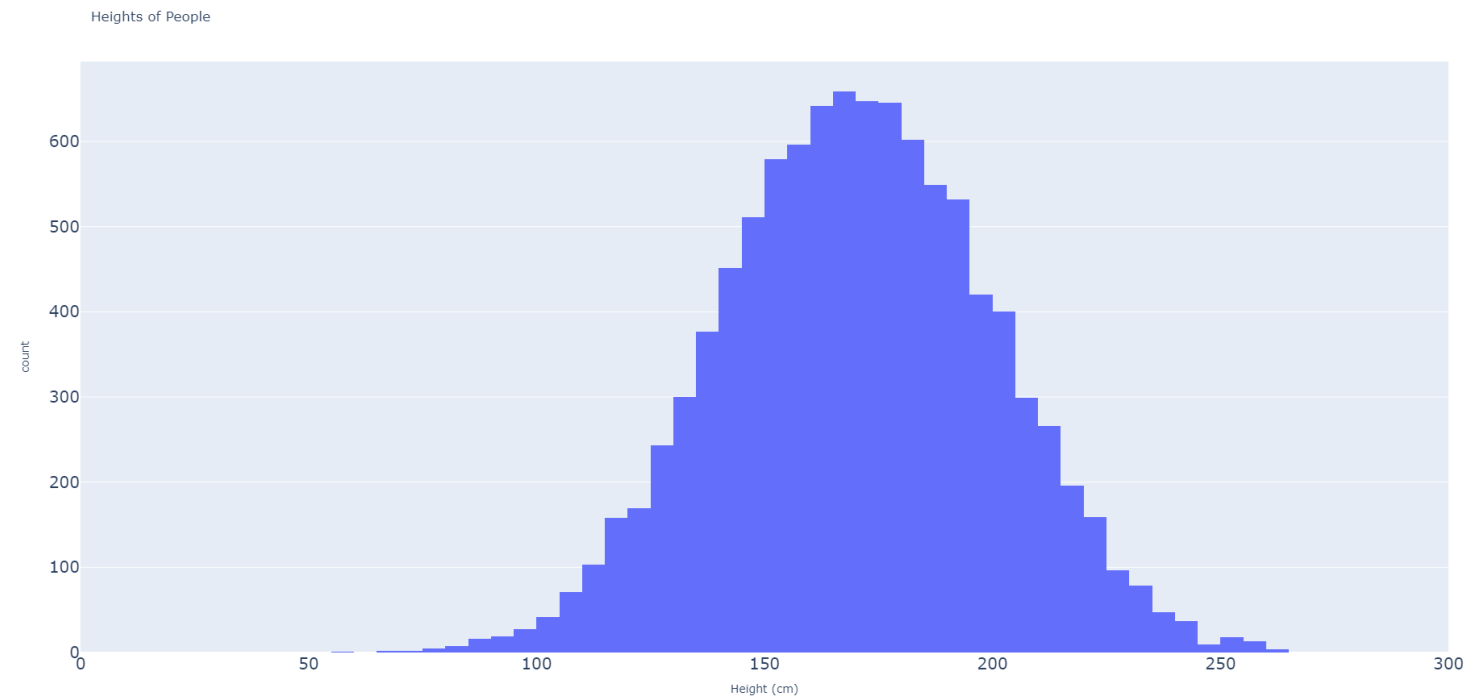
Normal distribution



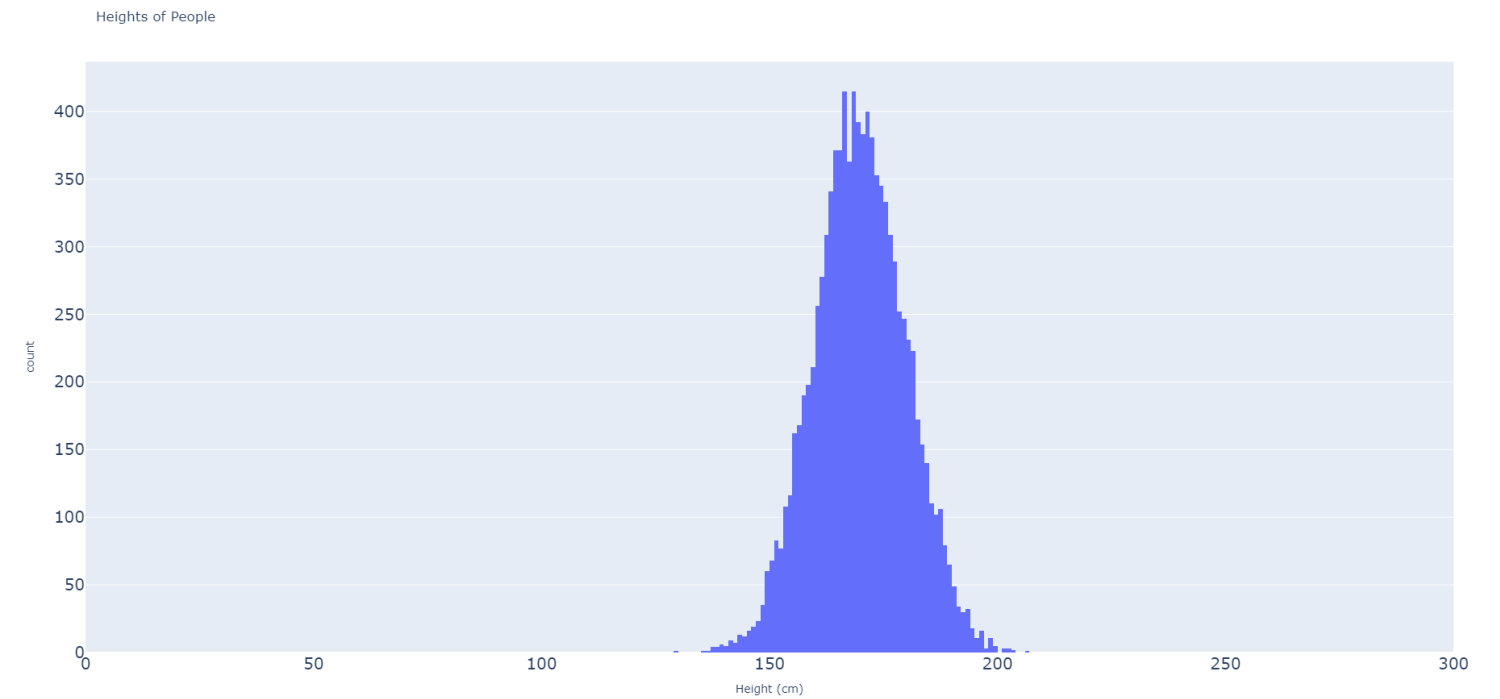
Right-skewed distribution

# Reading histograms - spread

Larger standard deviation



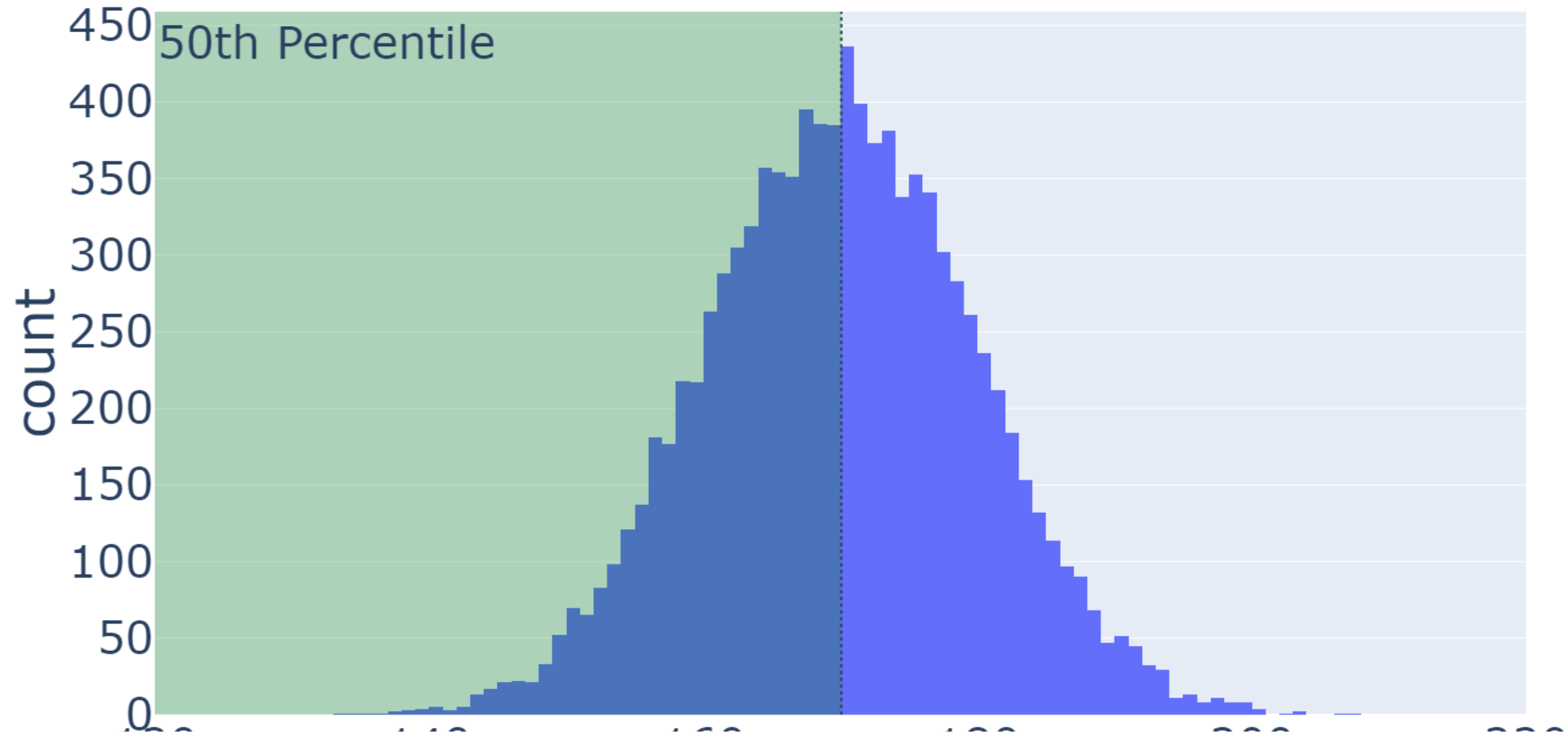
Smaller standard deviation



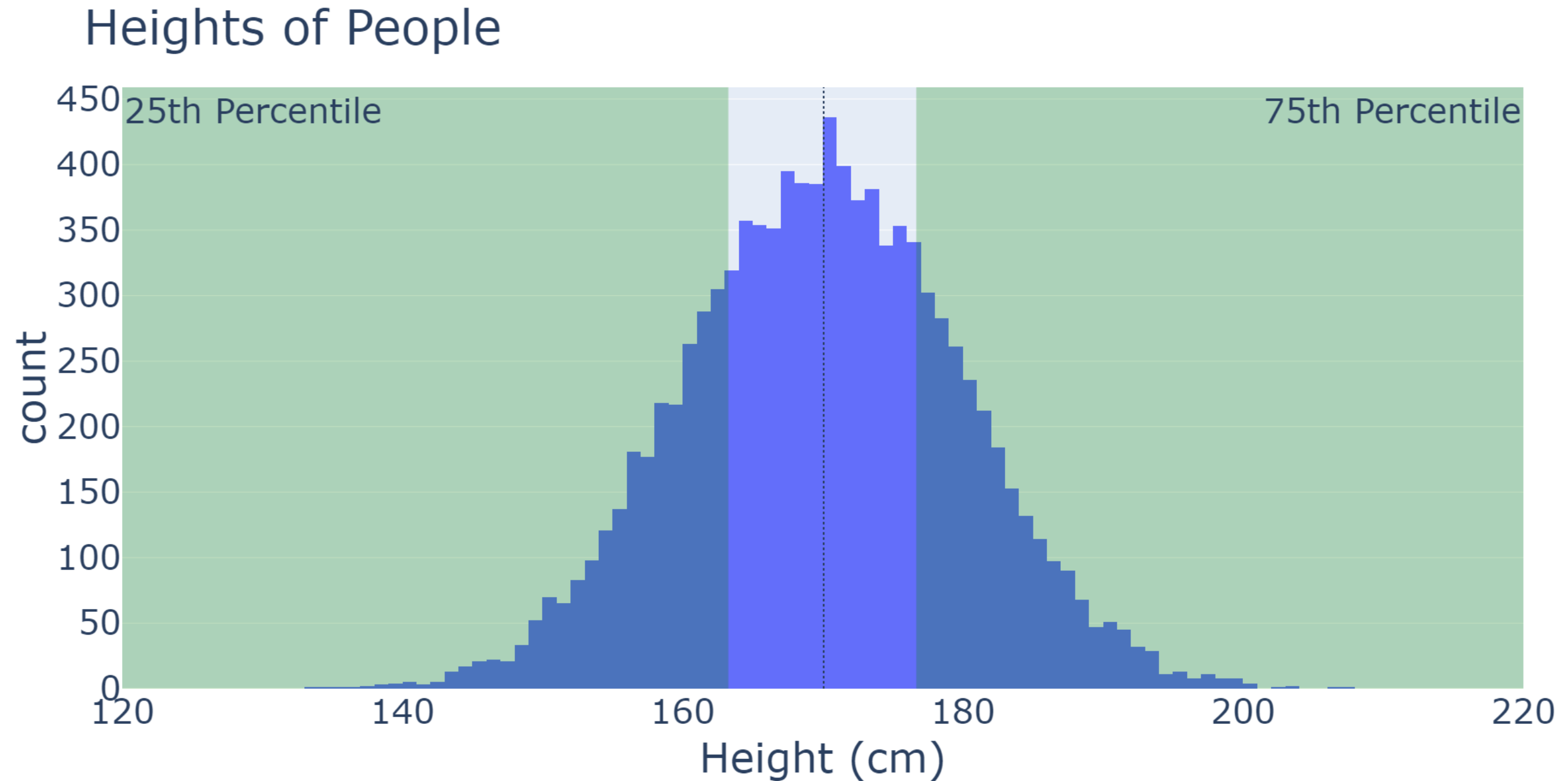


# Reading histograms - percentiles

## Heights of People

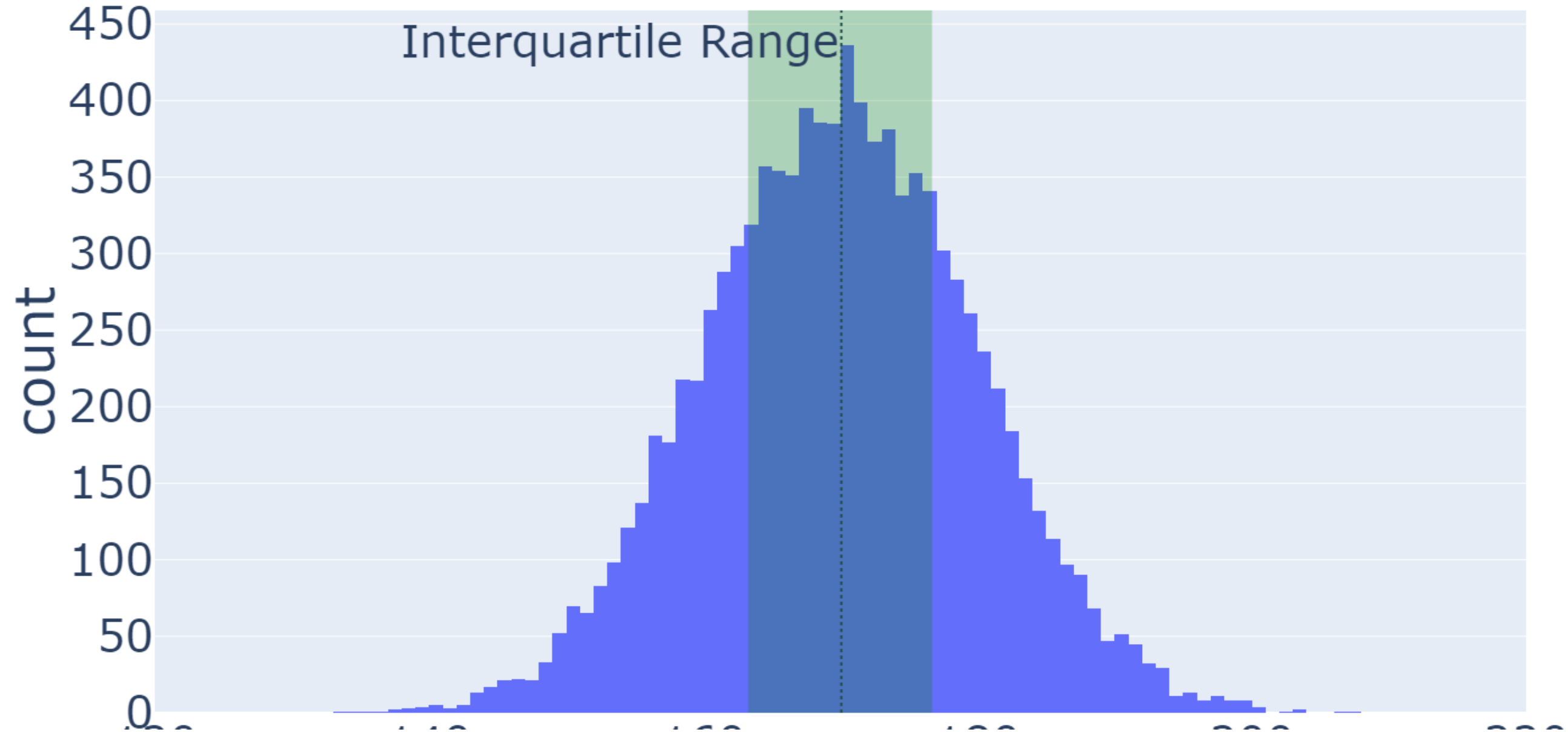


# Reading histograms - 25th & 75th percentiles

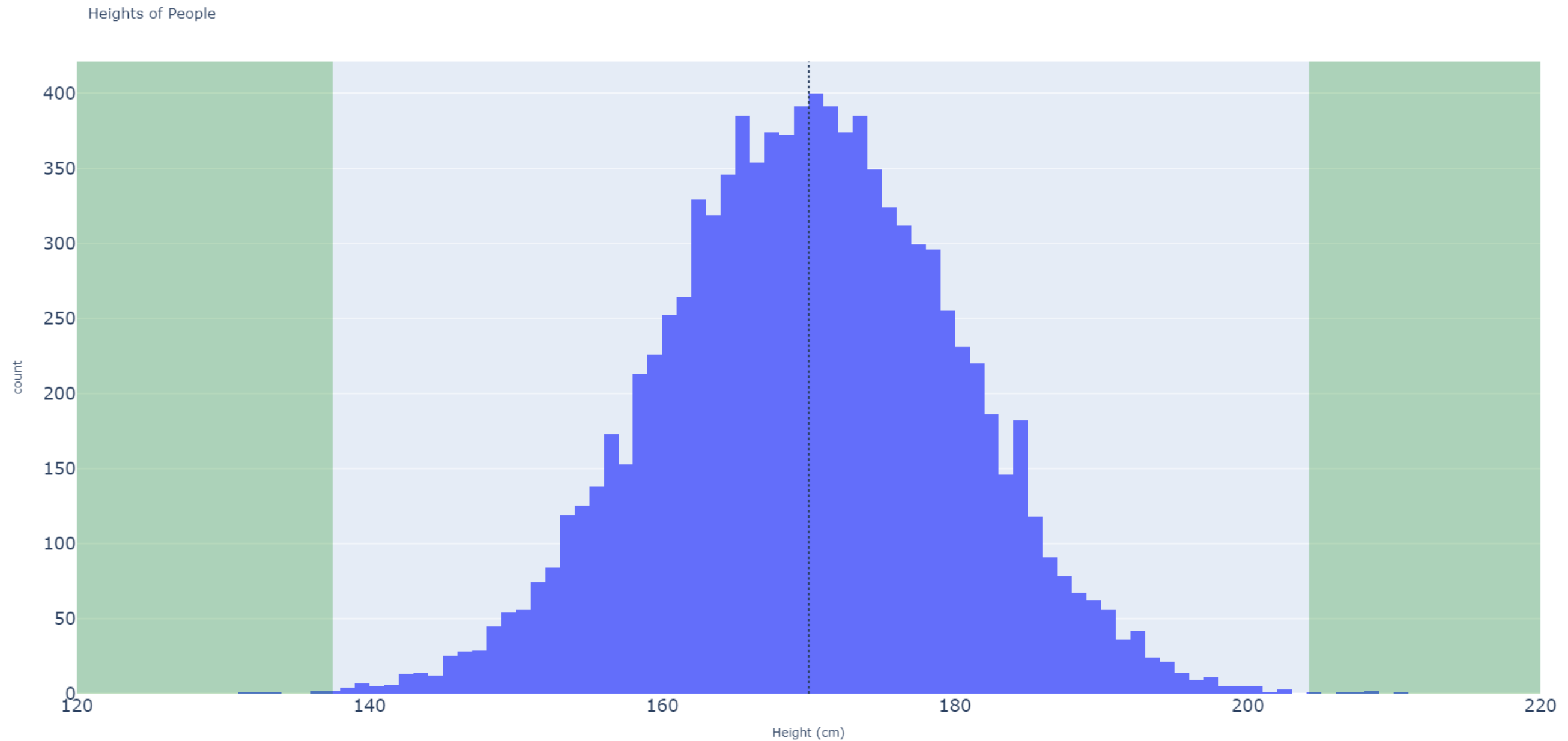


# Reading histograms - interquartile range

## Heights of People



# What is an outlier?



# Finding outliers

Using standard deviation

$$lower = -3 * SD$$

$$upper = 3 * SD$$

Outlier when

$$value < lower \text{ OR } upper < value$$

Interquartile Range (IQR)

$$lower = 25\text{percentile} - (1.5 * IQR)$$

$$upper = 75\text{percentile} + (1.5 * IQR)$$

Outlier when

$$value < lower \text{ OR } upper < value$$

# Addressing outliers

1. Remove observations
2. Imputation

## Winsorizing

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

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

# Let's practice!

EXPLORATORY DATA ANALYSIS IN POWER BI

# Histograms and outliers in AirBnB listings

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# Let's practice!

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