WHAT WE CAN LEARN FROM THE OLYMPICS

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PROPOSAL

Clients: The health nutrition sector

- The role of perfect nutrition has gained of increasing importance
- In previous decades it was said that being thin is the key factor for success
- This has changed: Today we know that you can only have success if your body is healthy
- My aim: To show you using the example of olympics that weight is a driver of success but not as you might think

Hypotheses

Hypothesis 1: Persons above the BMI tend to perform better since they have more muscles

Hypothesis 2: In athletics it is more helpful to have a lower BMI

Hypothesis 3: In weightlifting it is more helpful to have a higher BMI

Hypothesis 4: Young runners are more likely to win than old runners

Hypothesis 5: The BMI of athletes has increased over time

Approach

1. Calculating the BMI (Body Mass Index) for each athlete
2. Calculating the average BMI in each sport
3. Calculating the individual specific deviation from the event specific BMI
4. Generating a dummy variable for being above or below this mean
5. Calculating the metrics for different events, years and sex

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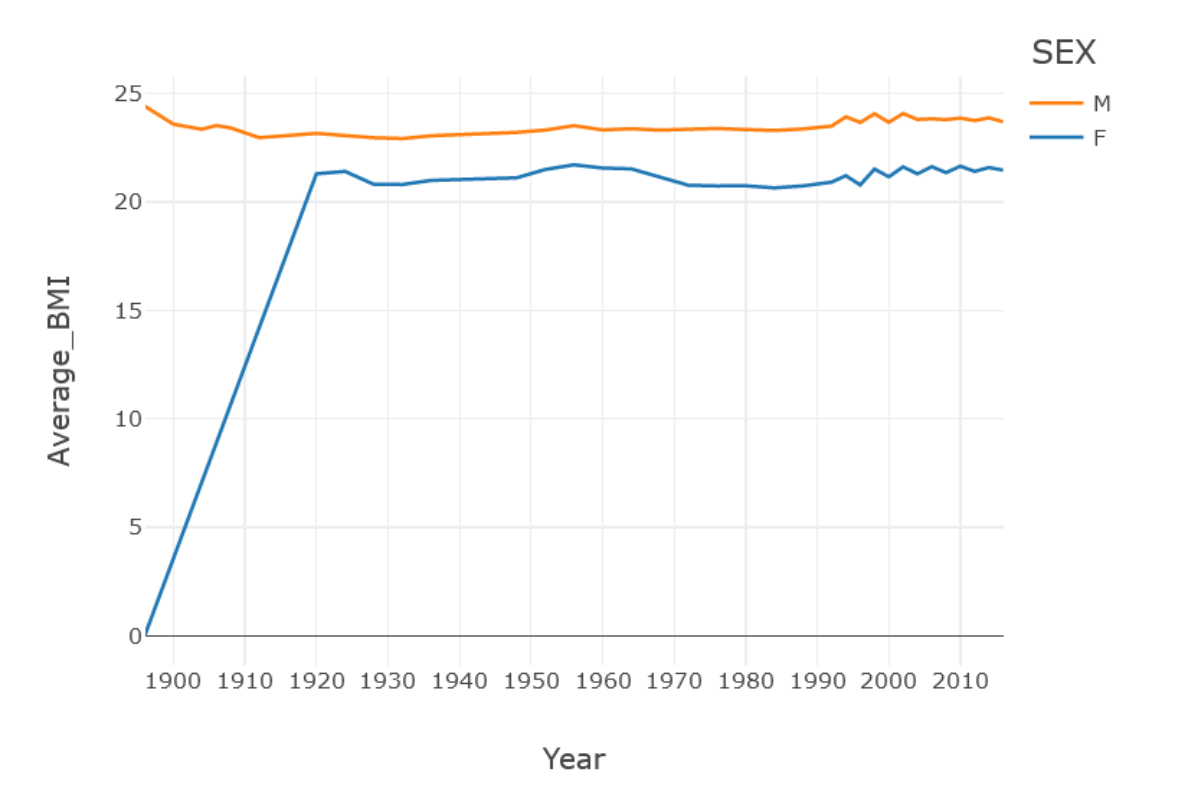
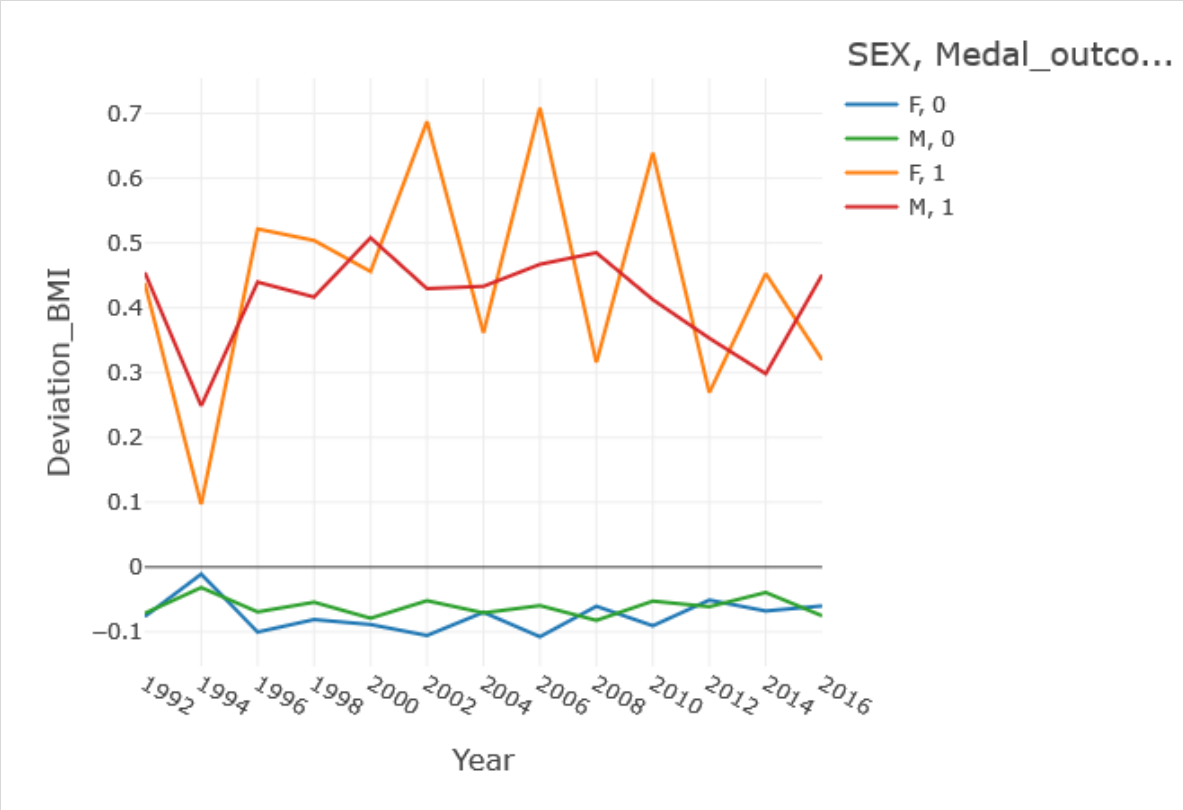
DESCRIPTIVE STATISTICS

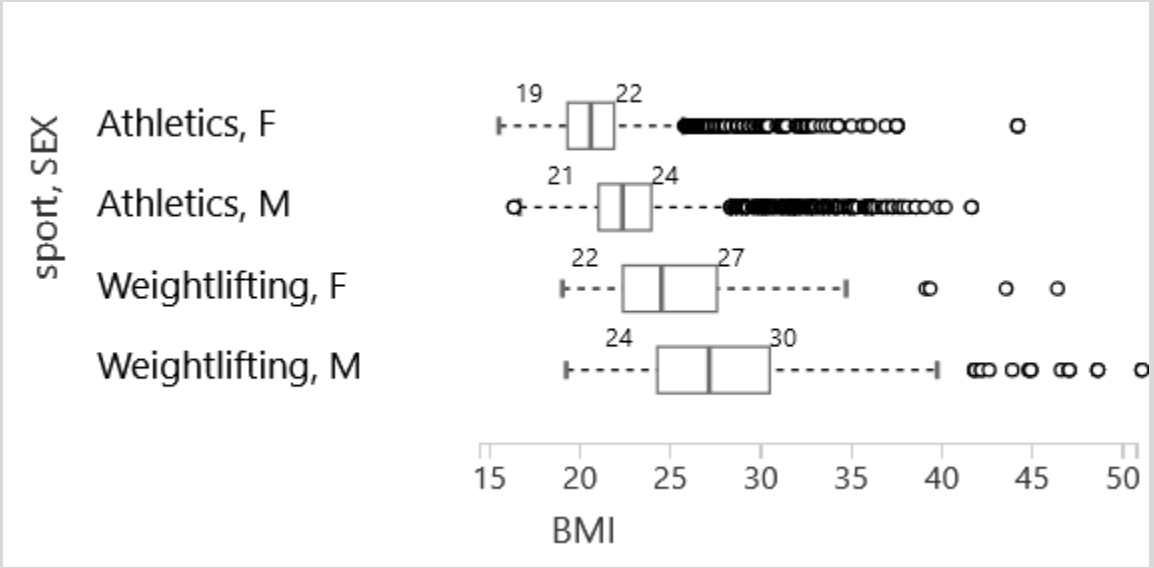
BMI over Time



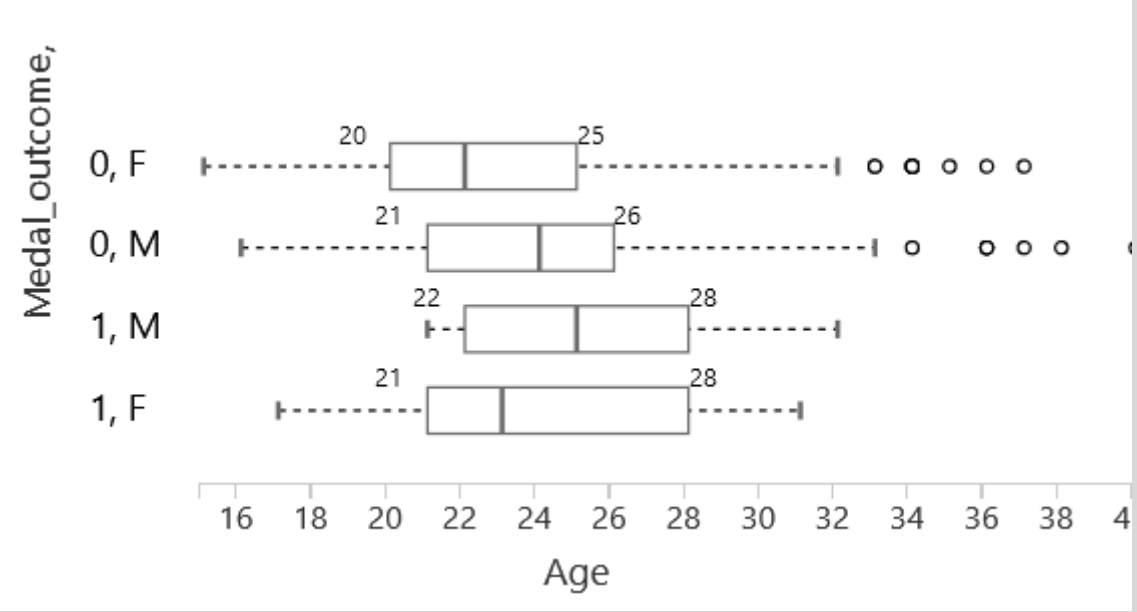
Hypothesis 1:
Persons above the BMI tend to perform better since they have more muscles



Hypothesis 2 +3:
In athletics it is more helpful to have a lower BMI, in weightlifting it is worse



Hypothesis 4:
Young runners are more likely to win a medal than old runners



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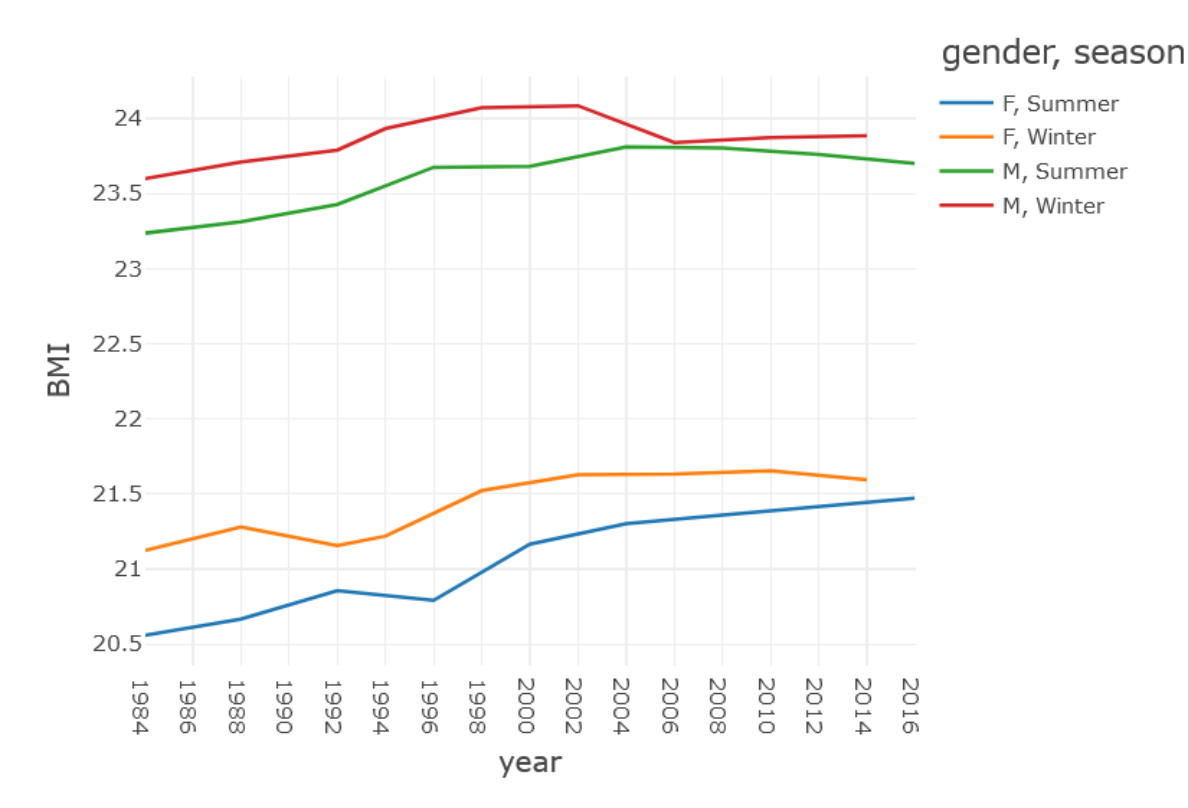

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CORRELATIONS

Hypothesis 1: Persons above the BMI tend to perform better since they have more muscles

- Pearsons Correlation Coefficient between BMI and winning a medal:
  - For Women: 0.077
  - For Men: 0.061

- There is a positive relationship between the average BMI
- Perhaps this is due to more muscles but can also have other reasons that we do not observe

Hypothesis 2:
In athletics it is more helpful to have a lower BMI

- AB-Test: Comparision of those who have a BMI that is over the sport specific BMI and those whose BMI is below. We compare the number of medals that each group won

- For women: Significant difference
  - Success rate ABOVE BMI MEAN: 13
  - Success rate BELOW BMI MEAN: 10

- For men: Significant difference
  - Success rate ABOVE BMI MEAN: 13
  - Success rate BELOW BMI MEAN: 9

- Surprisingly, athletes with a higher BMI a more likely to win a medal

Hypothesis 3:
In weightlifting it is more helpful to have a higher BMI

- AB-Test: Comparison of those who have a BMI that is over the sport specific BMI and those whose BMI is below. We compare the number of medals that each group won
- For women: No significant difference
- For men: Significant difference
  - Success rate ABOVE BMI MEAN: 18
  - Success rate BELOW BMI MEAN: 14
- There is no significant difference for women probably because there are only few observations
- As suggested for male weightlifters it is an advantage to have a higher BMI

Hypothesis 4: Young runners are more likely to win than old runners

- Only the events “Athletics Men's 100 metres” and “Athletics Women's 100 metres”
- Pearson Correlation between Age and Medal Outcome
  - Women: 0,046
  - Men: 0,014

- Not as suggested, the relationship between age and medal outcome is positive. That is, older athletes are more likely to win
- This may be due to selection: Those who have won at the last olympics are more likely to take part a second time.

Hypothesis 5:
The BMI of athletes has increased over time

- Pearsons Correlation between BMI and year
  - For women: 0,059
  - For men: 0,068

- There is a positive relationship between BMI and year. Thus, the BMI has increased over time
- However, we do not know why.

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DISCUSSION

What did we learn?

- BMI is an important factor for winning an olympoc medal
- Even in atheltics athletes with weights above the average BMI are more likely to win a medal
- Moreover, the BMI has increased over time

- For the nutrition industry we can say that having the perfect weight for your body is the driver of success

Open Question

- We only have weight and height information, however, key information are missing such as: Percentage of body fat, percentage of muscles, body type and: NUTRITION
- Moreover, it might be interesting the compare nations and their teams over time
- Also, it might be useful to look at specific athletes that took place in more olympics. How did their weight change? Did they have more success when loosing or gaining weight?

THANK YOU!