

Case study

Calorie burning: The objective of the study was to explore the relationship between heat production (calories), body mass and workout intensity. To this end, measurements of heat production (variable calories, it is the response variable) at various Body Masses (kgs, variable weight) and Work levels (Calories/hour, variable calhour) on a stationary bike were taken on 24 volunteers.

Analysis:

- Explore the data carefully using graphical tools and descriptive statistics.
- Explore the missing data using graphical tools and descriptive statistics.
- Carry out a complete case analysis. Discuss carefully your results.
- Carry out a multiple imputation analysis. Discuss carefully the methodology (number of imputations, imputation methods, etc) and your results.
- Carry out a IPW analysis. Discuss carefully the methodology (model to calculate the weights) and your results.
- Compare the results from all the analysis
- Discuss the advantages and disadvantages of all the approaches.

Conclusion:

- What scientific insight does your final model offer?
- Interpret the final model using the estimated coefficients and confidence intervals.

Source: M. Greenwood (1918). “On the Efficiency of Muscular Work”, Proceedings of the Royal Society of London, Series B, Containing Papers of a Biological Character, Vol.90, 627, pp.199-214