IT UNIVERSITY OF COPENHAGEN

Reflections in Data Science

BSREDAS1KU-20201

2020-02-25

https://www.informationisbeautifulawards.com/showcase/4417

Exercise 3 - Plan

- Fermi estimations problems (10 minutes).
- Null model exercise 1 (25 minutes).
- Null model exercise 2 (25 minutes)

Fermi problem 2

- How many bicycles are sold in Denmark every year?

Fermi problem 2

- Danish population?
- Portion of population interested in bicycles?
- Percentage of new buys?

Fermi problem 2

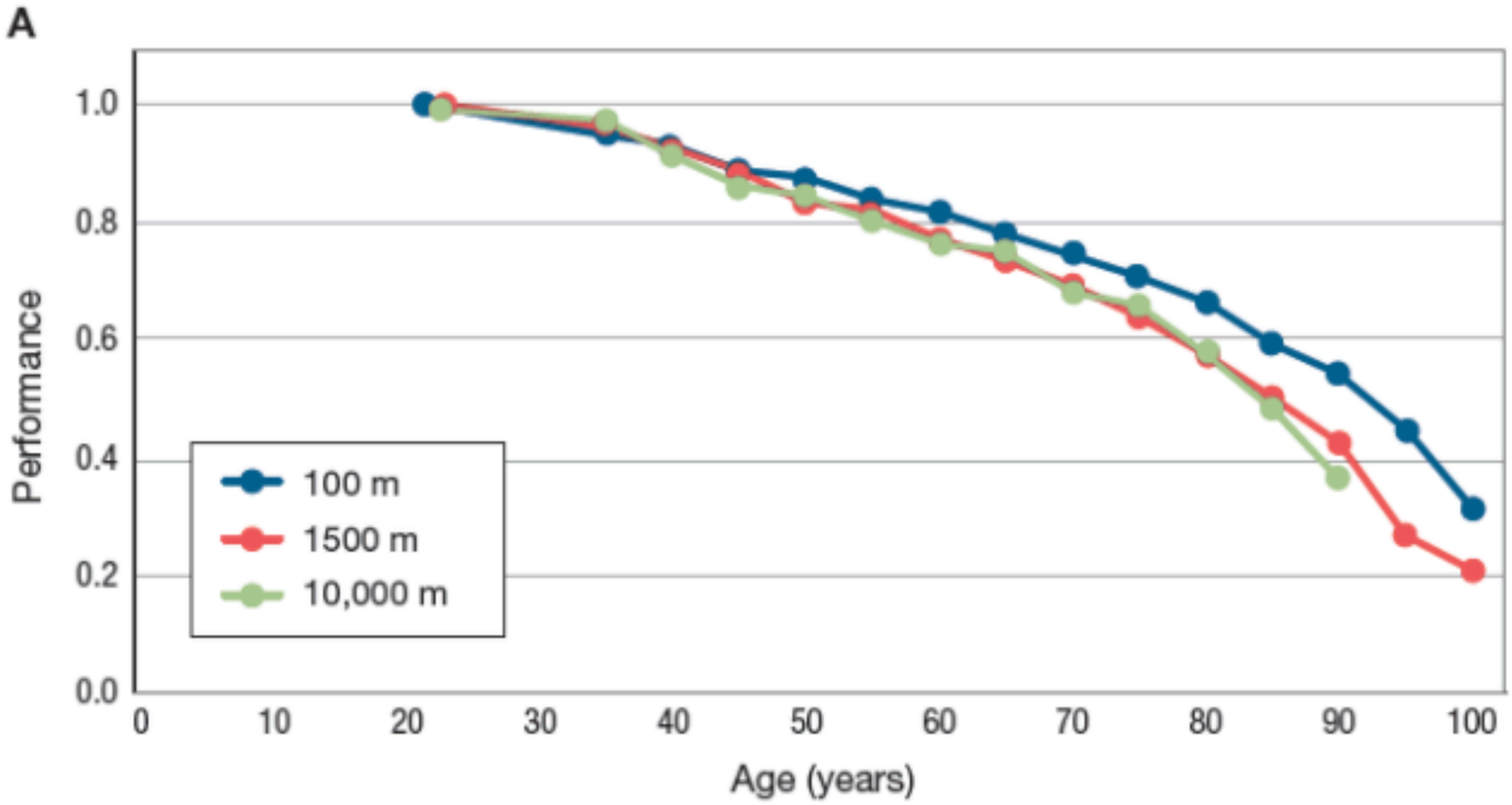
- How many bicycles are sold in Denmark every year?

Answer: Approximately half million bicycles are sold every year in Denmark

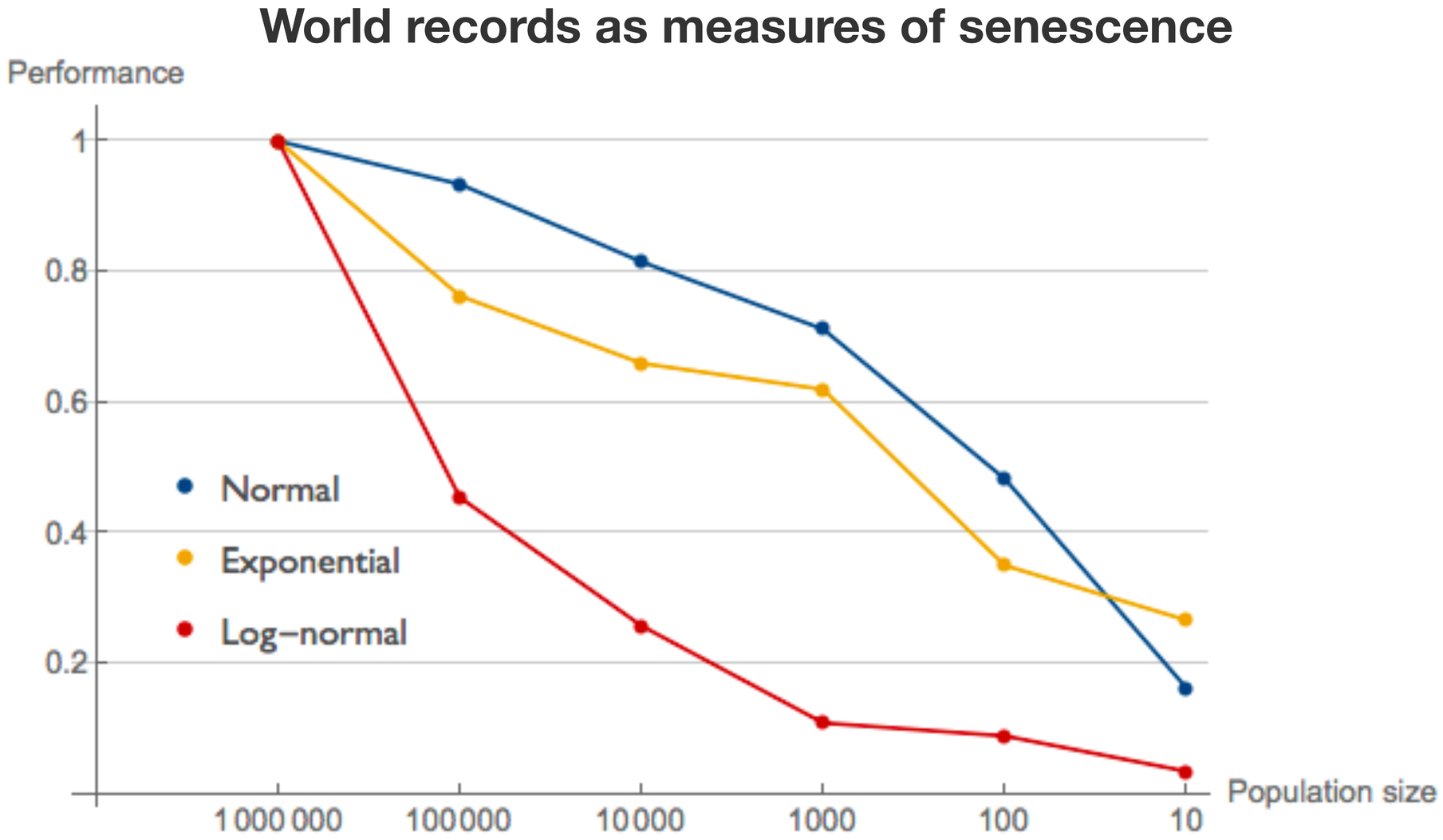
Source: http://www.cycling-embassy.dk/wp-content/uploads/2010/03/Bicycle-statistics-from-Denmark.pdf

Null model exercise 1

World records as measures of senescence



Null model exercise 1



Inverse transform sampling

- Inverse transform sampling is a method for generating random numbers from any probability distribution.

- It uses the inverse cumulative distribution.

Null model exercise 1

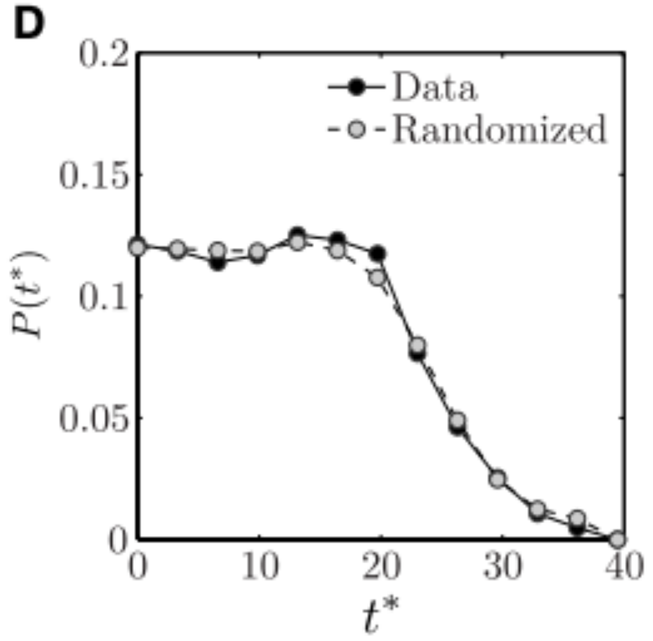
World records as measures of senescence

www.mybinder.org

https://github.com/tocunha/reflectionsdatascience

Null model exercise 2

- Distribution of highest impact work during the career.
- Description of the null model in the paper.
- http://www.robertasinatra.com/pdf/Science_quantifying_aaf5239_Sinatra.pdf



Null model exercise 2

- You will be provided with the data to generate the distribution.
- You will have to read the initial part of the paper to identify the null model.
- Implement the null model.
- Reproduce the plot.
- Check in our repository the notebook null_model_scientific_impact.ipynb