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## Primary Research Question

Denmark is a high-income country, and Belarus is a medium-income country of about the same size. Find the **best-fitting model** for internet usage in each country since 1990. Then answer the question: Does **income level** have an impact on the **speed** with which a country adopts use of the internet?

## Analysis

Let's break this question down into the different descriptive statistics that you will need to construct your answer. Be sure that your R output includes all of the following components.

1. Create a variable that represents **proportion** of the population using the internet. (internet users divided by population).
2. Create a subset of the data that only contains data from 1990 onward.
3. Create a new variable that is "years since 1990".
4. Create two new data frames --- one for each country of interest.

5. Determine the best-fitting model (exponential or logistic) for internet usage in each country from 1990 onward.
6. Using the best-fitting model for each country, determine which country shows a faster adoption rate of the internet.

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(6/6 points)

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## Model Fit Statistics

Report the model fit statistic ( $R^2$ ) for each of the following models. Report to 4 decimal places.

1a) Exponential growth model for Denmark:

1b) Logistic growth model for Denmark:

1c) What is the **best-fitting** model for growth of internet usage in **Denmark** from 1990 onward?

☒ logistic ☐ neither logistic nor exponential☐ exponential

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1d) Exponential growth model for Belarus:

1e) Logistic growth model for Belarus:

1f) What is the **best-fitting** model for growth of internet usage in **Belarus** from 1990 onward?

☒ logistic 

☐ neither logistic nor exponential

☐ exponential

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## Logistic Models

Use the logistic models to answer the following questions:

2a) What is the **carrying capacity** in Denmark? (report to four decimal places)

0.8967

0.8967

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2b) What is the value of **b** (the growth indicator) in Denmark? (report to two decimal places)

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2c) What is the value of **b** (the growth indicator) in Belarus? (report to two decimal places)

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2d) What is the **carrying capacity** in Belarus ? (report to four decimal places)

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(1/4 points)

**Prediction**

Using the logistic model equations from your analysis, calculate the **YEAR** that 10% of the population in each country would be using the internet.

3a) Denmark=

**Answer:** 1996

3b) Belarus=

**Answer:** 2004

Using the logistic model equations from your analysis, calculate the **YEAR** that 80% of the population in each country would be using the internet.

3c) Denmark=

2004

2004

**Answer:** 2004

3d) Belarus=

2020

2020

**Answer:** 2019

Hide Answer

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