I need to extrapolate data for BMI, height, weight from a provided dataset (0-20 year old m/f data from the CDC) to ages up to 100 years, in yearly increments.

Your approach will involve making assumptions and using general trends observed in population studies. However, it's important to note that without access to any real datasets you will have to perform your own statistical analysis with explanations.. here are my example assumptions (using BMI, body mass index)

Assumptions for Extrapolation

Trend Continuity:
Given the CDC dataset, the trends observed in the BMI changes from ages 2 to 20.5 continue in a similar pattern but at a decelerated rate as individuals age.

Plateauing in Middle Age:
BMI tends to increase until middle age, after which the rate of increase slows down, and it may plateau or slightly decrease in older age due to factors like muscle mass loss.

Gender and Population Specifics: The extrapolation considers that the dataset is for females and assumes that the trends do not significantly differ from global averages observed in similar populations.

Potential Methodology

1. Analyze Existing Data:
Determine the average yearly increase in BMI across the provided age range. This involves calculating the difference in median BMI values year over year and averaging these differences.
2. Adjust for Ageing:
Apply a deceleration factor to the average yearly increase to account for the slowing of BMI increase with age. This factor could be determined based on literature or existing studies on aging and BMI.
3. Extrapolation:
Starting from the last known data point at age 20.5, apply the adjusted yearly increase to estimate BMI values for each subsequent year up to age 100.
4. Consideration of Plateau and Decline: Introduce a plateau phase starting at an assumed age (e.g., 60 years), after which the BMI slightly decreases or remains constant, reflecting changes in body composition in older age.

Hypothetical Extrapolation for BMI Example
1. Ages 2 to 20.5: Use the provided dataset directly.
2. Ages 21 to 60: Apply an adjusted yearly increase based on the average increase observed in the dataset, gradually decreasing the increment to reflect the slowing of BMI growth.
3. Ages 61 to 100: Assume a plateau with a slight decrease or constant BMI, reflecting common trends in aging populations.

Commentary on Possible Uncertainties

- Individual Variability: There's significant individual variability in BMI changes with age, influenced by genetics, lifestyle, health conditions, and socioeconomic factors.

- Population Differences: The extrapolation assumes that the dataset's population is representative of the broader population, which may not be accurate for specific subgroups or regions.

- Health Interventions: Changes in public health policies, medical advancements, or societal shifts (e.g., increased awareness of nutrition and exercise) could alter future BMI trends in ways not accounted for in this extrapolation.

The framework above can be used by you, or if you think a better approach, then use it!

We require statistical analysis and consideration of the latest research on BMI/height/weight trends across the human lifespan using whatever sources you think are useful.

If you think we can split it out by race - even better... there is Indian, Chinese, European data out there too

The outlined approach and assumptions above are speculative and intended to illustrate what might be involved in such an extrapolation task.

I will have about 10 of these tasks - all very similar in nature .. and then want to create other "tools" for my website like "death calculators"

All of this will then be visualised on the website using charting tools - but you can use a spreadsheet to visualise them first

A fun project for the right person who might be interested

Attached is a BMI file for females aged 2-20yo to use as input.. and also the expected output

Many more job like this for the right person