Age Distribution

Griffith Feeney

Why Age is Important

- Age is a critical variable in understanding population change of all kinds
- Practically everything varies strongly with age; we need age ‘control’ to understand
- Age often serves as a proxy for historical period, as in educational attainment data
- World population is undergoing an aging process that will affect every area of life

Definition of Age

- **Exact age** refers to *time elapsed since birth*
- **Age in completed years** refers to the greatest integer less than exact age
- **Age at last birthday** means the same
- ‘Age’ is often used without further specification, with the appropriate meaning inferred from context

Age Distribution of a Population

- Exists at any point in time
- Changes with time except in a ‘stationary population’
- May refer to a list of the ages of all persons in the population
- But usually refers to numbers of persons in age groups, most often single year or quinquennial age groups

Dynamics of Age Distribution

- “The most important fact in demography is that we all get one year older every year”
- This simple fact defines much of the dynamics of age distribution
- Remaining considerations are the level of fertility and, in some cases, migration
- Explication follows; learn this well!

Visualizing Age Distributions

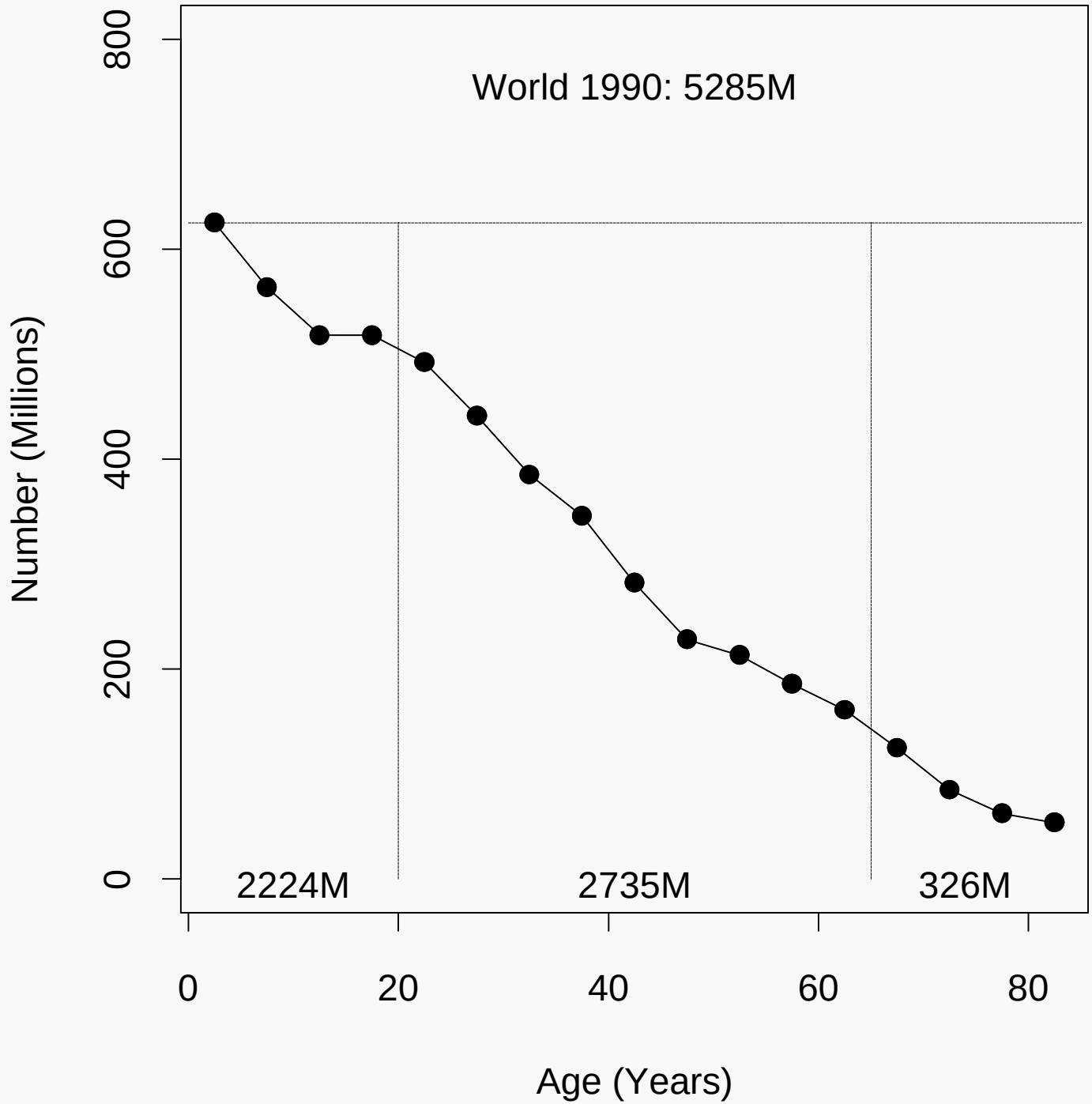
- Visualization is essential for understanding
- Line plots are the right method for visualizing age distribution data
- The *population pyramid*, despite its popularity, is an inferior tool
- Demographers have not kept up with statistical work on visualization

Now for an Example

- The following plot shows the age distribution of world population as of mid-1990
- Horizontal scale is age, vertical scale number of persons
- Reference lines show broad age groups and number of persons in first age group

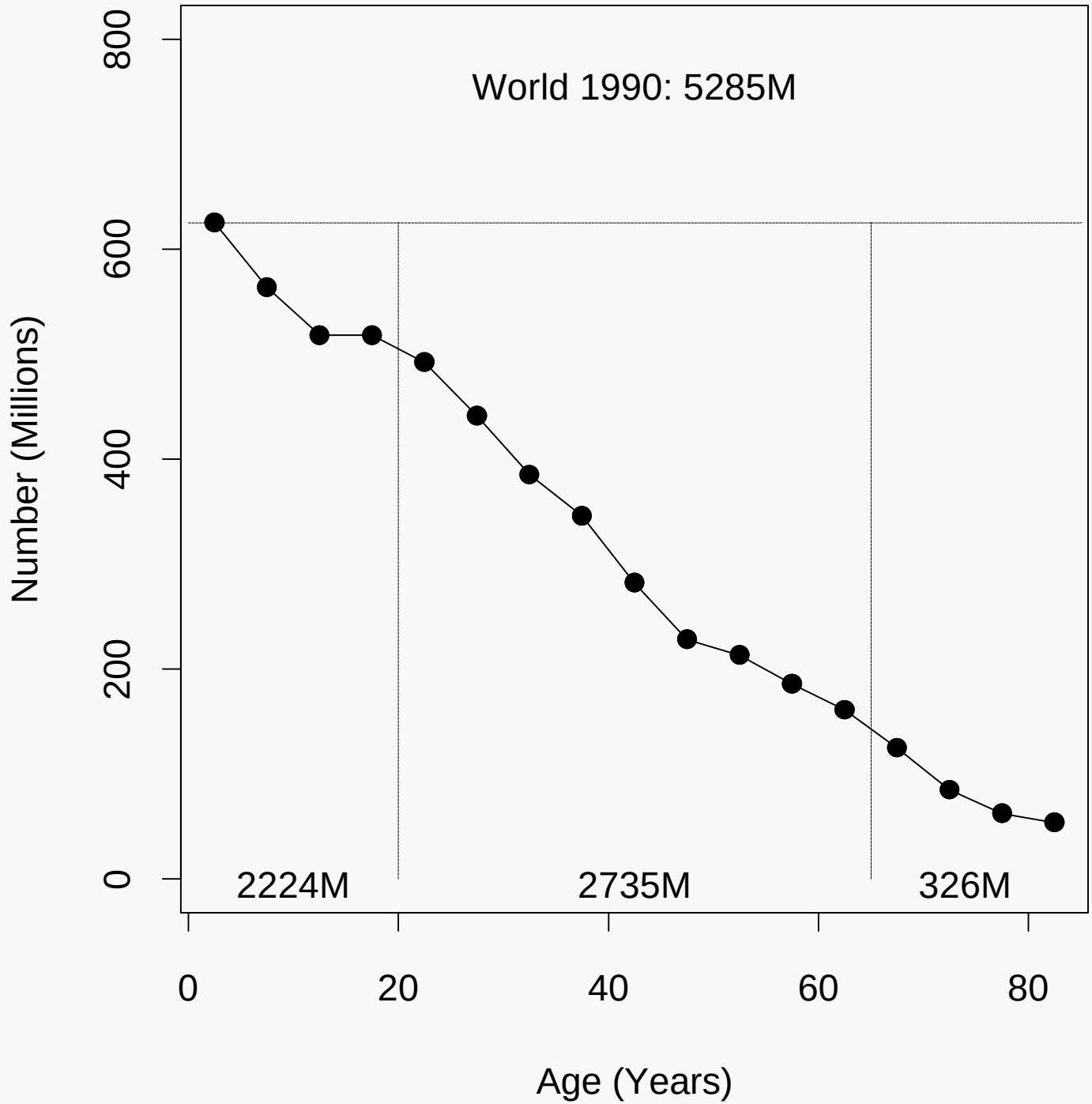
Aside
How to Read a Plot

- Ask and answer the following three questions
- What are we looking at? Note the title, axis labels, scale ranges, plotting marks, etc.
- What do we see? Describe the visual pattern
- What does it mean? Typically many answers to this one


World 1990: 5285M
Number (Millions)
0
200
400
600
800
2224M
2735M
326M
0
20
40
60
80
Age (Years)

What Do We See?

- The age distribution is “young”, meaning that there are many more young people than old people
- More specifically, numbers of persons decline steadily and sharply as we move from younger to higher age groups
- Look at the plot again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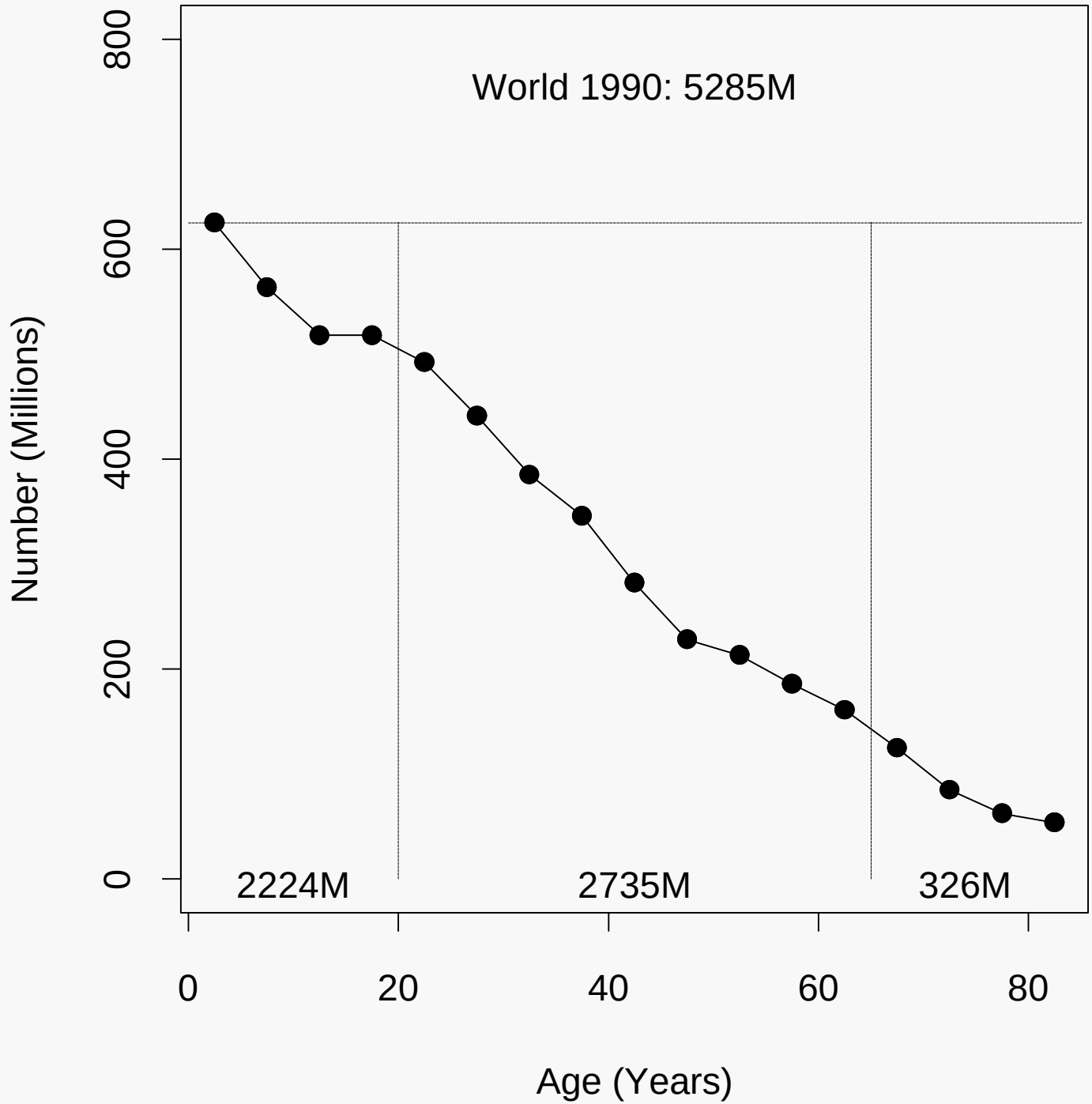
Next We'll Look at the 1995 Age Distribution

- Before we do, however, imagine what it will look like
- Will it be the same? Different? How different?
- "The most important fact in demography is that we all get one year older every year"
- What does this say about how the picture will change over five years?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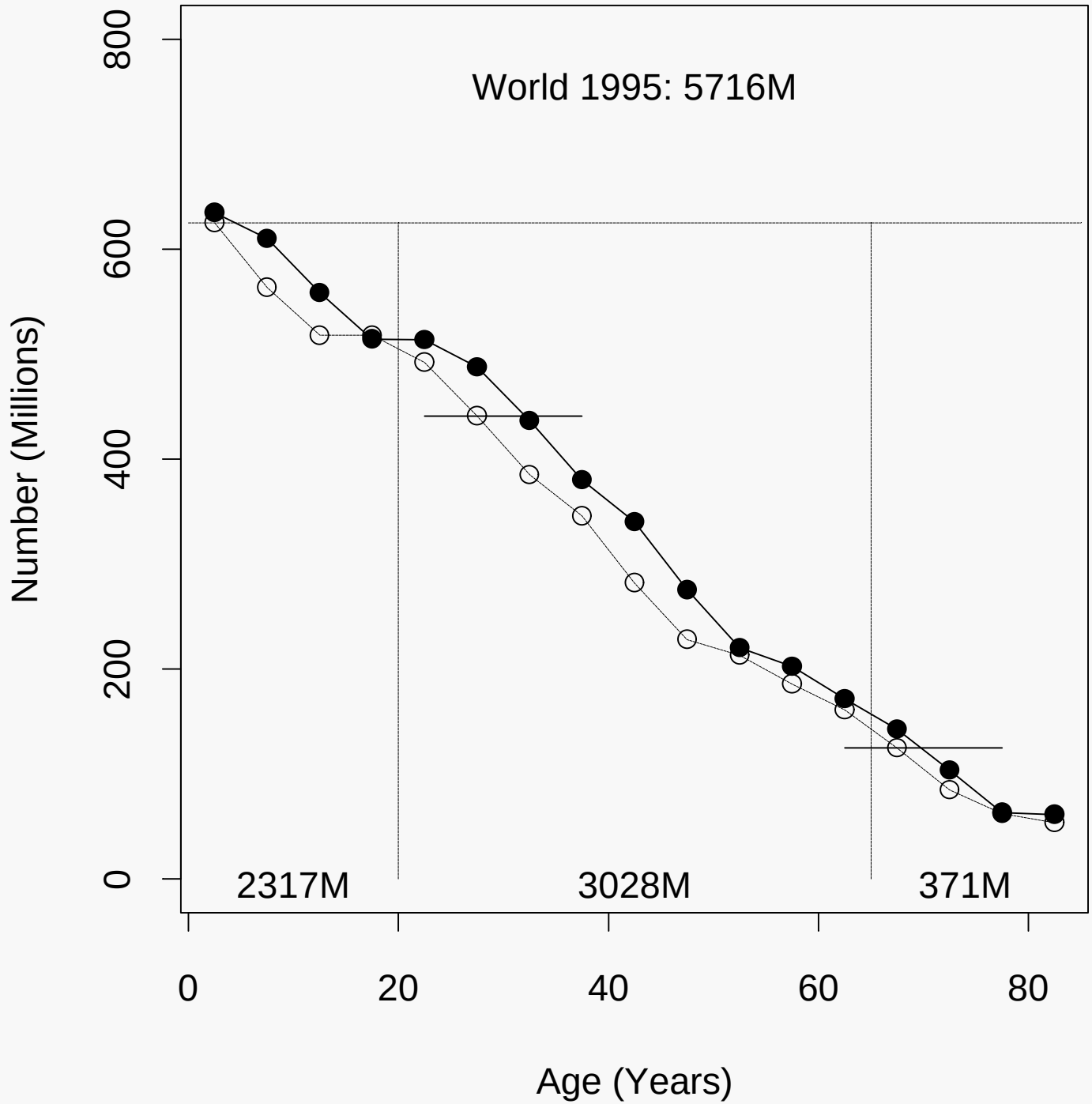
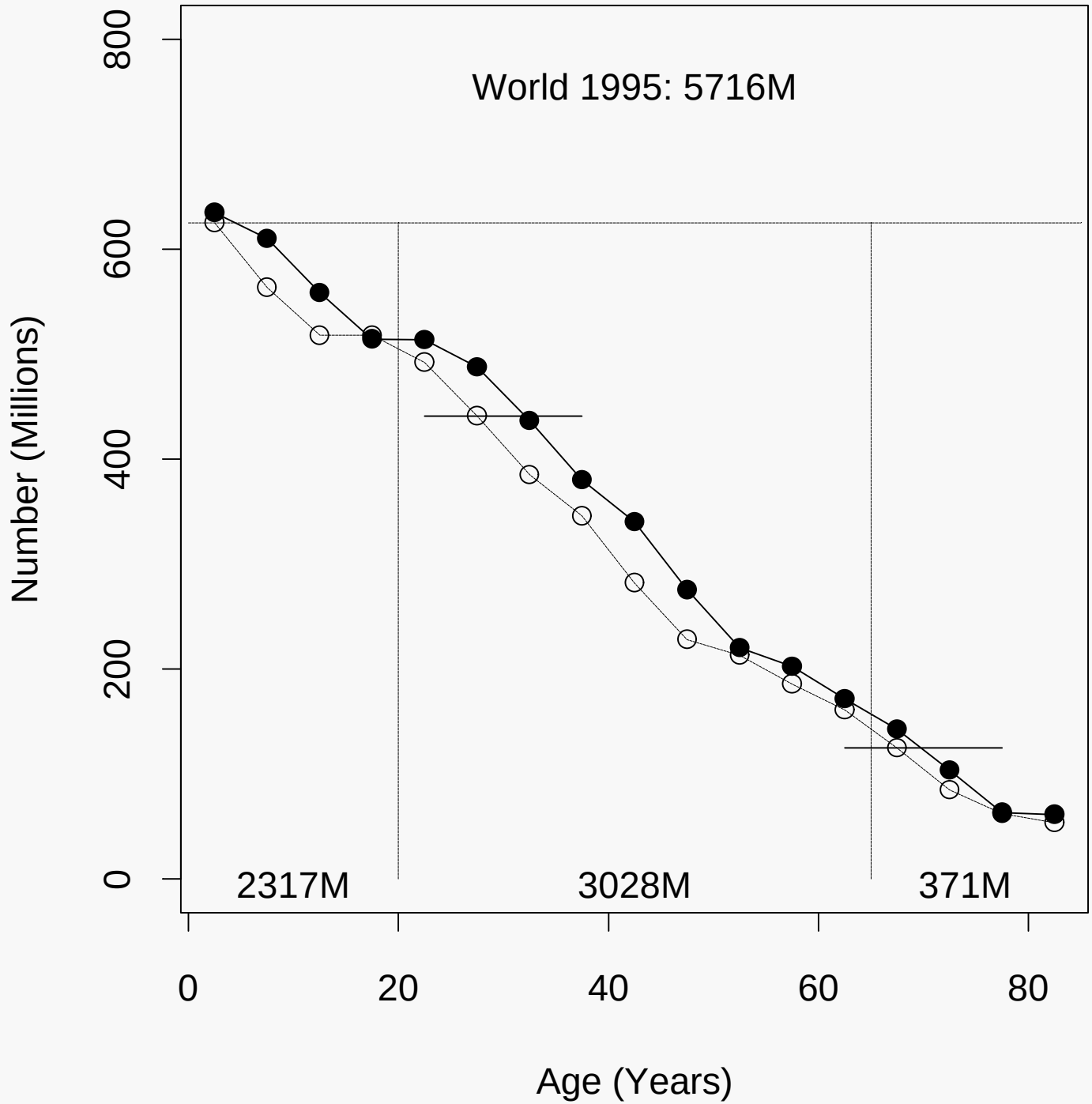
Now for the 1995 Distribution

- The plot will show *both* the 1995 distribution and a ‘shadow’ of the 1990 distribution to help you see how the age distribution changed over five years
- Two short horizontal reference lines have been included in the picture; why?
- Try to explain why the picture looks the way it does


World 1995: 5716M
Number (Millions)
0
200
400
600
800
2317M
3028M
371M
0
20
40
60
80
Age (Years)

Now You've Seen the Picture

- How to describe the change?
- Consider the 0-4 year olds in 1990
- How old were they in 1995?
- How many of them were there in 1995, compared to 1990?
- Now look at the picture again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Where These Numbers Come From

- The **population censuses** of the countries of the world
- Compiled by the United Nations Population Division
- In *The Sex and Age Distribution of World Population: The 1994 Revision*, United Nations, New York, 1994, 857 pages

Questions?
Comments?
Discussion?