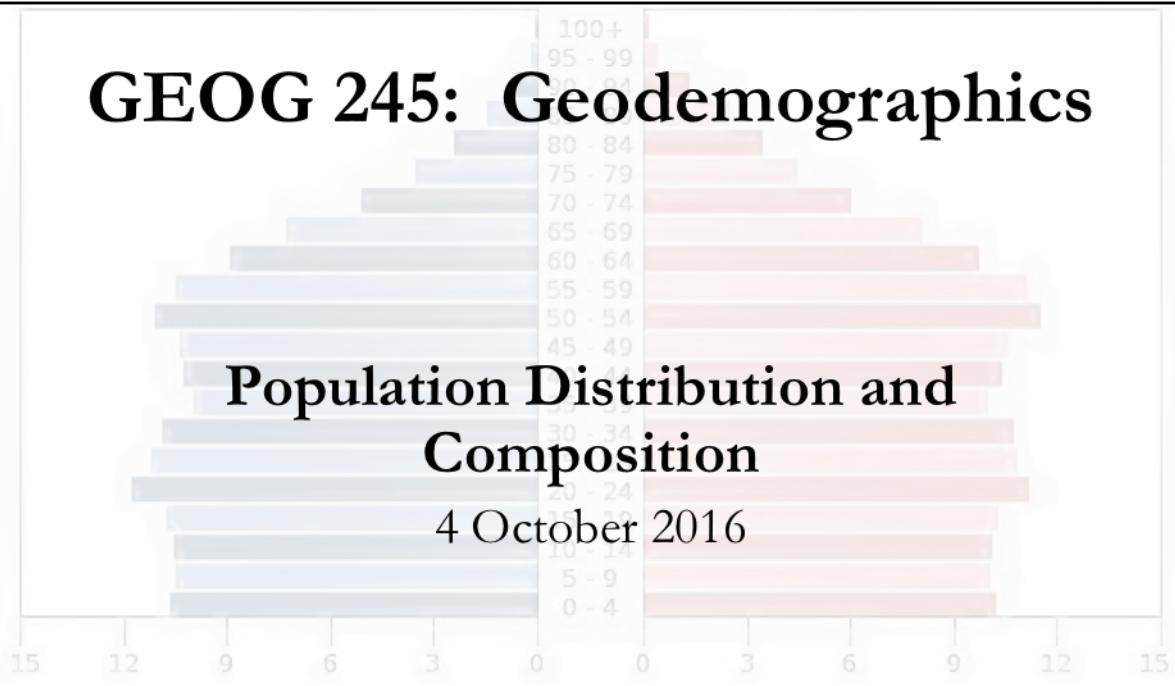


GEOG 245: Geodemographics

Population Distribution and Composition

4 October 2016



Announcements

- Correction from last Thursday:
 - In 1600, global population was 500 million (not 500 thousand). This is smaller than the current population of North America (but certainly larger than the population of Seattle).
- Feel free to call me Skye (or whatever you are most comfortable with)
- Feel free to use computers and other technology in the classroom, but if it isn't strictly for taking notes, please try to sit in the back or near the edges to limit the distraction to others

Note: The correction has been made in the lecture slides on canvas and I added a note to the lecture recording that you should be able to see.

Plan for Today

- Population Pyramids
 - Reading Discussion
 - Understanding Population Pyramids
 - Building Population Pyramids
- The US Population
 - A picture of the US as a whole
 - Subgroups in the US

Reading Discussion

Take 5 minutes to discuss with your neighbors:

- What is a population pyramid?
- Why do we use population pyramids? OR What can population pyramids tell us?

Reading Discussion

Take 5 minutes to discuss with your neighbors:

- What is a population pyramid?
- Why do we use population pyramids? OR What can population pyramids tell us?
- What two key demographic markers go into producing a population pyramid?

Age and Sex

- Most (if not all) nations ask about age and sex in their national census questionnaires
- Societal roles are often assigned based on age and sex
- These two variables makeup what demographers call population structure

Challenges to Enumerating Age and Sex

- Age:

- Not everyone knows their birthdates
- People round their age/lie about their age

- Sex:

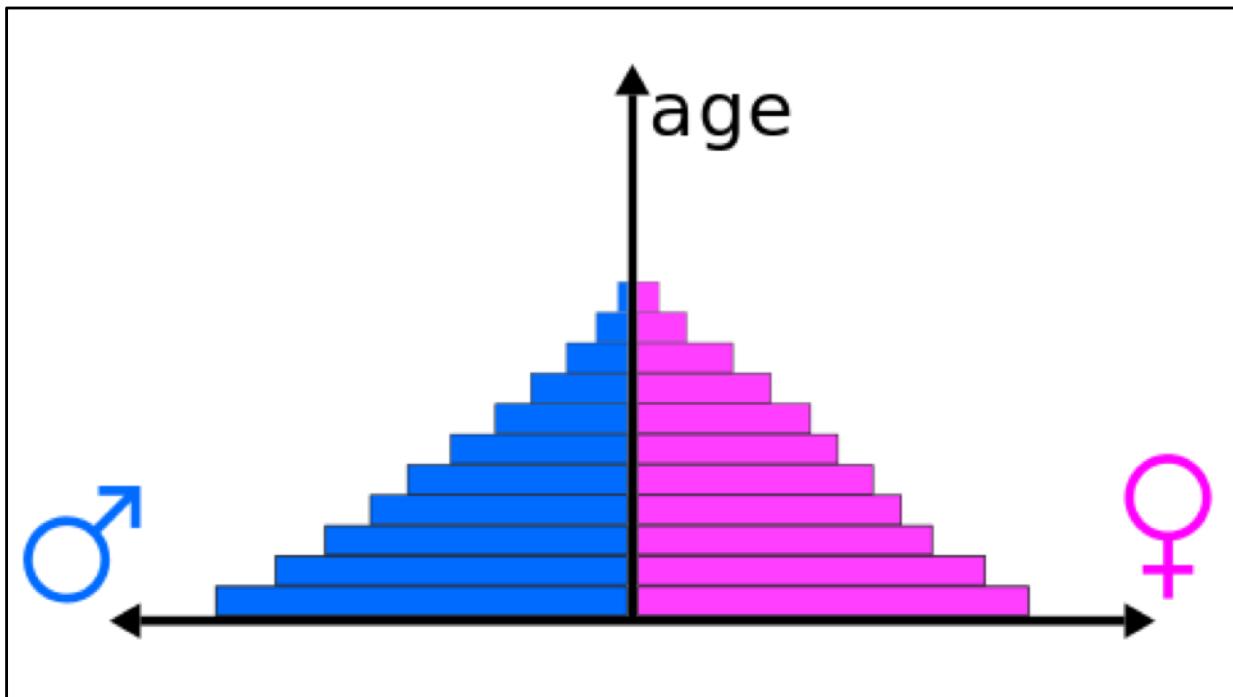
- One's sex (or gender) may influence one's likelihood to be counted in a census
- Sex and gender are complicated categories

Why might you not know your birthday? Young orphans often don't, it is common to assign a 'birthdate.'

Why might you lie about your age? Vanity, military service requirements, retirement/tax/social services, etc.

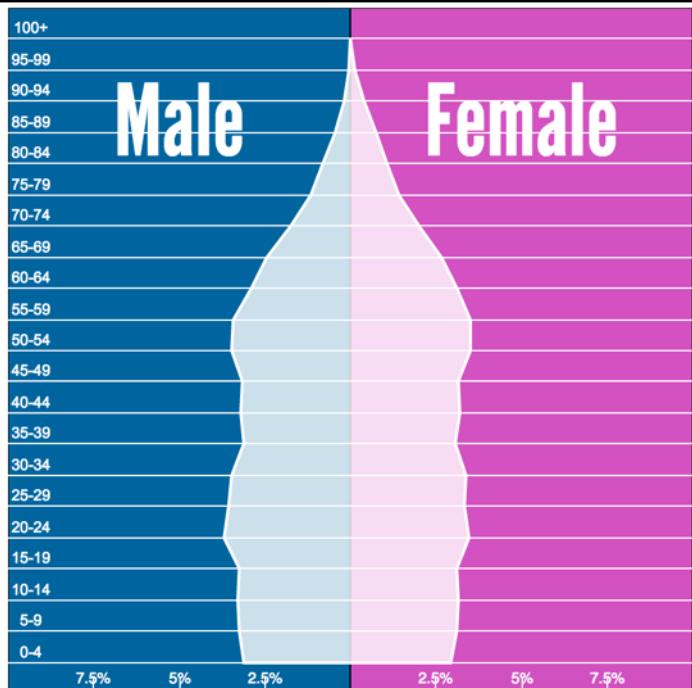
Why might gender influence whether one is counted? In many countries women are not as valued as men

Why are sex and gender complicated? Not everyone is born in the body that conforms to the gender they identify as, sexual reassignment surgery, many people choose not to identify one way or the other (we recognize age as a continuum, but not sex/gender)

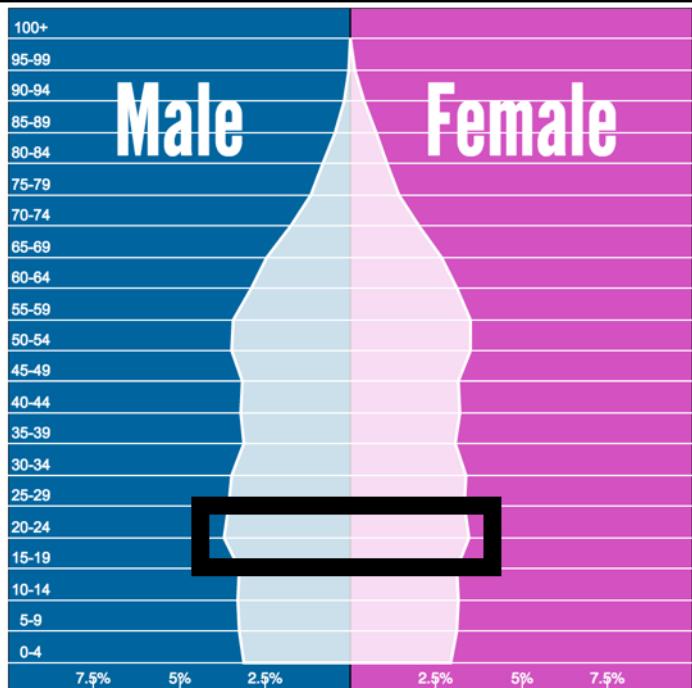


- Considered the best/most efficient way to illustrate age and sex
- Generally used as a first look at a given population
- One of the most commonly used demographic visualizations
- Named population pyramid for its typical pyramid shape
- Essentially two back-to-back histograms
- Males on the left, females on the right
- Age is the vertical axis, usually in 5 year increments (occasionally 1 year increments)

Where do you fall on this 2016 population pyramid for the US?



Where do you fall on this 2016 population pyramid for the US?



Most of you likely fall within the black box (15-24 years of age).

Note: because of how the ages are grouped into 5-year cohorts, even though there are probably not too many 15-year-olds in this class, they are part of the same group as 18 and 19-year-olds.

Questions?

The Anatomy of a Population Pyramid

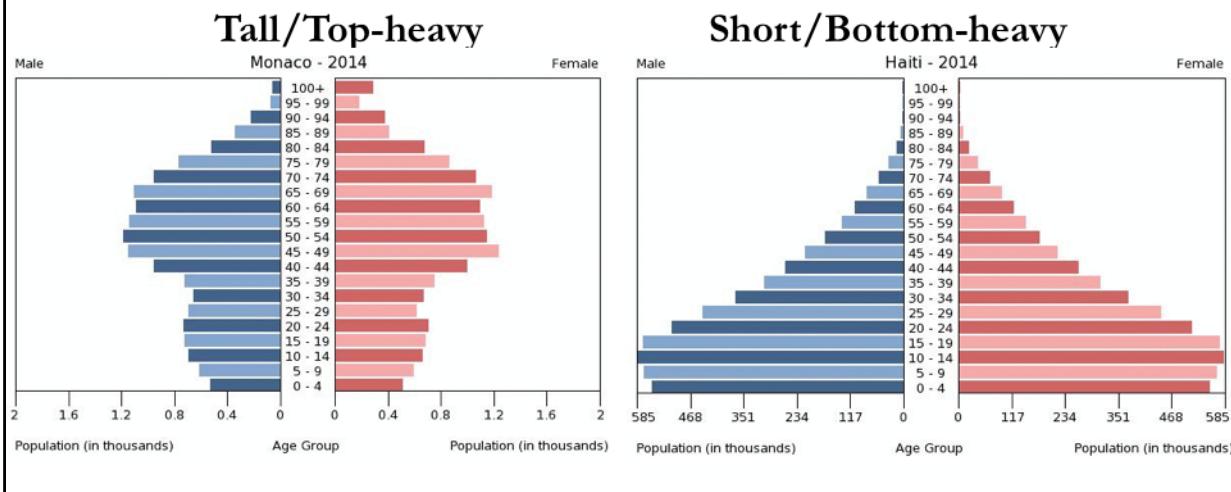
How tall is the population pyramid?

The Anatomy of a Population Pyramid

How tall is the population pyramid?

- The taller the pyramid (and the thicker it is toward to top), the longer the life expectancy of the population.
- In other words, the more top-heavy a pyramid is, the longer the life expectancy.

The Anatomy of a Population Pyramid



Notice that there are relatively few people in the highest years of the population pyramid for Haiti as compared with Monaco.

The Anatomy of a Population Pyramid

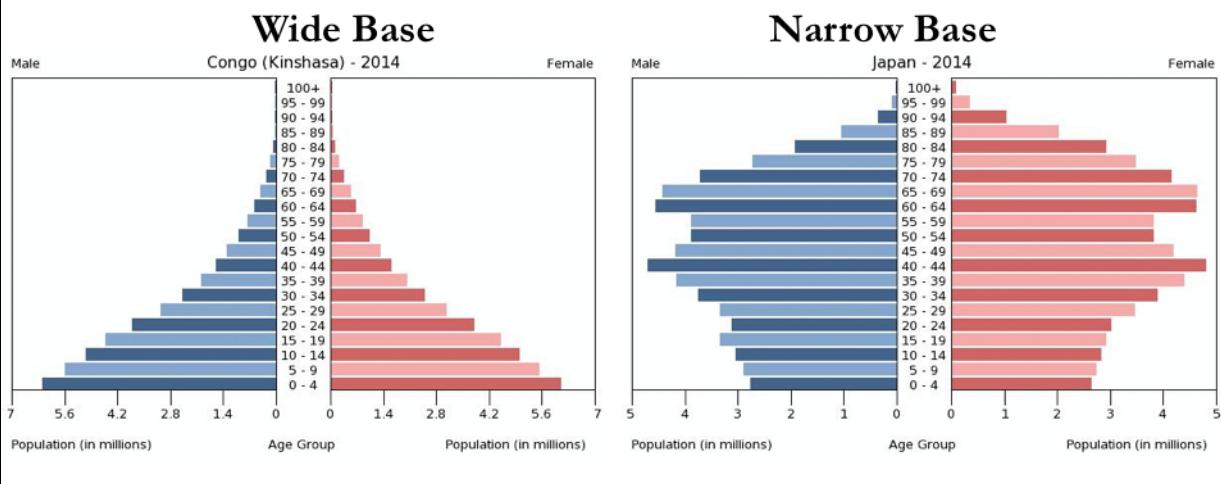
How big is the base?

The Anatomy of a Population Pyramid

How big is the base?

- Birth rate varies with the width of the base
 - A wide base indicates a high birth rate
 - A narrow base indicates a low birth rate

The Anatomy of a Population Pyramid



The Democratic Republic of Congo (pyramid on the left) has a birth rate of +/- 6 births per woman.

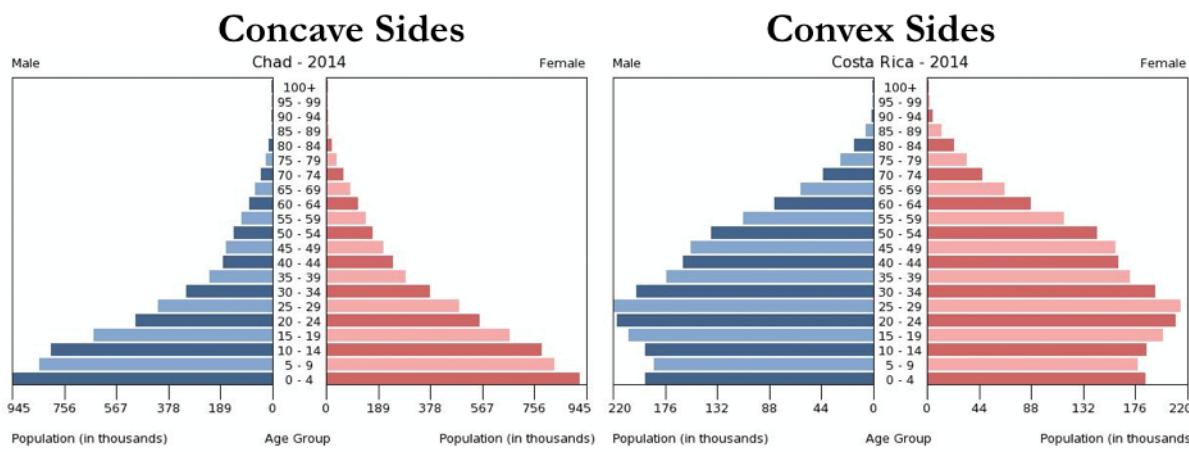
Japan (pyramid on the right) has a birth rate of +/- 1.4 births per woman.

The Anatomy of a Population Pyramid

What shape is the side of the pyramid?

- Death rate varies with the shape of the sides of the pyramid
 - Concave sides indicate a high death rate
 - Convex sides indicate a low death rate

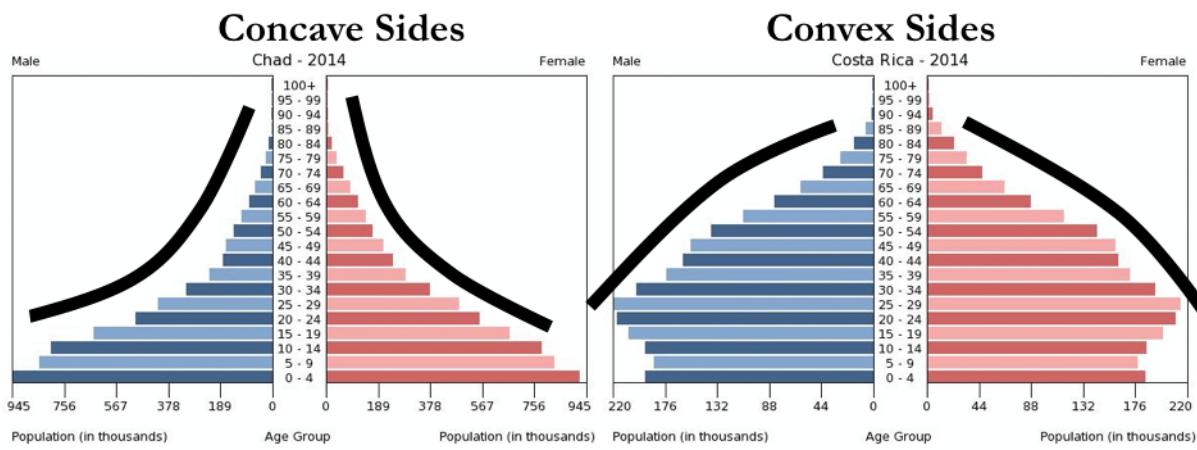
The Anatomy of a Population Pyramid



Chad (pyramid on the left) has a death rate of +/- 15 deaths / 1000 population.

Costa Rica (pyramid on the right) has a death rate of +/- 4 deaths / 1000 population.

The Anatomy of a Population Pyramid



Chad (pyramid on the left) has a death rate of +/- 15 deaths / 1000 population.

Costa Rica (pyramid on the right) has a death rate of +/- 4 deaths / 1000 population.

The Anatomy of a Population Pyramid

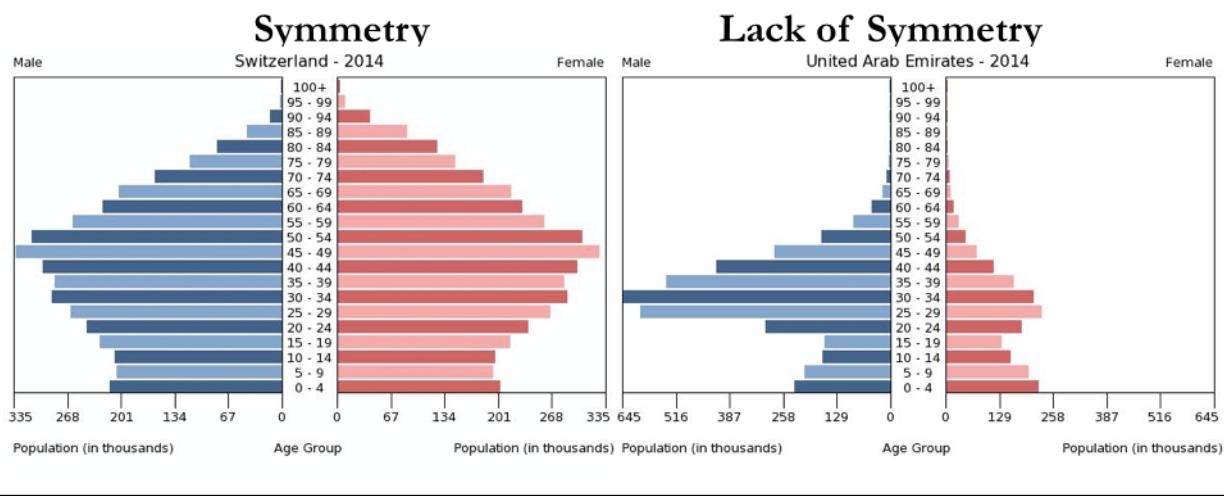
How symmetrical is the pyramid?

The Anatomy of a Population Pyramid

How symmetrical is the pyramid?

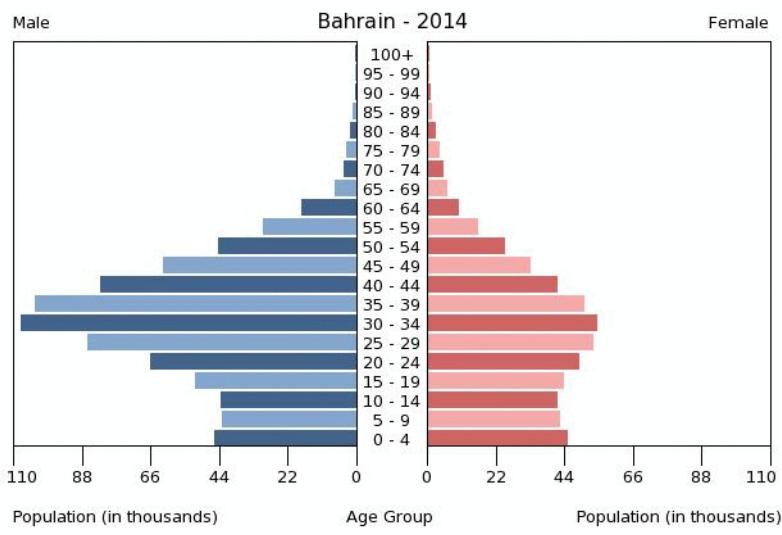
- Lack of symmetry indicates a difference between the male and female populations
 - This can be caused by
 - Differing opportunities for men and women
 - Disproportionate immigration and/or emigration of men and women
 - Differing causes of death (ex. war)
 - Selective abortions

The Anatomy of a Population Pyramid



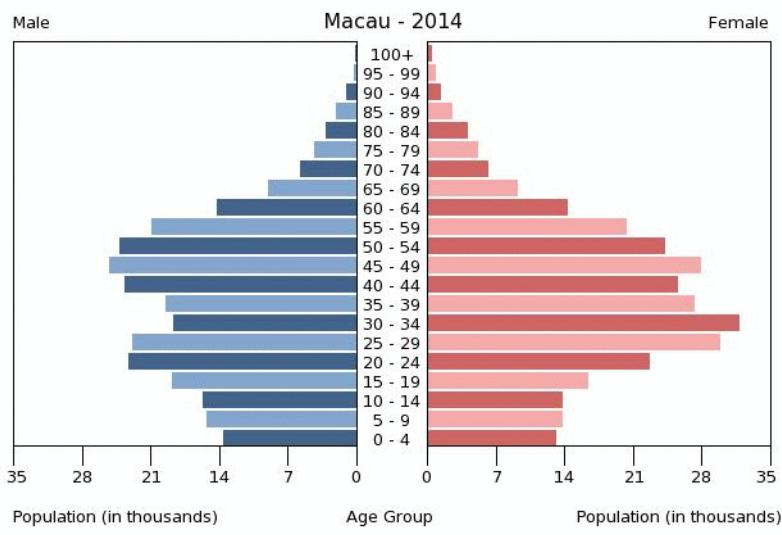
What is going on in the UAE?

More Examples of Lack of Symmetry



Bahrain is very similar to the UAE.

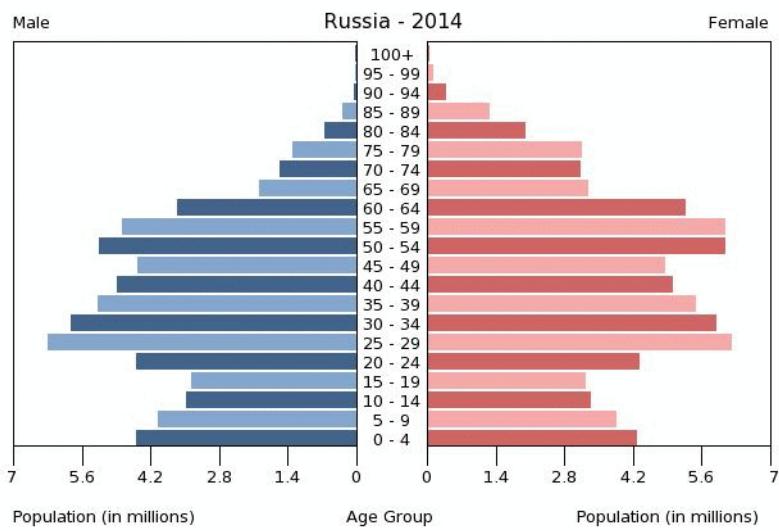
More Examples of Lack of Symmetry



What is going on in Macau?

Likely employment related. Employment is very gendered in Macau and seems to be attracting women of working age.

More Examples of Lack of Symmetry



What is going on in Russia? Hint: What age groups are most asymmetrical?

Hypotheses/contributing factors:

Women are living much longer than men (think about the types of work expected of men and women).

Particular restrictions during soviet years disproportionately affected men.

Male alcoholism is relatively high in Russia.

The Ecological Fallacy

What is the ecological fallacy?

The Ecological Fallacy

When you make inferences (guesses) about an individual based on population statistics.

The Ecological Fallacy

When you make inferences (guesses) about an individual based on population statistics.

Ex. The average life expectancy in the US is 78.7 years, so everyone in this room is going to live to be 78.7.

The Ecological Fallacy

When you make inferences (guesses) about an individual based on population statistics.

Demographic data does not allow us to do this accurately and it is an easy way to slip into **discrimination and stereotyping**.

Please be very careful to avoid committing an ecological fallacy!

The Anatomy of a Population Pyramid

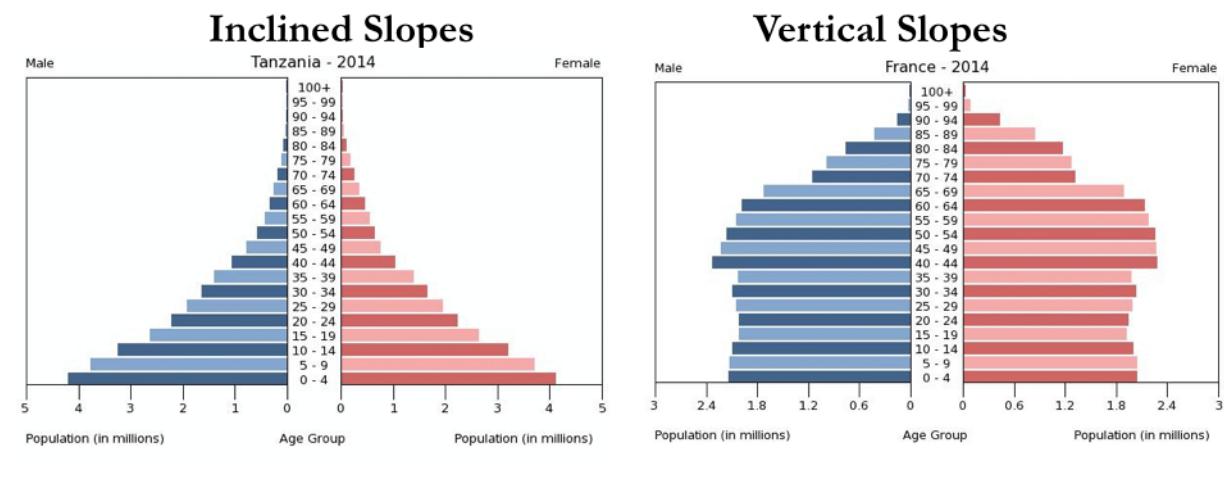
How steep is the slope?

The Anatomy of a Population Pyramid

How steep is the slope?

- The steepness of the slope varies with population trajectory
 - Inclined slopes indicate growing populations
 - Vertical slopes indicate stable populations
 - Reclined slopes indicate shrinking populations

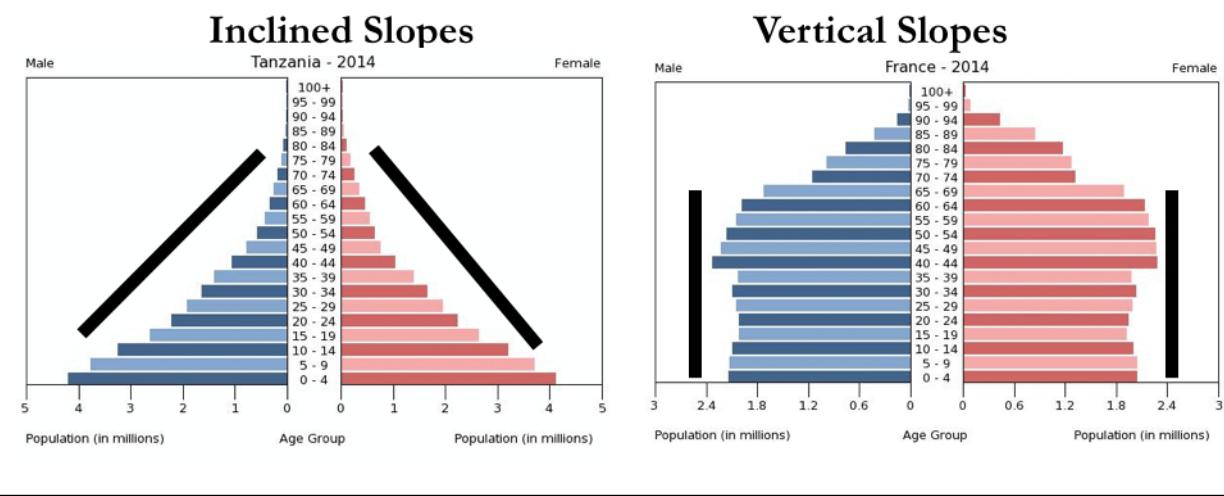
The Anatomy of a Population Pyramid



Tanzania is gaining population.

France is a stable population.

The Anatomy of a Population Pyramid

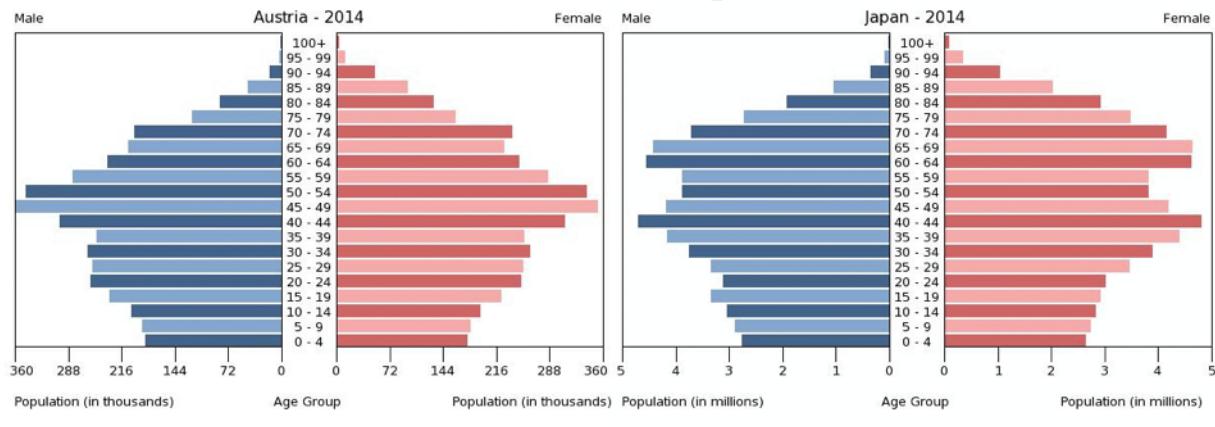


Tanzania is gaining population.

France is a stable population.

The Anatomy of a Population Pyramid

Reclined Slopes

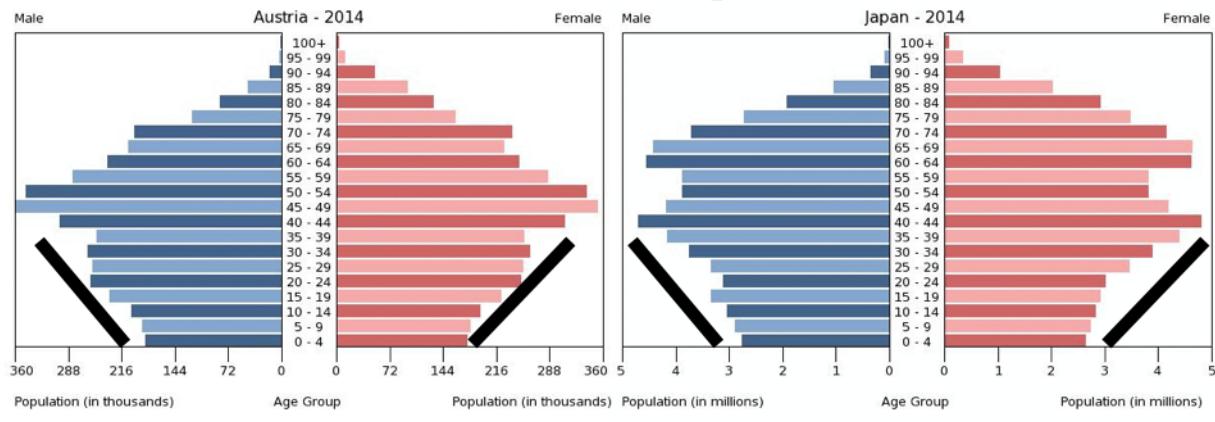


Japan and Austria have declining populations.

Note: We are focused primarily on the bottom half of the pyramid when we talk about reclined slopes or declining populations, because in any population we will see a tapering off as people die near the top of the pyramid.

The Anatomy of a Population Pyramid

Reclined Slopes



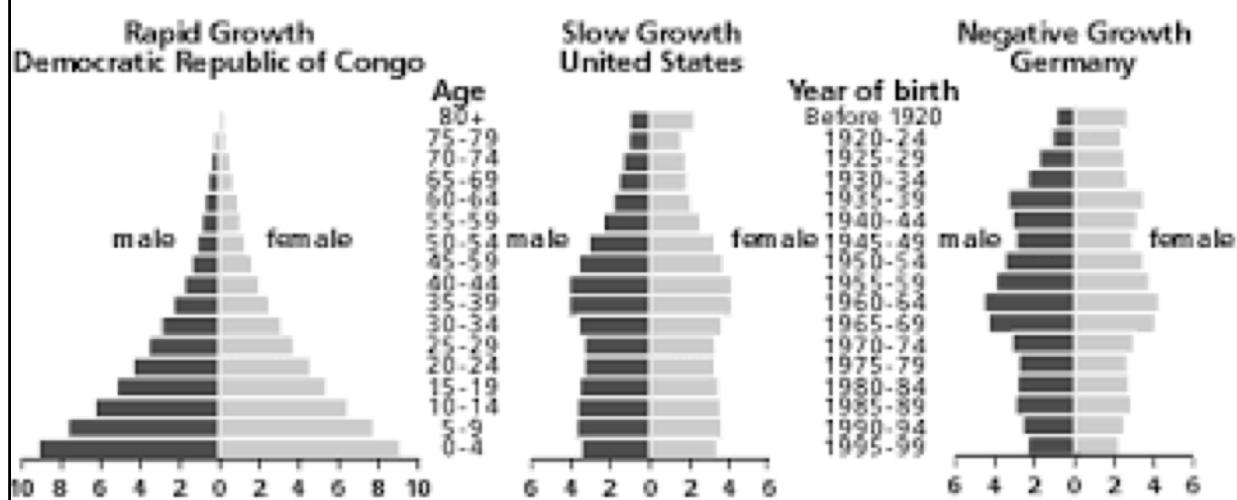
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Note: We are focused primarily on the bottom half of the pyramid when we talk about reclined slopes or declining populations, because in any population we will see a tapering off as people die near the top of the pyramid.

The Anatomy of a Population Pyramid

How steep is the slope?

- This is arguably the most important aspect in predicting the overall trajectory of the population over time.



Remember: How do we Measure Population?

- Absolute Size
- Distribution
- Density

We talked about this last Thursday.

Remember: How do we Measure Population?

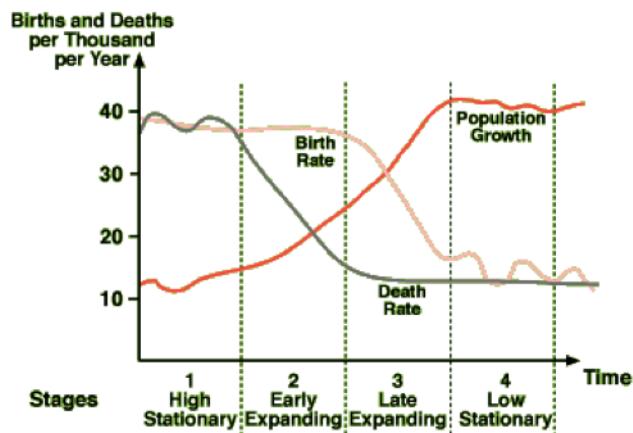
- Absolute Size
- Distribution
- Density

Population Pyramids are measuring the absolute size of the population and the sex/age distribution. They tell us nothing about density.

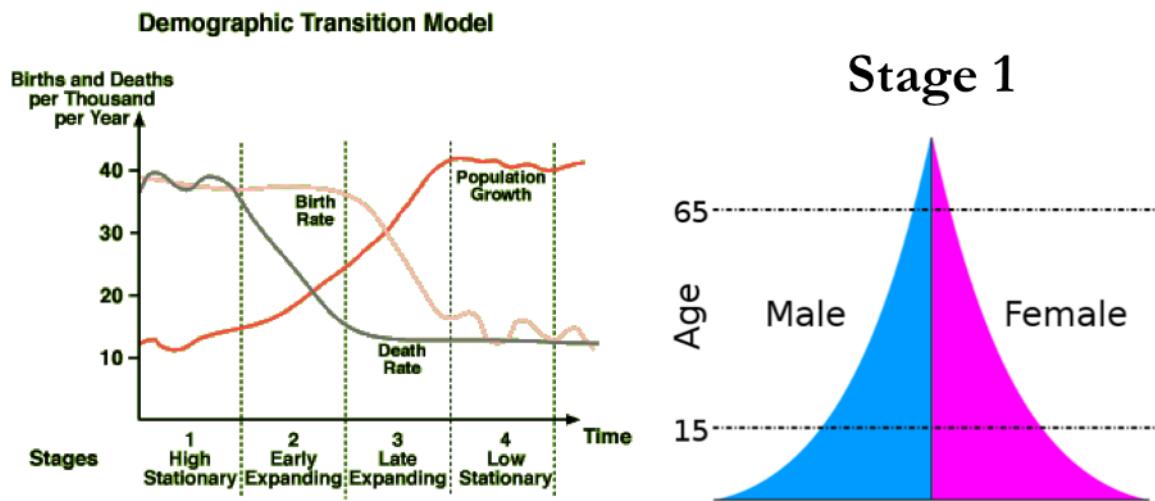
Questions?

What would you expect population pyramids to look like at each stage of the demographic transition?

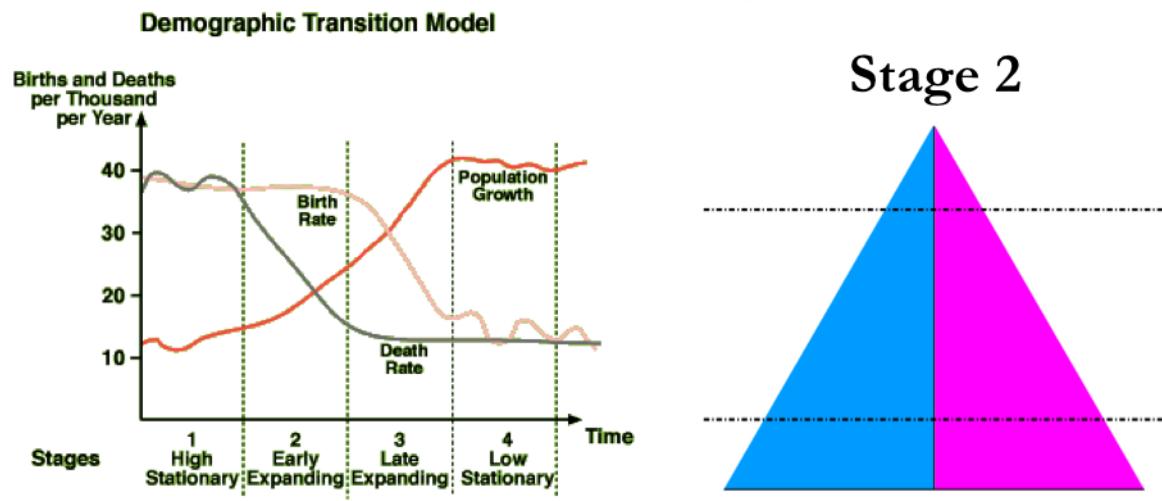
Demographic Transition Model



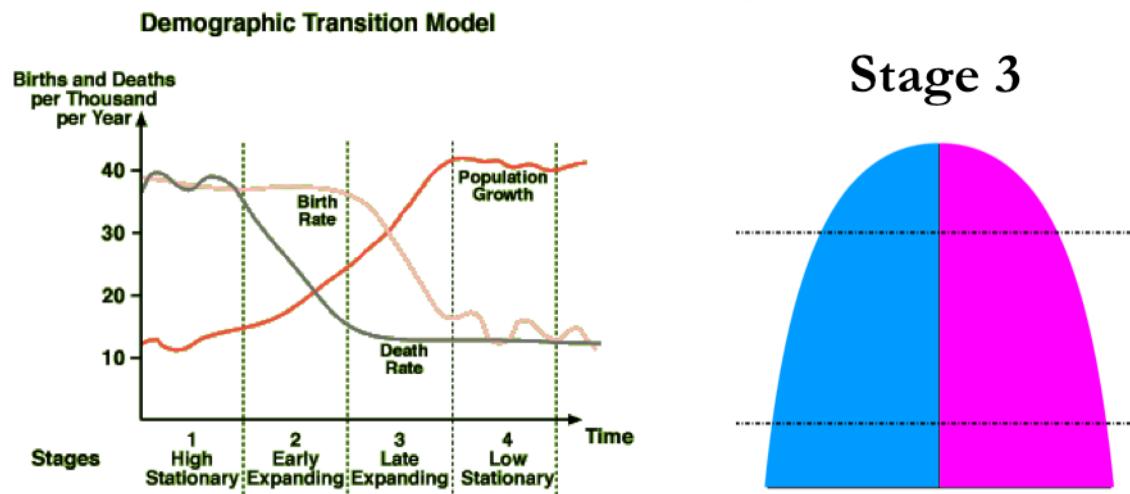
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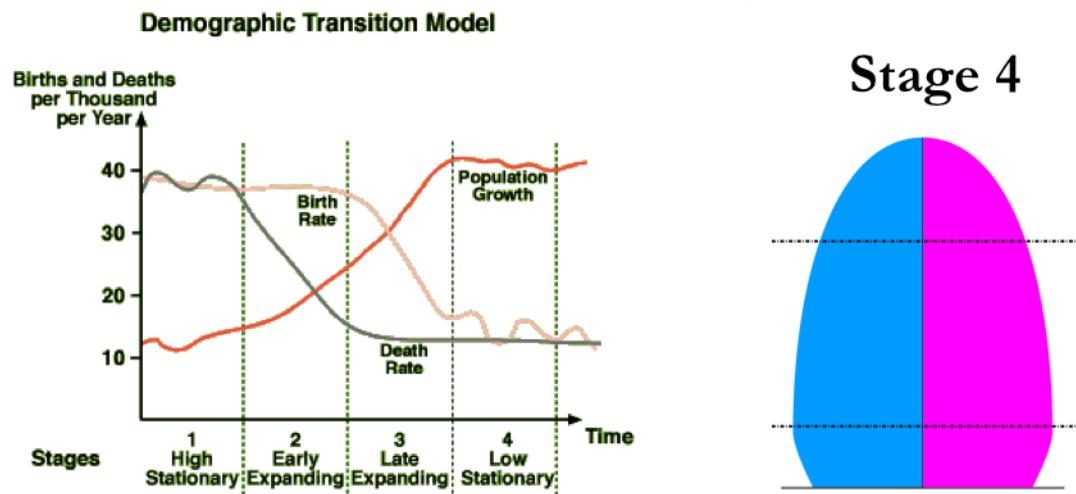
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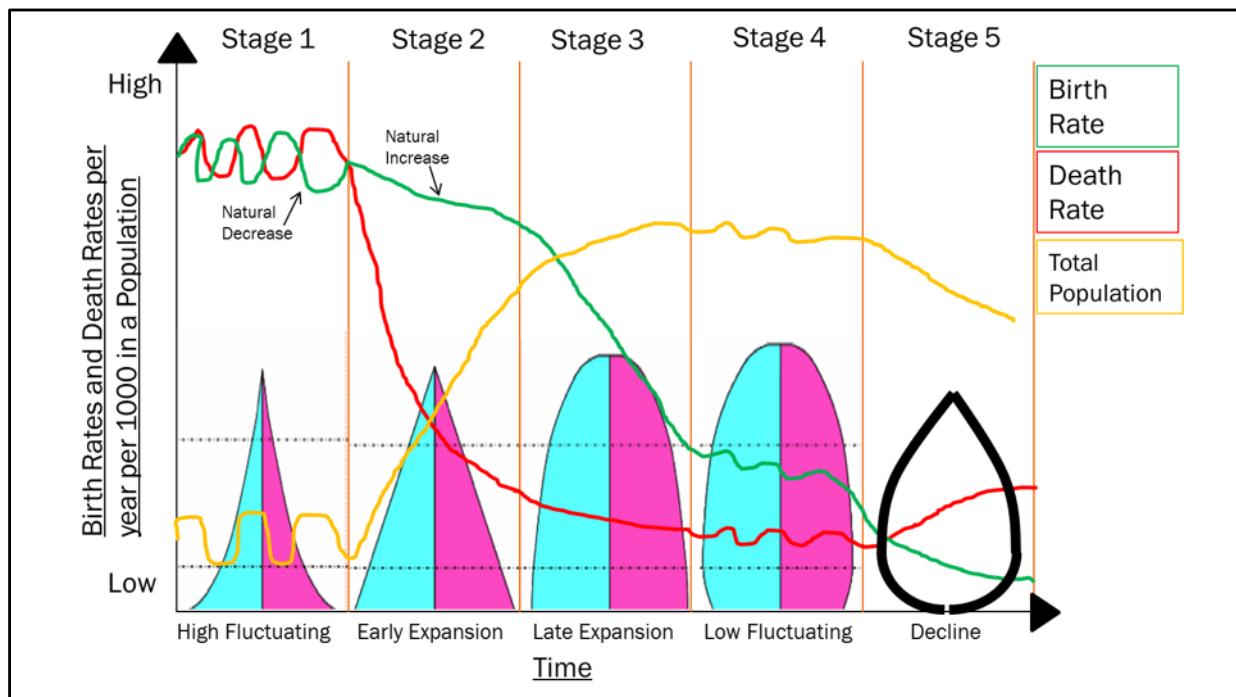


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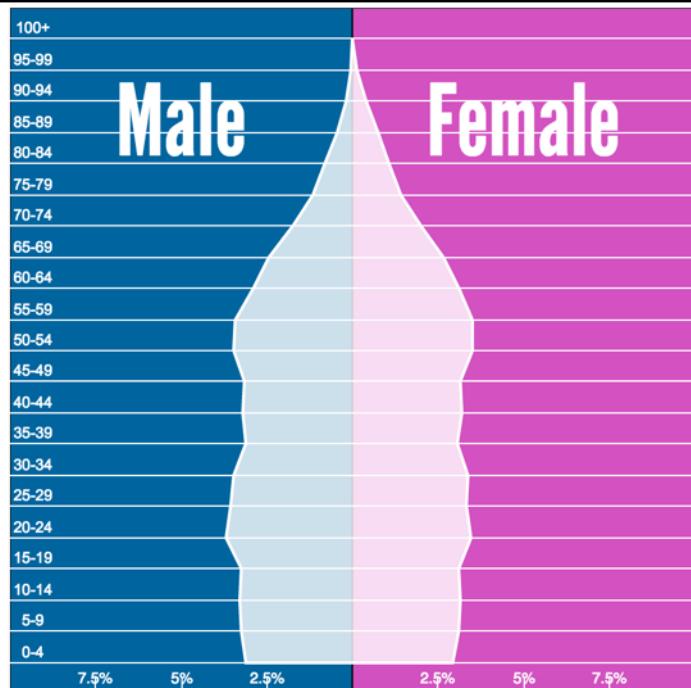
What would you expect population pyramids to look like at each stage of the demographic transition?





Questions?

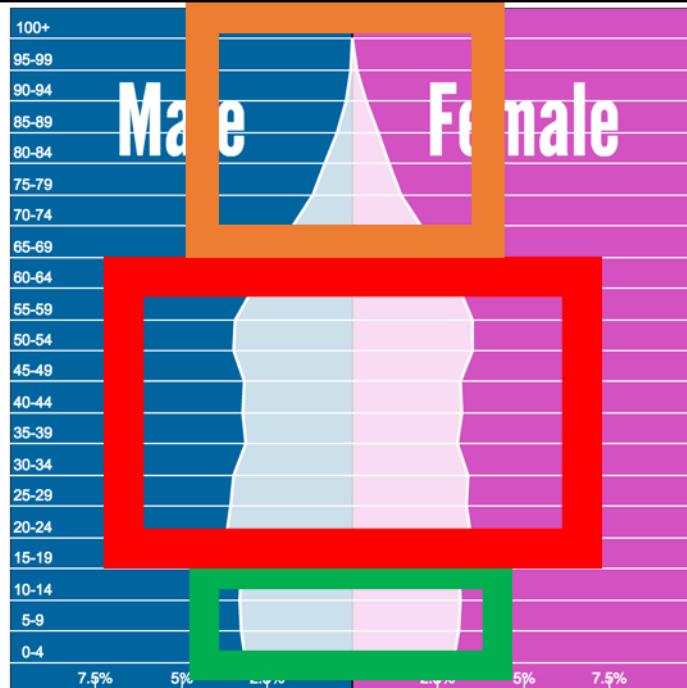
Populations are generally broken into three parts:



What divisions might be demographically relevant?

Populations are generally broken into three parts:

- Young dependents/children [0-14]
- Working aged population [15-64]
- Elderly dependents [65+]

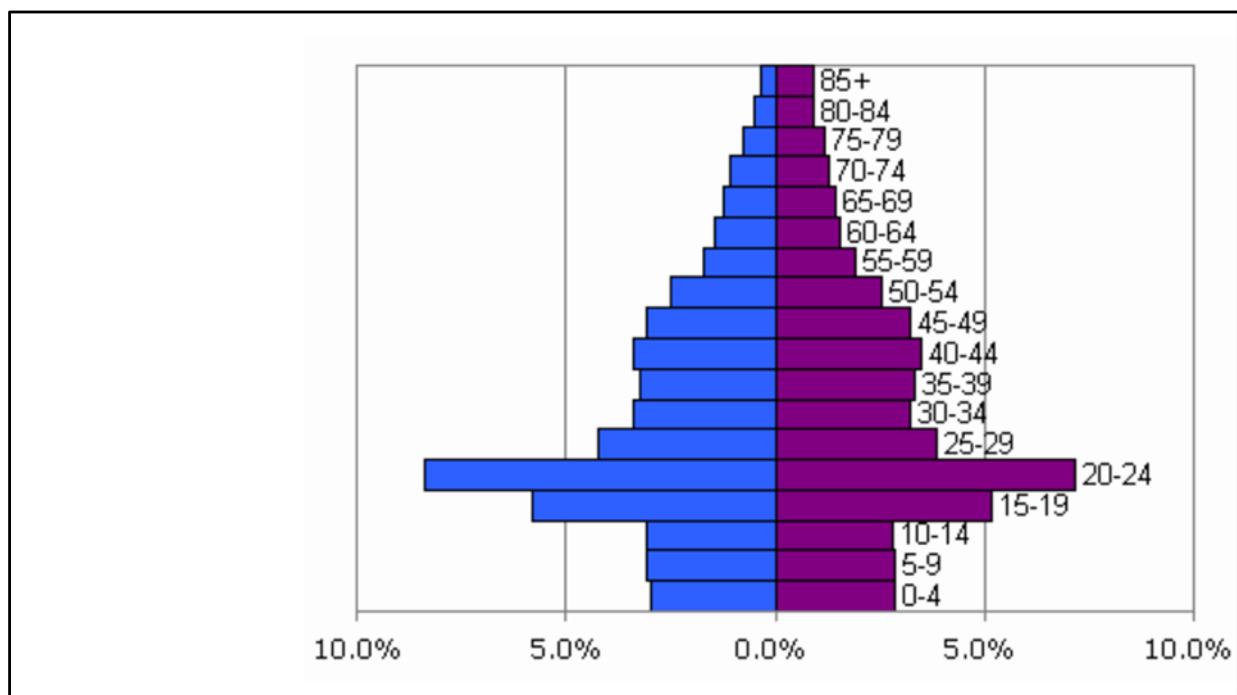


Why are these the three groups that demographers are concerned with?

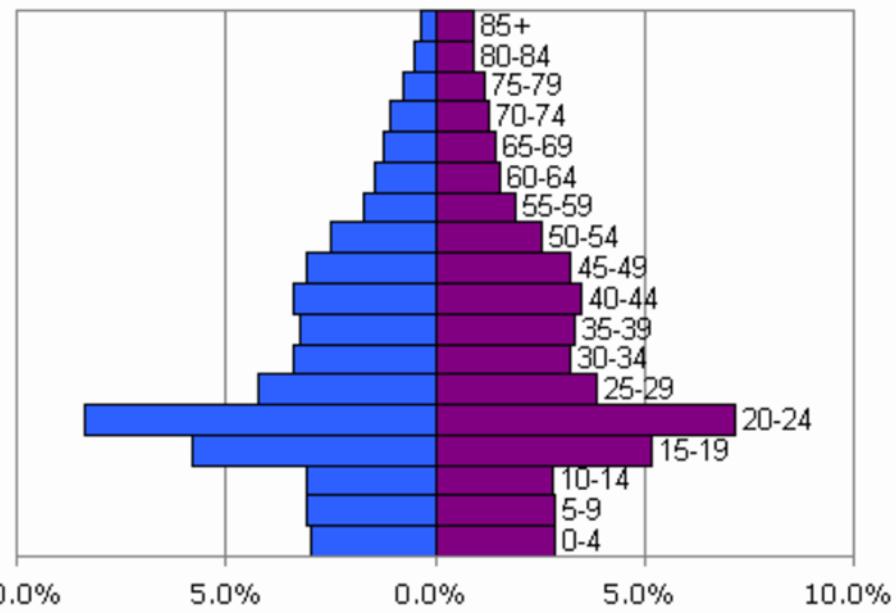
The sustainability of a population
(economically) is about the relationship
between those three groups.

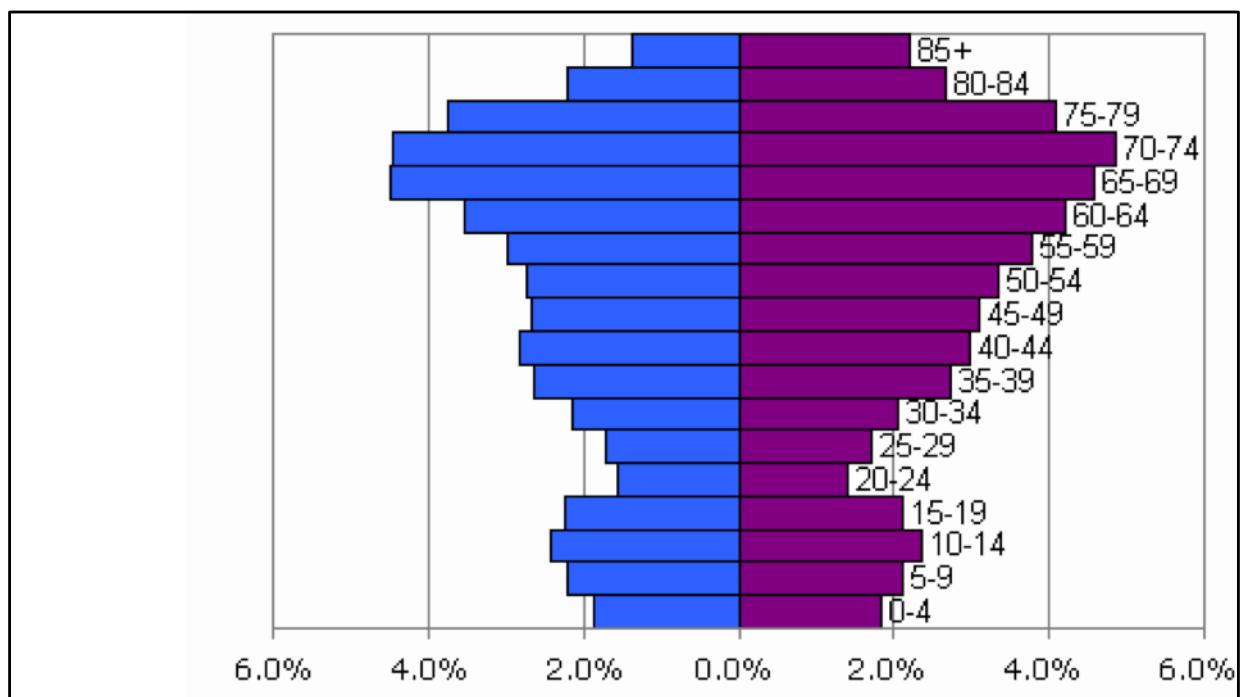
Questions?

What can you tell me about the cities being represented by each of these population pyramids?

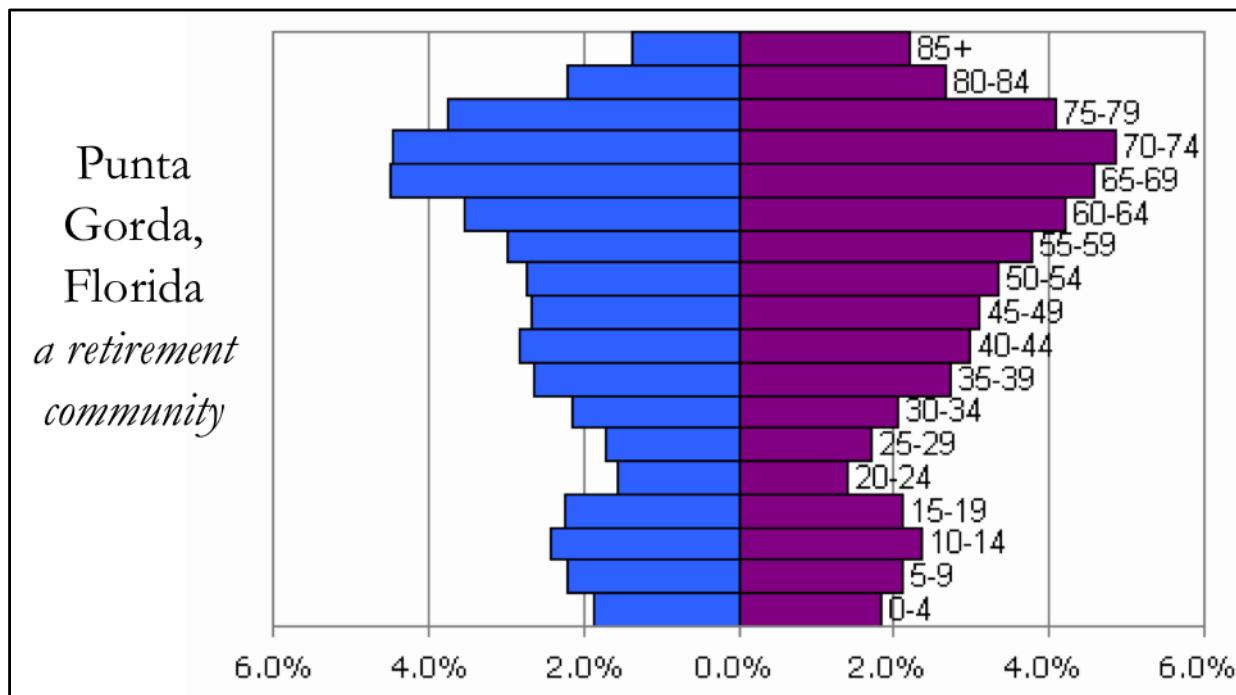


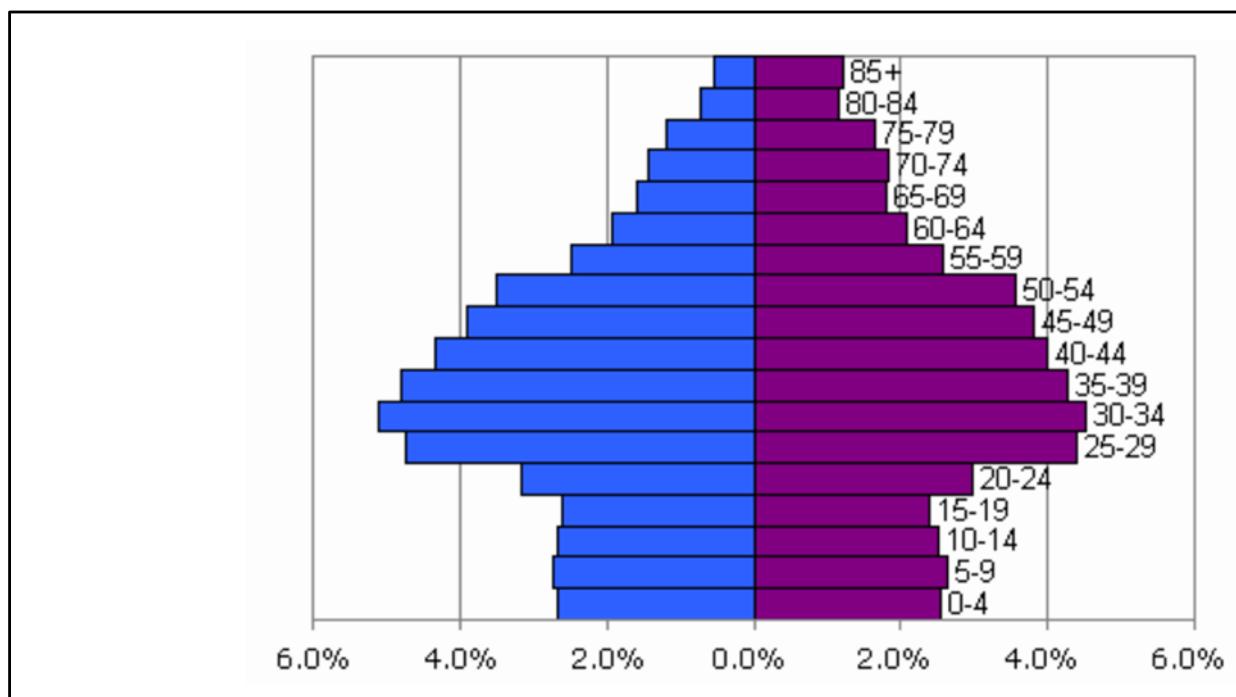
Champaign-
Urbana, IL
a college town



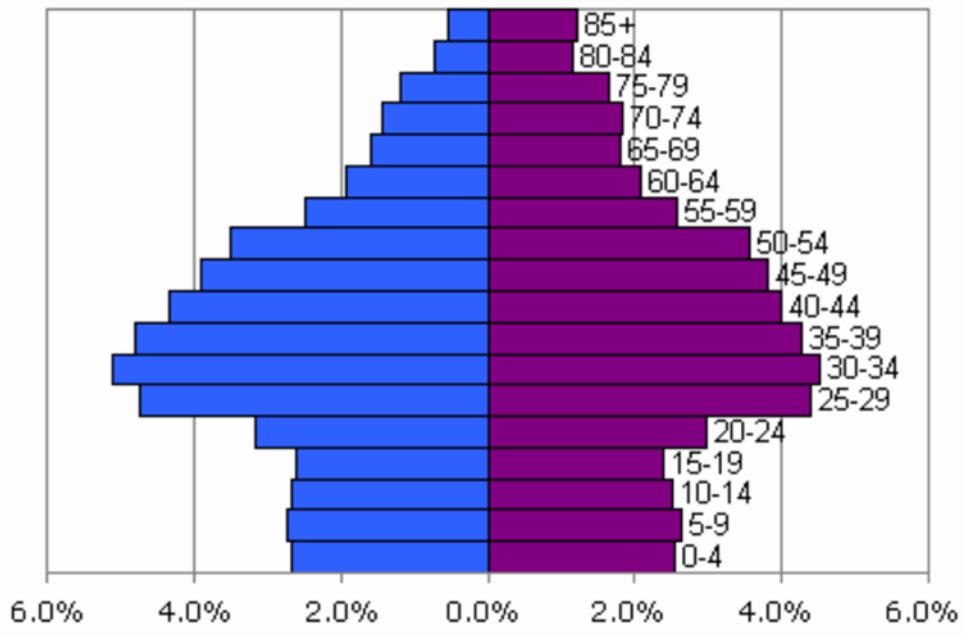


Punta
Gorda,
Florida
*a retirement
community*





San
Francisco,
California
*high rent/
the tech
bubble*



Pull out a piece of paper...

- Take three minutes to think about and sketch what you think Seattle's population pyramid looks like

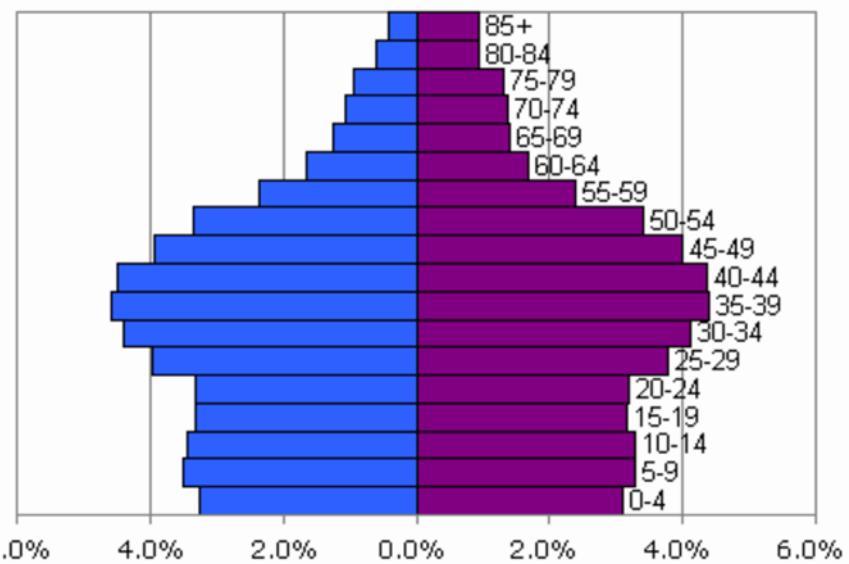
Pull out a piece of paper...

- Take three minutes to think about and sketch what you think Seattle's population pyramid looks like
- **Take five minutes to discuss with your neighbors**
 - Do each of yours look the same?
 - What accounts for any differences?
 - Do you want to edit yours and if so what about it?

Pull out a piece of paper...

- Take three minutes to think about and sketch what you think Seattle's population pyramid looks like
- Take five minutes to discuss with your neighbors
 - Do each of yours look the same?
 - What accounts for any differences?
 - Do you want to edit yours and if so what about it?
- **Make sure your name is on your paper and pass them in (for participation points)**

Seattle's Population Pyramid

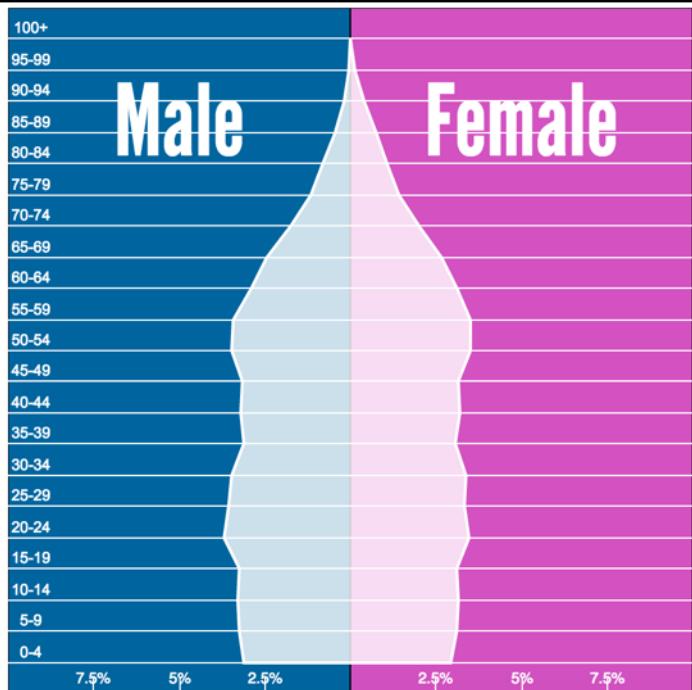


Is this different than what you expected? How so?

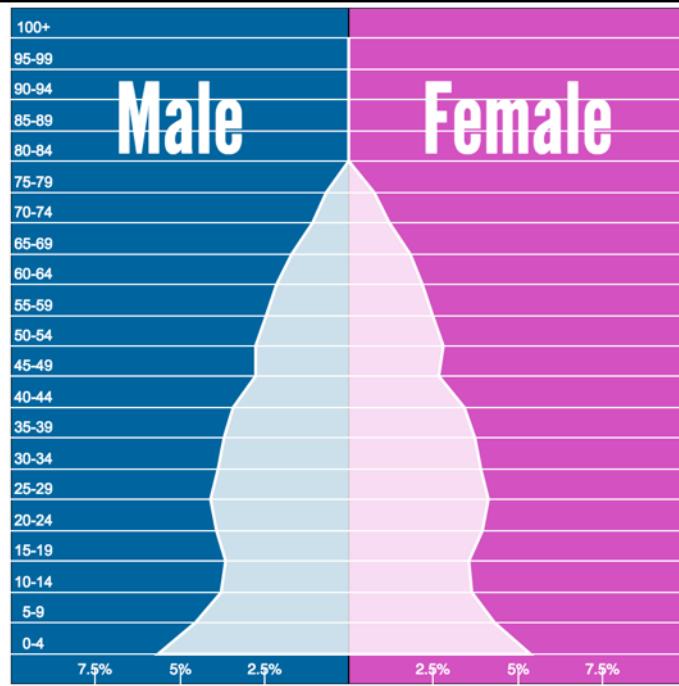
Plan for Today

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 - A picture of the US as a whole
 - Subgroups in the US

What does this
United States
2016
population
pyramid tell
us?



The US in 1950



From <http://populationpyramid.net/united-states-of-america/>

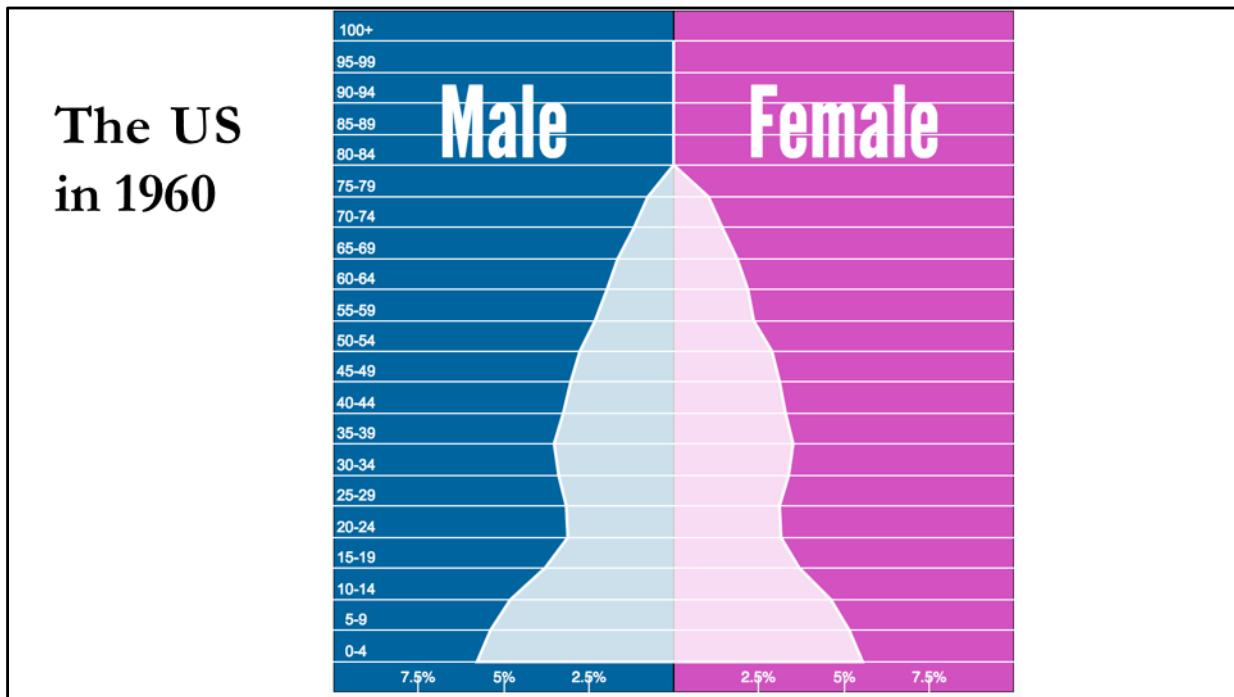
What can we tell from this population pyramid?

What can we surmise about fertility?

Mortality?

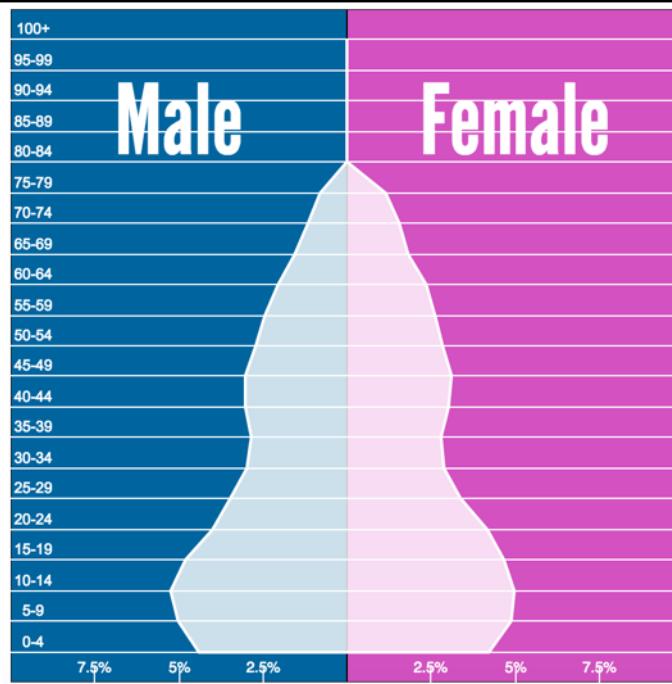
Growth?

The US in 1960



From <http://populationpyramid.net/united-states-of-america/>

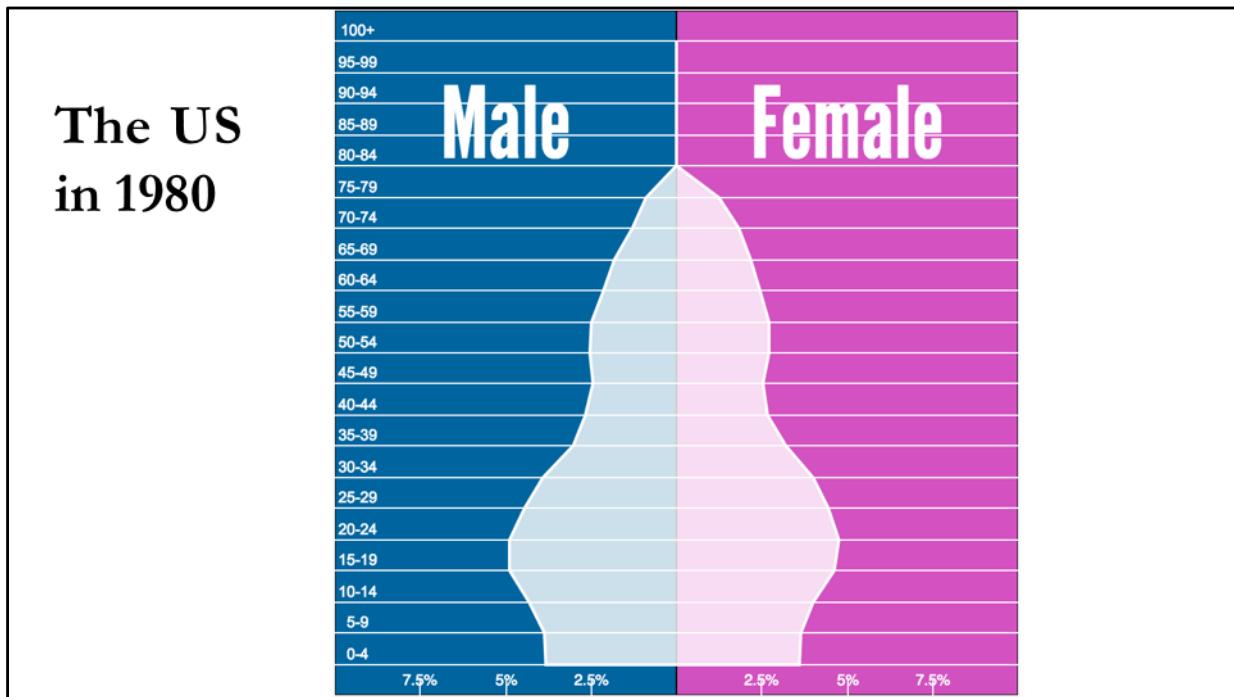
The US in 1970



From <http://populationpyramid.net/united-states-of-america/>

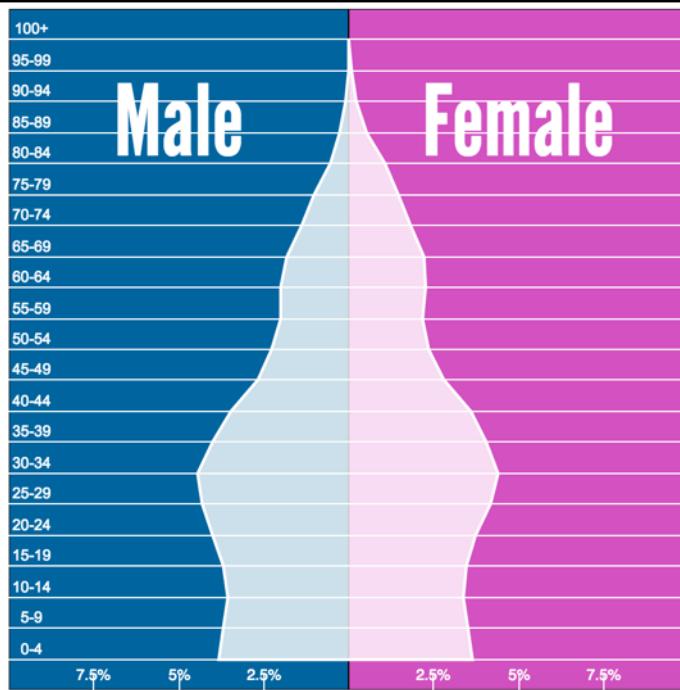
Note the Baby Boomers generation, now around 10-14 years old.

The US in 1980



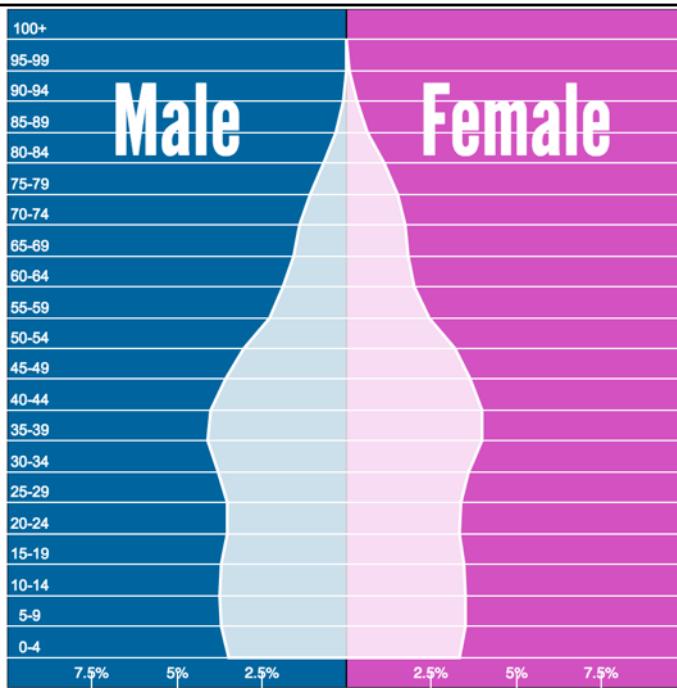
From <http://populationpyramid.net/united-states-of-america/>

The US in 1990



From <http://populationpyramid.net/united-states-of-america/>

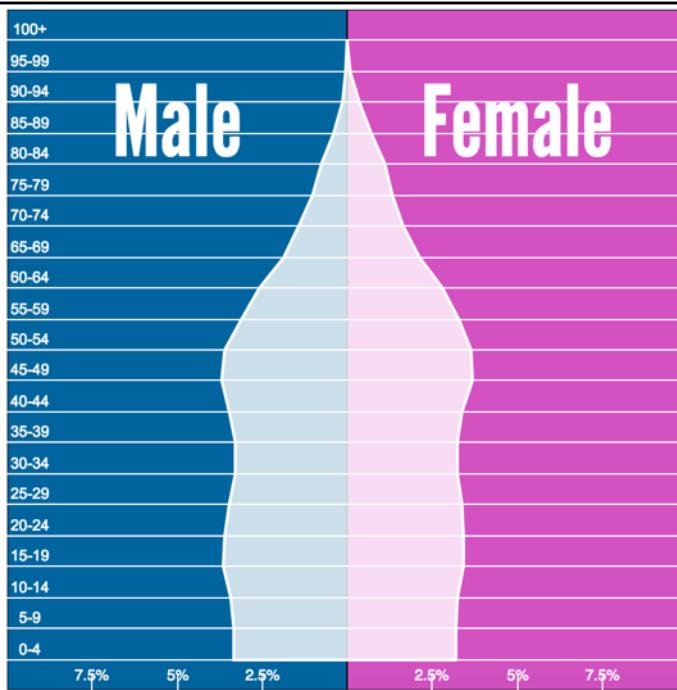
The US in 2000



From <http://populationpyramid.net/united-states-of-america/>

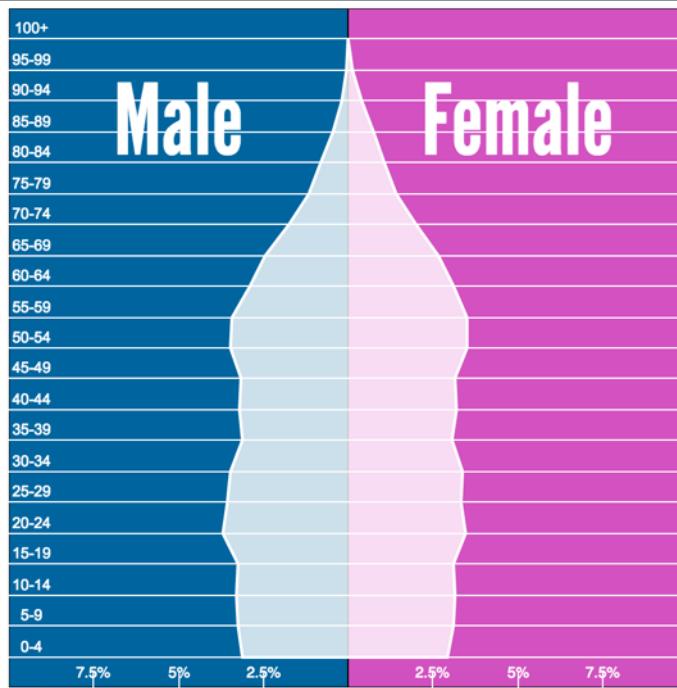
Note the smaller bulge (now around 10 years old) of Baby Boomer's children

The US in 2010



From <http://populationpyramid.net/united-states-of-america/>

The US in 2016



From <http://populationpyramid.net/united-states-of-america/>

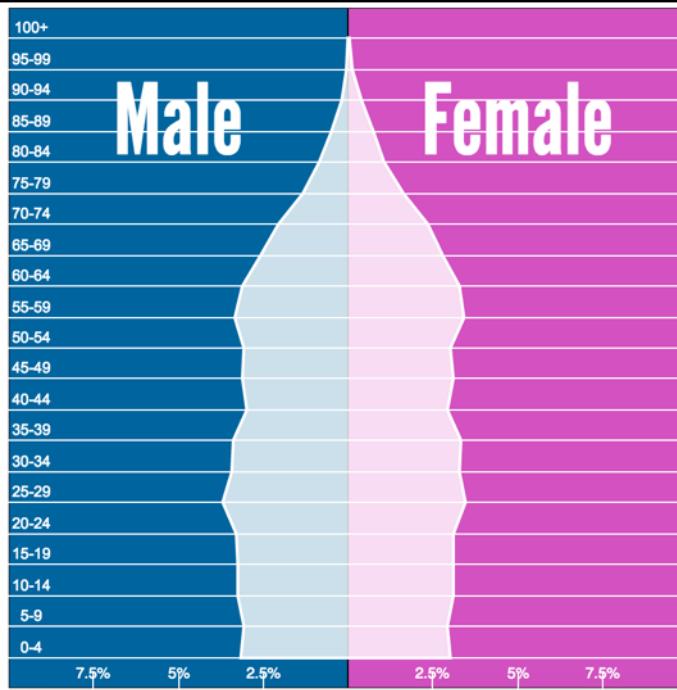
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Mortality?

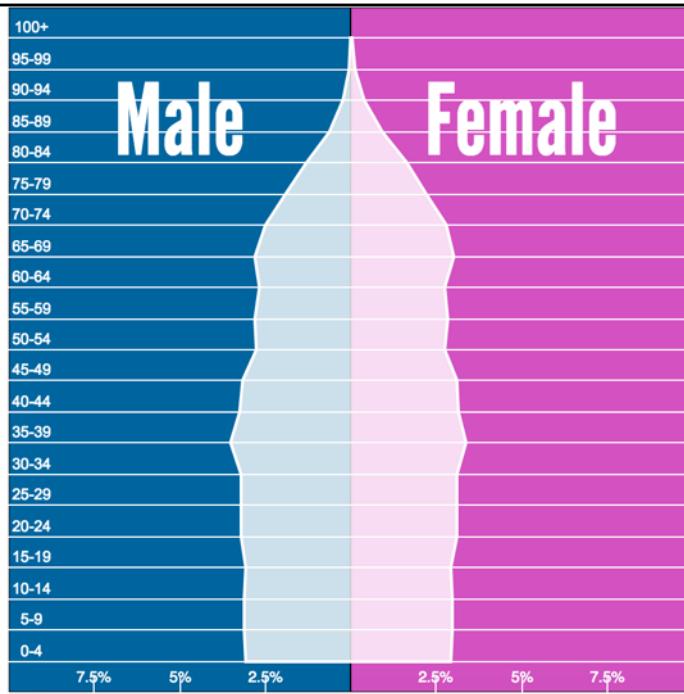
Growth?

The US in 2020



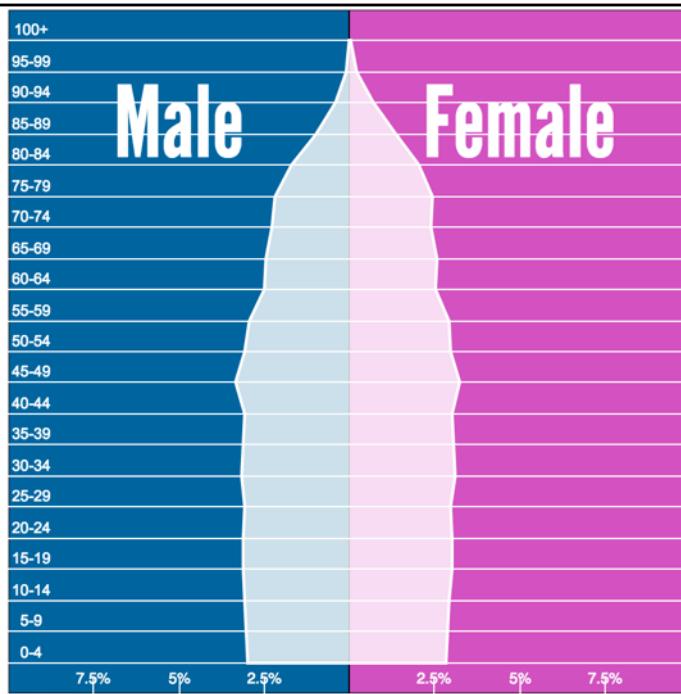
From <http://populationpyramid.net/united-states-of-america/>

The US in 2030



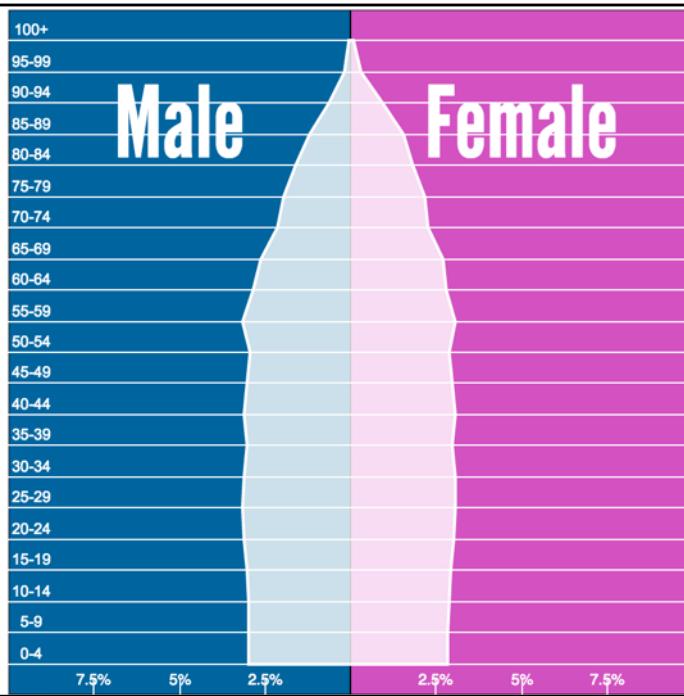
From <http://populationpyramid.net/united-states-of-america/>

The US in 2040



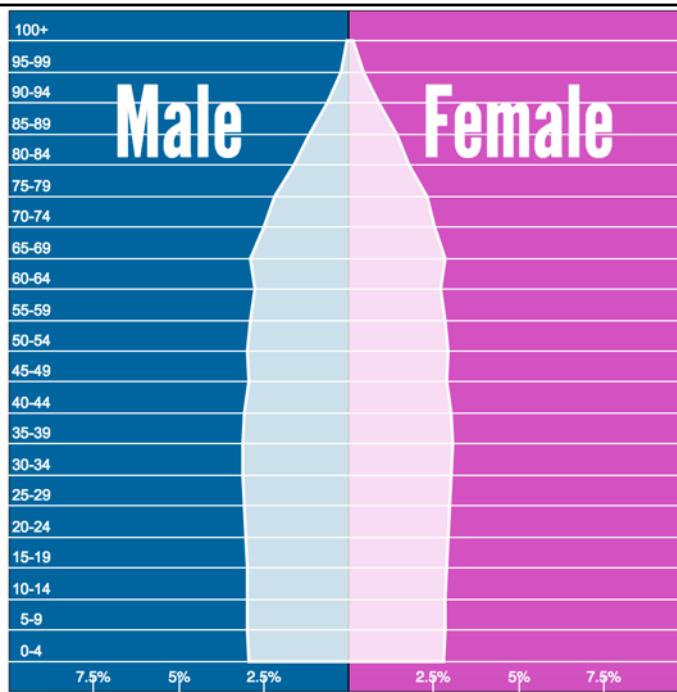
From <http://populationpyramid.net/united-states-of-america/>

The US in 2050



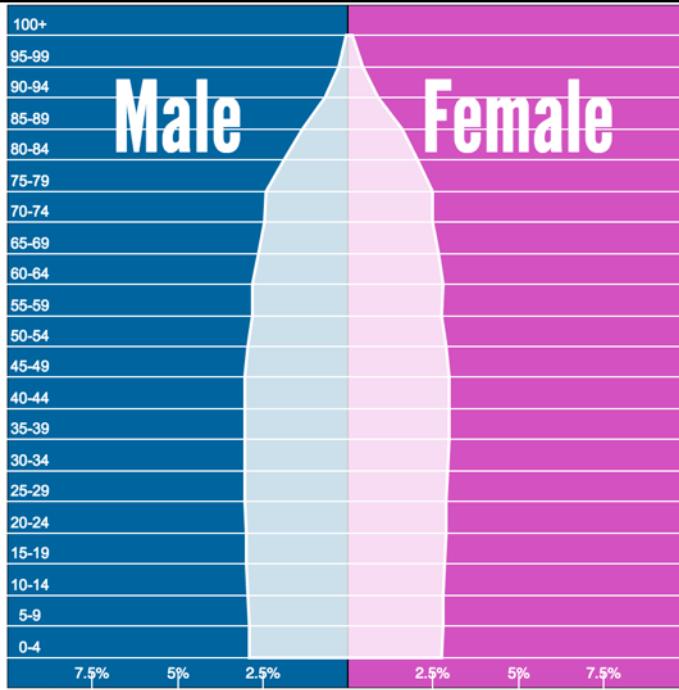
From <http://populationpyramid.net/united-states-of-america/>

The US in 2060



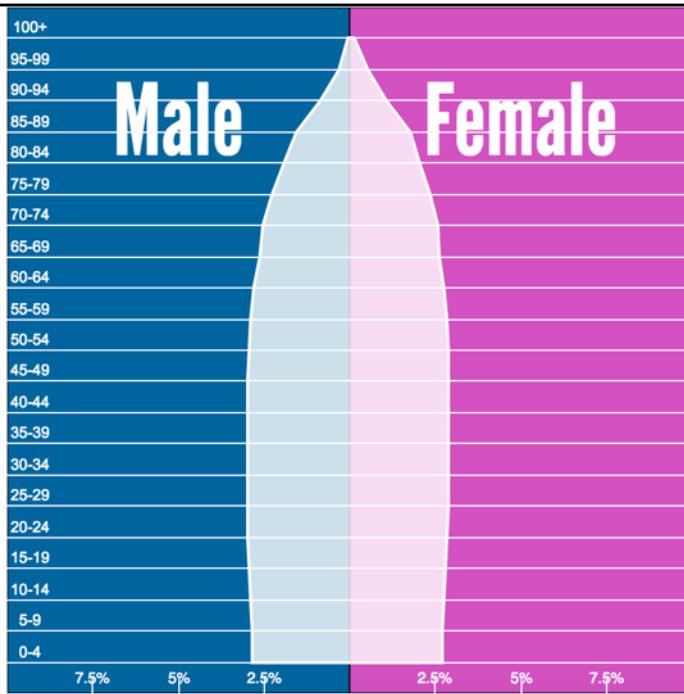
From <http://populationpyramid.net/united-states-of-america/>

The US in 2070



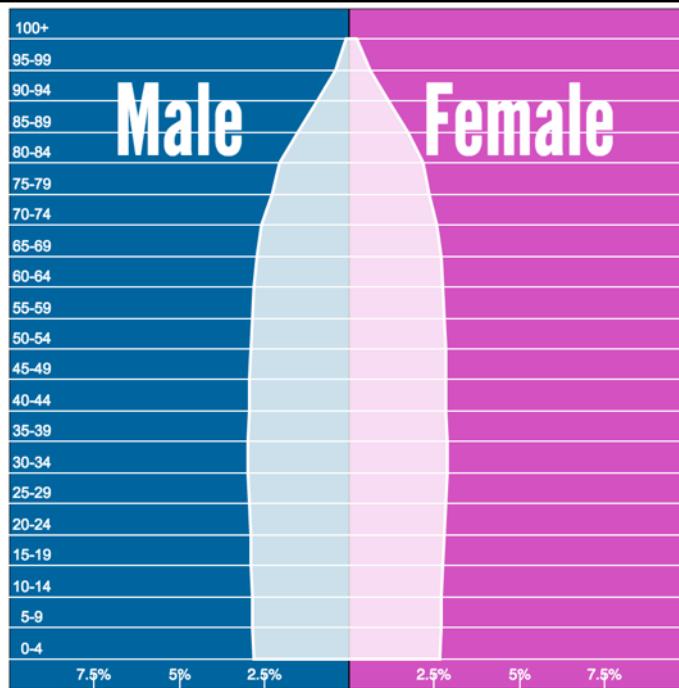
From <http://populationpyramid.net/united-states-of-america/>

The US in 2080



From <http://populationpyramid.net/united-states-of-america/>

The US in 2090



From <http://populationpyramid.net/united-states-of-america/>

Word of warning: The further into the future the prediction is for, the more room for change and the less detail we can offer.

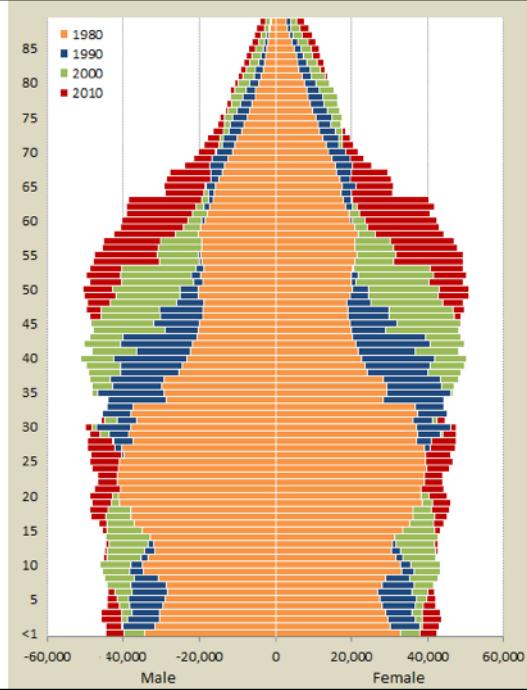
What can we tell from this population pyramid?

What can we surmise about fertility?

Mortality?

Growth?

Washington State 1980-2010



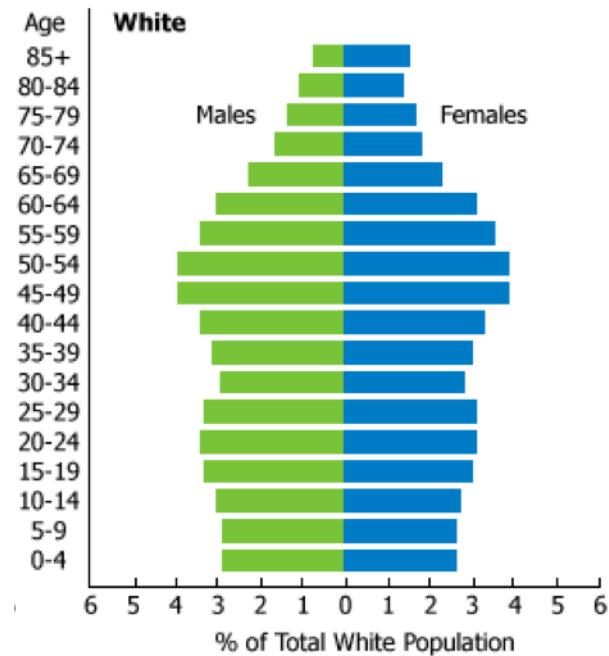
What is going on here?

How does this compare to the national trajectory we just looked at?

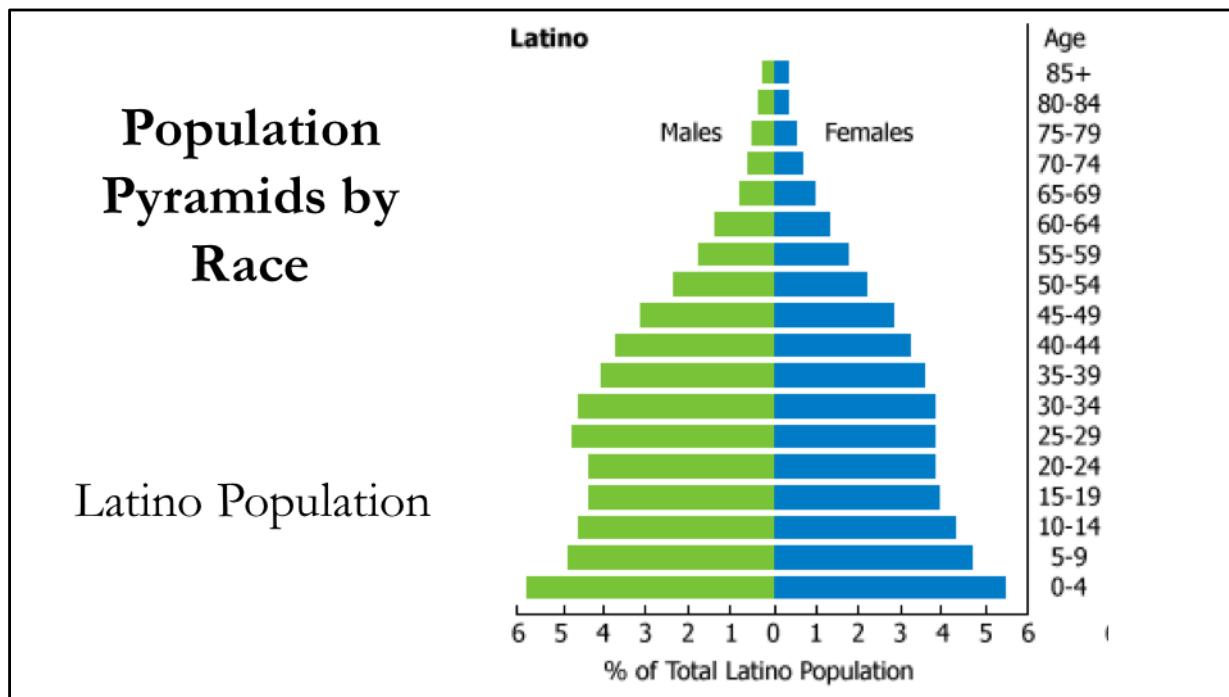
Note: Some population pyramids have count data across the bottom. Others have percentage of the population.

Population Pyramids by Race

White Population



How does this compare to the overall population?

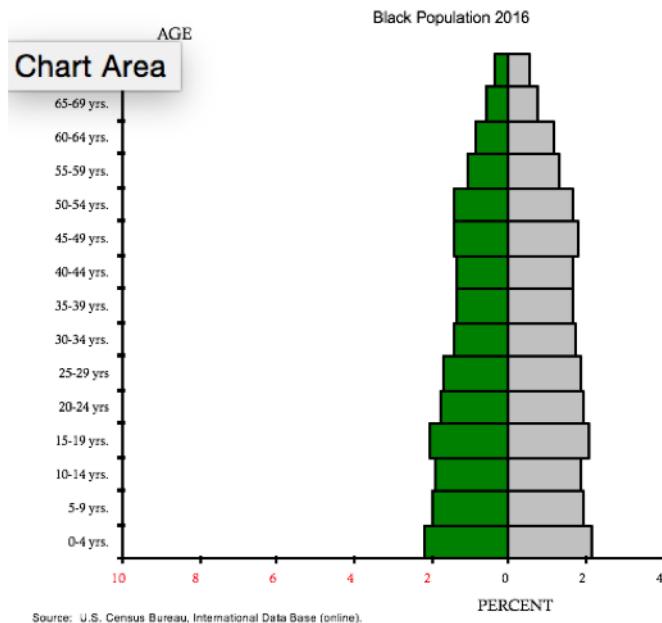


How does this compare to the overall population?

What are the key differences?

Population Pyramids by Race

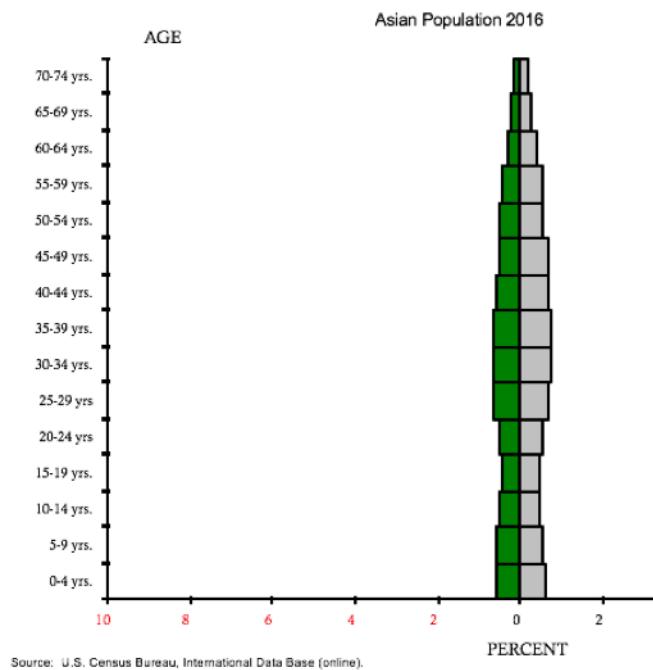
Black Population



How does this compare to the overall population?
What are the key differences?

Population Pyramids by Race

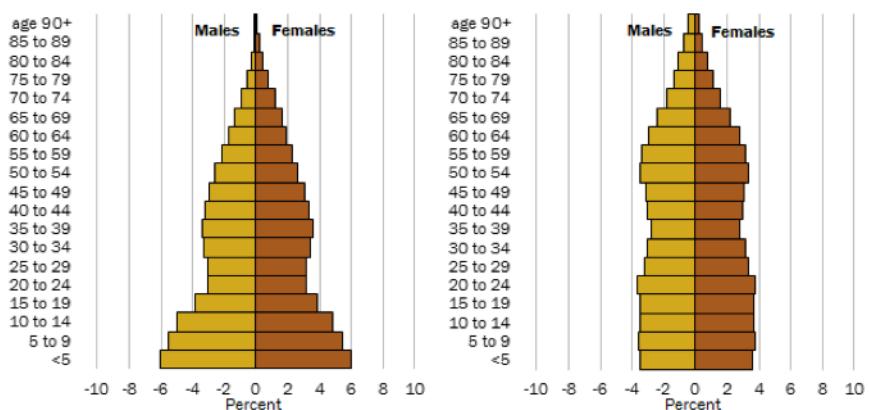
Asian Population



How does this compare to the overall population?
What are the key differences?

How does immigration factor in?

U.S.-Born Age Pyramids
% of U.S.-born population in each age group



Source: Pew Research Center tabulations of 1960 U.S. decennial census data and 2013 American Community Survey (IPUMS)
PEW RESEARCH CENTER

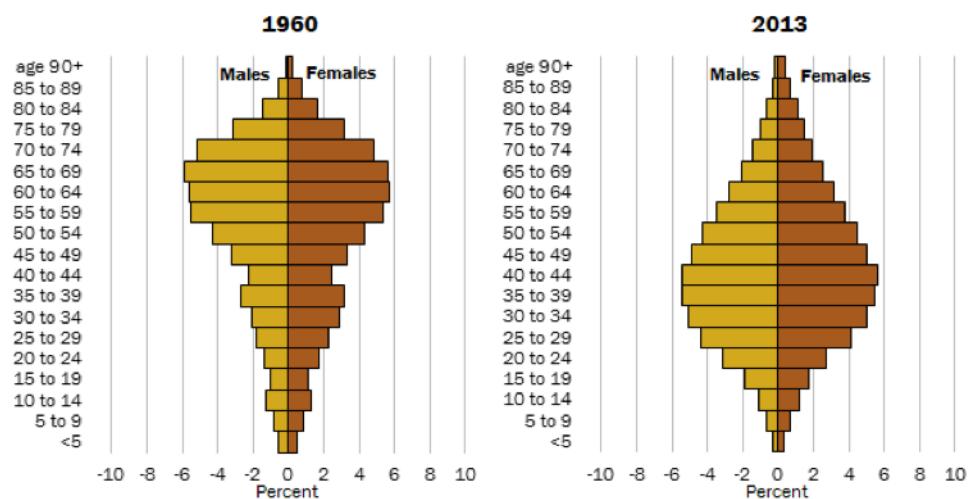
On the left is 1960, on the right is 2013.

This should look familiar, it is essentially the same pyramids we were just looking at (foreign born population is small enough that it doesn't significantly change the structure of the pyramid).

How does immigration factor in?

Foreign-Born Age Pyramids

% of foreign-born population in each age group



On the left is 1960, on the right is 2013.

Notice how the average age of the foreign-born population has decreased tremendously! What does this tell us about immigration?

Questions?