Population Pyramids

Guatemala, 1990

Sun City, Ariz., 1990

Male Female

Male Female

percent

percent

Building Pyramids

By CHERYL STAUFFER

Population pyramids—used by demographers to represent the age and sex distribution of a particular population at a specific point in time—are easy to build.

The Shape Tells the Story

With relatively high fertility, most developing countries exhibit the classic "pyramid" shape (see graph of Guatemala's age and sex distribution, above). Some developed countries, however, have begun to exhibit pillar-like shapes. And graphs for smaller areas, such as states and cities, may show further variation. For example, the above graph representing the age and sex structure of Sun City, Ariz., turns the traditional pyramid upside down. The graph tells the story of a haven for retirees.

Handy Tools

You can build these pyramids with a readily available, commonly used spreadsheet software program like Microsoft Excel.

A population pyramid is a specifically formatted comparative histogram. To create this histogram, you must first enter age and sex data into a spreadsheet, with the number of males and the number of females listed separately either by single years of age or by designated age cohorts. If you are interested in making any comparisons with other populations, you should calculate these data into percentages of the total population, for example, females ages 0-4 as a percentage of the total population.

Here are the steps to take when you use Microsoft Excel:

1. After listing as negative numbers those data pertaining to males—Excel requires these negative numbers to graph the data appropriately—**select** the data for both males and females, as well as age category labels. Under **Insert**, select **Chart**; from the chart type, select the bar chart **Cluster Bar** from the chart wizard and follow the prompts for steps 2 to 4.
2. Click on the vertical axis and select **Format**. From the **Patterns** tab, set major and minor tick marks to "none" and set the tick mark labels option to "low."
3. Click on either data series from the chart and select **Format**. From the **Options** tab, set the **Overlap** to 100 and the **Gap Width** to 0.
4. Click on the horizontal axis and select **Format**. From the **Numbers** tab, select the custom number format and enter in the following: **0;0**. Doing this will eliminate the negative signs.
5. Complete the chart by adding the appropriate labels to designate males and females, and by designating that the age and sex distribution is in percent, if appropriate. Apply any other formatting, such as altering the colors of the bars in the pyramid and removing the gridlines.

Data on the current age and sex distribution for the United States can be found on the Census Bureau's Web site for states (http://www.census.gov/population/www/estimates/statepop.html) and counties (http://www.census.gov/population/www/estimates/countypop.html). Age and sex distribution data by race and Hispanic origin can also be downloaded. The Census Bureau's International Data Base provides information on countries and displays pyramids for 1997, 2025, and 2050 (http://www.census.gov/ipc/www/idbnew.html).

Population pyramids can also be generated by using a software utility called "Population Pyramids 98" from HPN Technologies, Inc. (http://www.visitus.com/popsite/software/pyramids/). ∎

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Coming Soon

∎ Selected estimates, projections, and data from the *1999 World Population Data Sheet* (due in mid-May).

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This year's meeting of the Population Association of America, the professional association of U.S. population specialists, was held in New York City in late March and drew 1,674 participants. Here are highlights from just a few of the nearly 1,000 papers and posters presented.

Census 2000: Counting by Committee

Kenneth Prewitt, director of the U.S. Census Bureau, opened the session on Census 2000 by saying that the schedule to have the census ready by April 1, 2000, will be "very, very tight." And, he said, three measures now being considered by the U.S. House of Representatives' Committee on Government Reform would be "operationally disruptive at this phase." The measures to which he referred are sponsored by Republicans and include a mandated second mailing of the census form to every household, an increase in the number of languages into which the census form must be translated, and post-census review by local officials of the counts for their areas.

Tom Hofeller, a Republican staff member of the House Subcommittee on the Census, downplayed the role of partisanship in the conflict between Congress and the bureau and cast the problem this way: "The statistical community thinks they are high priests. … I don't hear the statistical community owning up to the fact that there are some valid problems with sampling." He urged the bureau to invest more in explaining the issues, to recognize that there is no one right way to proceed, and to work to achieve "consensus in the polity." He also spoke of Congress' willingness to allocate additional funds to make changes in implementation.

Undeterred by talk of consensus and money—"I don't believe the blank check promises for a minute"— Prewitt responded: "At a certain point, there has to be a time that's too late. If the measures ordering a second mailing and additional languages pass, we will model the damage that would cause, and we might recommend delaying." Finally, he asked, "Do they want us to do a census or participate in a Washington-based debate?"

TerriAnn Lowenthal, former staff director of the House subcommittee charged with census oversight and now a consultant to the Census 2000 Initiative, summed up the session: "The bureau is unprepared for its political role." She conceded a point made by Hofeller that conducting a sample survey has all the same problems of enumeration plus those of matching, and she urged demographers to reconsider the effectiveness of the current adjustment technique.

World Population Graying

Aging emerged as a theme of "World Population: Six Billion and Counting," which underscored the need for better communication between social scientists and policymakers. Several demographers and an investment banker participated in the panel discussion of world population issues.

Peter Peterson, chairman of the Blackstone Group and author of *The Gray Dawn: How the Coming Age Wave Will Transform America—And the World,* called for policy changes to prepare developed countries for the strains that aging populations will place on them. According to Peterson, developed countries' unfunded liabilities for pensions plus health care amount to $70 trillion, or three to five times current spending on defense and 9 percent to 16 percent of gross domestic product. To pay for these benefits, he said, payroll taxes would have to increase by between 25 percent and 40 percent, placing an unfair burden on workers.

He posed questions that he hopes policymakers and citizens will consider when they hear the numerical projections: whether developed countries with large populations of older people will become risk-averse and resistant to innovation, and whether political power will therefore shift to developing countries, which will have relatively more young people.

Joseph Chamie, director of the United Nations Population Division, remarked that the UN and other organizations have initiated discussions on aging, but that policymakers "don't believe our estimates."

Charlotte Hoehn, director of the Federal Institute for Population Research in Germany, likewise expressed frustration with her country's retirement policies. Contrary to the advice that she and others gave in the early 1990s—that, to keep its old age security system solvent, the government needed to reduce the level of pay-as-you-go pension benefits by half, or to double the amount of contributions—under Chancellor Gerhard Schroeder, measures have been proposed to accelerate retirement with full pension to make room for the young unemployed.

One factor behind policymakers' reluctance to act on population projections may be the disagreement among demographers about what to conclude from the numbers. John Bongaarts, vice president of the Population Council's Policy Research Division, said that the total fertility rate (TFR), which is used in the UN's most recent population estimates (see page 8), is lower than actual or cohort fertility because it is subject to a distortion called the "tempo effect." This effect refers to the rate of speed at which women bear their children, which in turn is influenced by the age

at which they begin bearing children. He stated that Italy's TFR of 1.2, when it is adjusted mathematically for the tempo effect, is closer to 1.7. He suggested, drawing on data showing a gap between current and expected or desired fertility, that the adjusted TFRs of many countries could rise to a level approaching replacement fertility (2.1). Tomas Frejka, a demographer recently retired from the UN Economic Commission for Europe, disagreed with Bongaarts' suggestion. Frejka reported that his own research on cohort fertility shows that below-replacement fertility appears to be taking hold in most European countries.

Childlessness Among Baby Boomers Plateaus

Childlessness among women ages 40 to 44 rose from 10 percent in 1980 to 19 percent in 1998, according to Amara Bachu, with the Fertility and Family Statistics Branch of the U.S. Census Bureau's Population Division. Women who had the highest levels of education, those engaged in managerial and professional occupations, and those with the highest family incomes experienced the highest levels of childlessness. Yet Bachu found that increases were small among successive baby boom cohorts, leading her to conclude that childlessness is tapering off for baby boomers.

Gays and Lesbians Well Educated, Understudied

Standard social science data sources now allow systematic study of the gay and lesbian population in the United States. These sources include the U.S. Census Bureau's Public Use Microdata Sample (5 percent sample), the National Health and Social Life Survey, and the General Social Survey.

Drawing from these data sets, Dan Black, professor of economics at the University of Kentucky, and Gary Gates, Seth Sanders, and Lowell Taylor—all from the Heinz School at Carnegie Mellon University—dis-

College-Educated Americans, by Sexual Orientation
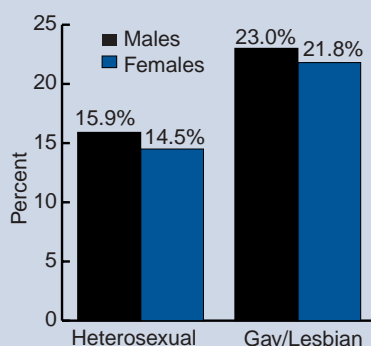
Source: Dan Black, Gary Gates, Seth Sanders, and Lowell Taylor, Heinz School, Carnegie Mellon University, "Demographics of the Gay and Lesbian Population in the United States: Evidence from Available Systematic Data Sources," Paper, Population Association of America Meeting, March 1999.

cussed advantages and disadvantages of using each of these data sources. The team then presented statistics about the cities with the highest concentrations of gay men, and about the educational attainment (see figure above), earnings, and military service of gays and lesbians.

Deaths From AIDS in Africa Could Climb Higher Than Projected

Although the toll that AIDS is taking now on sub-Saharan Africa is visible, some widely circulated projections of the number of AIDS deaths that will occur there in the coming years may be too low. Peter Johnson and Linda Hooper, demographers with the U.S. Census Bureau, painted three contrasting portraits of AIDS mortality in the region, based on data from the Global Burden of Disease (GBD) study conducted by the Harvard School of Public Health, the U.S. Census Bureau, and the UN Population Division.

The GBD predicts that AIDS deaths will peak at between 600,000 and 800,000 deaths around 2005, hold fairly steady until 2010, and decline to half a million by 2020. UN 1998 data lead to a higher projection, showing that deaths will peak at 2.3 million in about 2007 and drop to 2 million by 2012. Census Bureau data lead to the highest projected mortality, with deaths reaching 5 million in approximately 2015 and rising to 5.7 million by 2020. The differences, according to Johnson and Hooper, lie in prevalence data (the GBD uses 1992 data, whereas the other two sources use 1996 data), as well as in the models used by each source (see table below).

Warren Sanderson, chair of the Economics Department at the State University of New York at Stony Brook, who presented research on the effects of AIDS in Botswana and Namibia, found the Census Bureau projections in line with his observations. Yet, according to Anderson, UN estimates for population in the next century "could be true only if tremendous change were occurring now," which he said was not the case. ∎

Basic Demographic Models Used in AIDS Projections

| Data | Indicators, by source | | |
	GBD	Census Bureau	UN 1998
Fertility	Crude birth rate	Age-specific fertility rate	Age-specific fertility rate
Mortality	Deaths or mortality rate in broad age groups (by cause)	Mortality rates for each affected country	Survival ratios
Level of detail	Regional	Country-specific	Country-specific

Source: Linda M. Hooper and Peter D. Johnson, U.S. Census Bureau, "The Demographic Impact of AIDS Mortality on Sub-Saharan Africa: Contrasting Portraits," Paper, Population Association of America Meeting, March 1999.