

COMMENTARY • Population and Conflict: Exploring the Links

The Young and the Restless: Population Age Structure and Civil War

Three months after the attacks of September 11, 2001, the *New York Times* asked, “Is the Devil in the Demographics?” (Sciolino, 2001). The article examined the vulnerability of large cohorts of unemployed youth to extremist ideology and political recruitment, and speculated about the hazards created by future youth cohorts in the Middle East. In the post-9/11 era, however, there has been very little academic research on the relationship between youthful age structure and warfare (three notable exceptions: Urdal, 2002; Hammel & Smith, 2002; Cincotta et al., 2003). Literature on civil war and insurgency has instead highlighted the role of other causal factors such as the presence of valuable resources, the degree of ethnic fractionalization, and type of political regime, while downplaying the importance of population age structure (see, e.g., Collier & Hoeffler, 2001; Fearon & Laitin, 2003; Elbadawi & Sambanis, 2002).

While these factors likely play an important role in the onset of civil war,¹ the importance of youthful age structure—particularly in insurgency-based civil wars²—should not be

ignored. The relationship between large youth cohorts and civil war appears to have held throughout history. For example, Herbert Moller (1968) suggests that wars in pre-modern and present-day Europe, including the rise of the Nazi party in Germany, corresponded with surges in the proportion of young men in the population. Yale historian Paul Kennedy (1993) argues that revolutions occur more often in countries with large populations of “energetic, frustrated, young men.”³ Even after controlling for the fact that more youthful countries are less developed and have more vulnerable political regimes, my research finds that a large difference in the number of young adults compared to the number of older adults—“relative cohort size”—can help predict civil war, particularly insurgent-based civil wars.

“Excess Youth”: A Perfect Storm?

Some recent conflicts appear to lend credence to the “excess youth” hypothesis. For example, Philip Gourevitch (1998) describes how Rwandan *génocidaires* were recruited from among the jobless young men who were “wasting in idleness and attendant resentments...Most of the men were motivated by the opportunity to drink, loot, murder, and enjoy higher living standards than they were previously accustomed to” (page 93). In Sierra Leone, where young people comprised 95 percent of the fighting forces in a recent civil war, an NGO official explained that the youth are “a long-neglected cohort; they lack jobs and training, and it is easy to convince them to join the fight” (Mastny, 2004, page 19). While recent conflicts in Palestine and the Democratic Republic of the Congo are mostly influenced by other factors, both areas have among the highest

Sarah Staveteig is a doctoral candidate in sociology and demography at the University of California, Berkeley. The research described in this paper was conducted with the support of a National Science Foundation Graduate Research Fellowship. She completed the initial work during the 2004 Young Scientists Summer Program at the International Institute for Applied Systems Analysis (Austria).

SARAH
STAVETEIG

ratios of young adults (15-29) to older working-age adults (30-54) anywhere in the world.

Even though population growth has slowed worldwide and will likely end within the next century (Lutz et al., 2004), high fertility rates in Africa and the Middle East will continue to bring increasingly larger cohorts of young adults for the next few decades. As Chart 1 illustrates, the ratio of young people to adults in the developing world will continue to remain well above the 1980 world peak for decades to come. The National Intelligence Council (2004) refers to these increasing youth cohorts as part of a “perfect storm”—including failed states, poor economies, and religious extremism—that will likely fuel conflict in certain parts of the world for decades to come.

“Youth Bulge” Is a Misnomer

I believe that the mixed evidence on youthful age structure and the risk of conflict is largely due to the poor measurement of age structure in most research. The term “youth bulge” is a misnomer: although few authors use the same definition of youth bulge, nearly all researchers⁴ measure it as the number of young people (generally between ages 15 and 24) as a percentage of the adult population. A bulge, literally defined as an “irregular swelling” (Abate, 1998), should be visible in the young adult section of the age pyramid. Yet some so-called youth bulges, such as that in contemporary Iraq (Panel A of Chart 2), do not produce the bulge shape characteristic of baby booms followed by “baby busts” (Panel B of Chart 2).

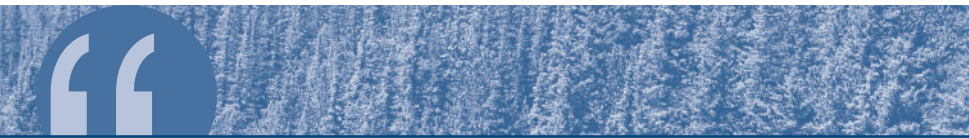
Relative Cohort Size: A Better Measure of Age Structure

If not the bulge shape in and of itself, then why do youthful populations influence the risk of insurgency? I argue that the presence of young adults is not as important as the degree of alienation, frustration, and marginalization they experience. These factors are subjective and difficult to measure; one way might be to examine how much schools and the labor market must

expand to accommodate the incoming cohort of teenagers. We can obtain a rough estimate by measuring the current group of young adults (ages 15 to 29) as a proportion of the number of older working adults (ages 30 to 54) to find a “relative cohort size,” after a similar measure proposed by Richard Easterlin (1968, 1978, 1987).⁵

Relative cohort size can provide the missing link between the population of young men and the risk of civil war, especially if we consider only insurgency-based civil wars (Staveteig, 2004a, 2004b, 2005). Easterlin’s relative cohort size hypothesis delineates the relationship between youthful populations and the economic and psychological frustrations that enable political instability and, ultimately, civil war. As a large relative cohort comes of age, the tension produced by lack of success in the job and marriage markets may, in the presence of other factors, render armed conflict a more appealing option. While relative cohort size is unlikely to be an immediate cause of civil war, large birth cohorts often strain the schooling system and labor market of a country, particularly a developing one, which can result in massive frustration, unemployment, reduced wages, and dissatisfaction—and arguably create a potential army of young men who could be easily recruited in a rebellion.⁶ If economic opportunities exist and expand in tandem with the youthful population, as they did in most parts of East Asia, enormous economic growth can result from relatively large cohorts (Bloom & Williamson, 1997; Bloom, Canning, & Malaney, 1999). Yet in most developing countries, where economic opportunities are not even sufficient for current youth cohorts, a rise in the population entering the labor force is likely to increase joblessness.

In the United States, a large relative cohort size—such as that created by teenage baby boomers—is thought to have been one cause of the social upheaval of the late 1960s and early 1970s (Macunovich, 2002; Easterlin, 1987). In countries with less economic opportunity and fewer channels for enacting social change, large cohorts of young adults may choose more



Even after controlling for the fact that more youthful countries are less developed and have more vulnerable political regimes, my research finds that a large difference in the number of young adults compared to the number of older adults—“relative cohort size”—can help predict civil war, particularly insurgent-based civil wars.

violent means of protest and social change. Historical case studies have documented that a youthful age structure in Cyprus, Palestine, Algeria, and Laos increased the size of the population that could be mobilized, which in turn influenced the intensity of the conflicts (Choucri, 1974, page 191).

One of the most important explanations of the importance of relative cohort size is what Easterlin (1978, 1987) calls “relative male income,” which is the standard of living a man’s income can buy relative to his father’s standard of living. Relative male income is inversely related to relative cohort size, other things being equal. In the United States, the baby boomers were a much larger birth cohort than their parents’ cohort, so people born later in the boom experienced a much tighter entry-level job market than those born early or before the boom. In this way, one’s birth and fortune were interlinked: members of smaller cohorts generally had an easier time finding jobs and education, while equally qualified members of larger cohorts struggled to achieve the same standard of living.

Not every society may respond the same way to low relative male income, but large birth cohorts in any country—particularly males—must be accommodated by the school system

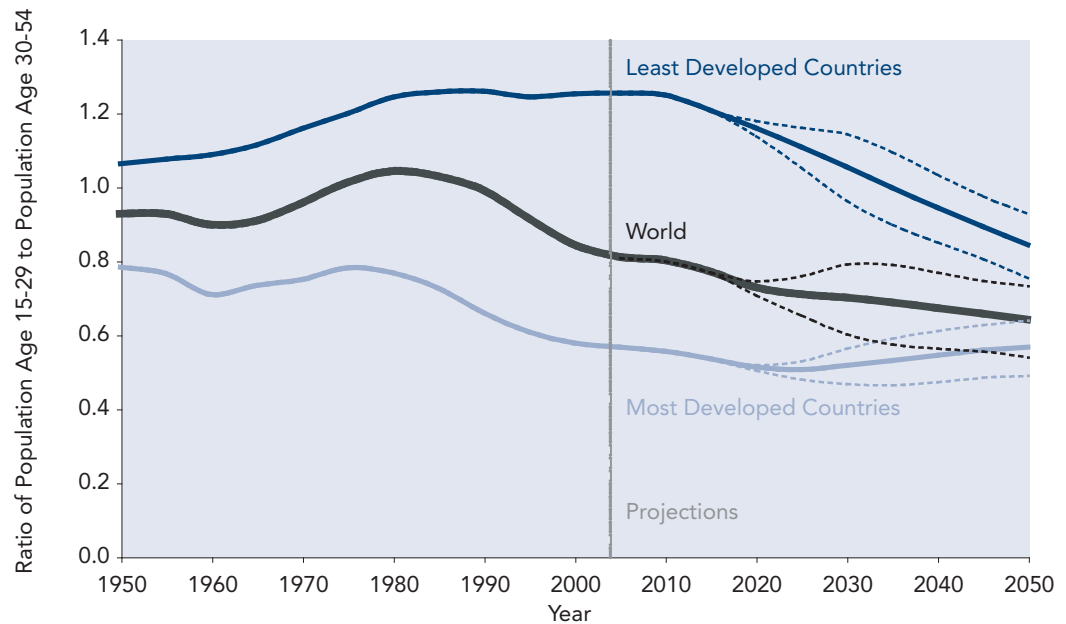
and eventually by the labor market. In populations with many women of child-bearing age, population momentum will cause overall population size to increase even decades after fertility declines. The government will be required to increase expenditures on services (such as roads, schools, and hospitals) to accommodate each new cohort. When the large birth cohort reaches adulthood, they will require more jobs than vacated by previous cohorts. In deeply religious contexts where pre-marital sex is forbidden and men are expected to financially establish themselves prior to marriage, such a shortage of economic opportunities can be particularly frustrating, as the shortage can prevent even educated adults from entering into marriage and achieving cultural notions of adulthood. Research on suicide bombers, for example, has shown that many are well-educated and highly capable, yet lack the economic opportunities necessary to establish themselves (Sprinzak, 2000; Pape, 2005)

Measuring the Importance of Relative Cohort Size

To test the importance of relative cohort size in the probability of civil war, I built a dataset that combined information on civil wars (Strand et al., 2004), insurgency-based civil wars (Heidelberg Institute for International Conflict Research, 1999), national per capita income (Heston et al., 2004), demographic factors (United Nations, 2003), political regime (Marshall et al., 2004), and other relevant trade and economic variables (World Bank, 2002). The data span 10 five-year periods from 1950–2000 in 174 countries.

In accordance with previous research, my baseline model found that countries with unconsolidated political regimes,⁷ high infant mortality rates, lower per capita incomes, and larger population sizes consistently had a higher risk of civil war onset (Staveteig, 2005). Infant mortality rate (which is often used as a proxy to measure development) and per capita income were nearly equally strong predictors of civil war onset, and both measures were highly correlated to one

Chart 1: Relative Cohort Size Worldwide 1950–2050



Note: "Relative Cohort Size" is defined as the ratio of population aged 15-29 to population aged 30-54.
Source: Author's calculations from United Nations' *World Prospects Data: The 2002 Revision* [CD-ROM].

another. I ultimately chose to use only the infant mortality rate in my models because the data over time and country were more complete. None of the other factors that researchers suggested are important—urbanization, per capita income growth, secondary school enrollment, and population density—measurably improved the baseline model.

Calculating youth as a percentage of the entire population ("non-relative cohort size") did not determine the onset of civil wars (insurgency-based or otherwise). On the other hand, comparing a *specific* population of youth to a *specific* population of adults (relative cohort size) and comparing a *specific* population of youth to *all* adults ("quasi-relative cohort size") both strongly predicted the risk of civil war. While the average country in the dataset experienced a 12 percent chance of any kind of civil war erupting in any given five-year period, differences in relative cohort size could swing that risk as low as 6 percent and as high as 28 percent, holding all other factors equal.⁸ For insurgency-based civil wars the results were even stronger. While the average country faced a 9 percent chance of an insurgency-based civil war starting in any given five-year period, relative cohort size could make this risk as low as 2 percent or as high as 38 percent. Higher levels of infant mortality and an unconsolidated political regime could greatly increase this risk.

Could these results be influenced by the countries' different levels of development? Using the United Nations' classification scheme for more-developed and least-developed countries,⁹ I found that even within these broad development categories, differences in age structure were significant and measurable predictors of conflict.

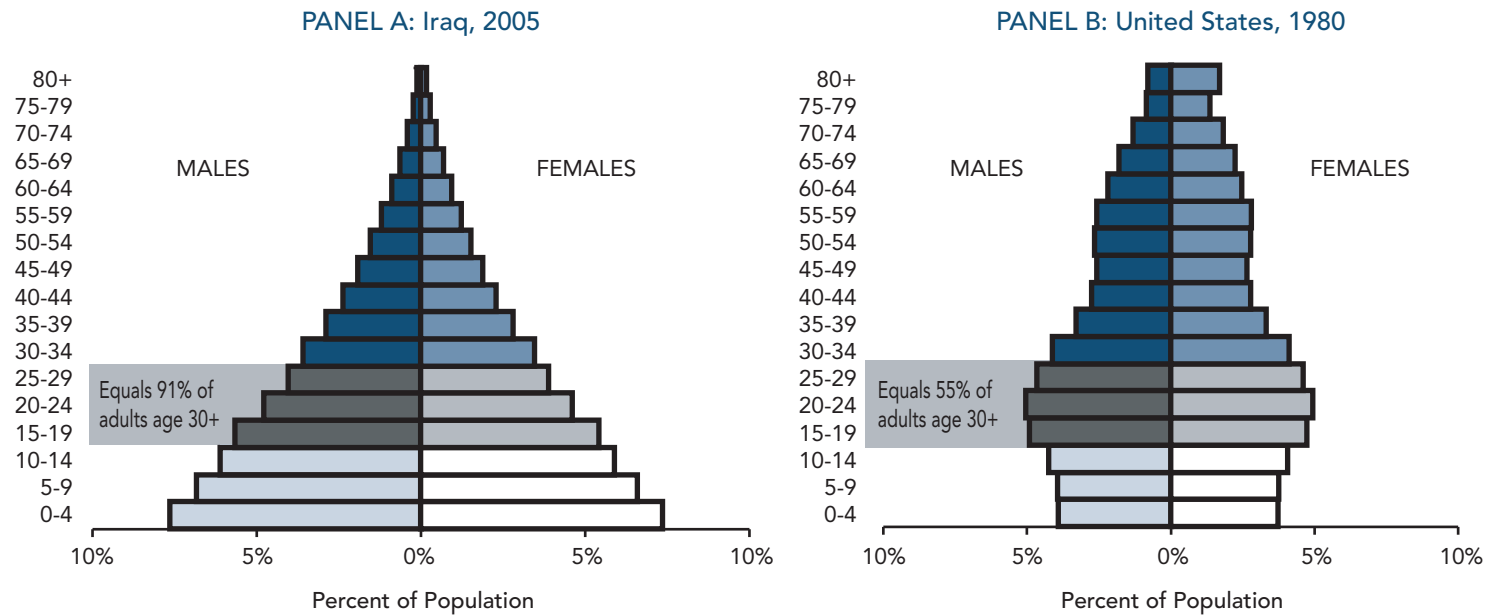
Interestingly, it appears that *future* relative cohort size could also be used to predict con-

flict. Relative cohort size can be measured up to 10 years in advance using current data on population age structure. For example, the ratio of future young adults (e.g., the current 5- to 19-year-olds) to future older adults (the current 20- to 44-year-olds)—combined with current information about infant mortality, population size, and governance—can predict whether conflict will occur 10 to 15 years from now almost as well as waiting 10 years to measure the actual relative cohort size. This finding could help develop conflict-prevention policies; by identifying large relative cohorts up to 10 years before they reach young adulthood, policymakers and funders might devise better strategies for easing the transition, and thus reduce the chances of conflict.

Conclusion

Just as developed countries now face future pension shortfalls and other challenges associated with aging populations, less developed countries face the opposite problem: excess youth. In

Chart 2: Age Structure in Iraq 2005 and the United States 1980



Note: The term “youth bulge” is a misnomer: all contemporary definitions of the term would rank contemporary Iraq (Panel A) as having a larger youth bulge than the United States did in 1980 (Panel B), despite the fact that Panel B shows a more characteristic “bulge” shape.

Source: United Nations’ *World Prospects Data: The 2002 Revision* [CD-Rom]. The 2005 estimate for Iraq is based on the medium-range projections from 2002.

2005, 1.9 billion people—nearly one-third of the world’s population—are under the age of 15. Ninety percent of these youth live in less-developed countries.¹⁰ Even if fertility decreases, large birth cohorts in developing countries are unlikely to wane for a few decades. As these large birth cohorts enter adulthood, the risk of insurgent civil wars increases. When relative cohort size peaked in the United States (as baby boomers entered young adulthood) in 1975, there was nearly a one-to-one ratio between the number of 15- to 29-year-olds and the number of 30- to 54-year-olds. In the average least-developed country, that ratio is expected to stay above one until 2035. The strain on school systems and labor markets in these countries will be profound. In absolute numbers, the increase in youth cohorts will be enormous.

Of course, it is not likely that a high relative cohort size will be *the* inciting cause of conflict in least-developed countries. A very youthful population is an important factor, among oth-

ers, that flares up only under certain conditions or “sparks.” But at the same time, sparks can only trigger violent conflicts when contextual factors enable them. If alternative means of social change are available, violence will be less appealing. A large relative cohort is not in and of itself a sufficient cause for civil war, but a smaller relative cohort size makes it more difficult for conflicts to erupt.¹¹ Even after controlling for the fact that more youthful countries are less developed and have more vulnerable political regimes, my research finds that relative cohort size is an important predictive factor for civil war, particularly insurgent-based civil wars.

The link I found between relative cohort size and civil war would have been even stronger if I had looked at the sub-national level, as insurgent groups often come from sub-populations with high relative cohort size (for example Chechens in Russia, Northern Irish in the United Kingdom, and Palestinians in Israel).¹² Recent suicide bombings in London and riots

in France are important reminders that developed countries are not immune to violent rebellions from youthful sub-populations. But these events alone do not justify restricting immigration; instead, I believe that they signal the urgent need to improve integration and equality. Industrialized countries facing major pension shortfalls due to a high ratio of retirees to workers could mitigate the problem by hiring young workers from the developing world. Even though immigration and integration are politically sensitive topics, developed countries should consider projected pension shortfalls and the cascading security risk of large youth cohorts in the developing world when debating immigration and integration policies.

Easing the transition of large birth cohorts into adulthood and developing viable nonviolent means of political change could help prevent civil war in countries where relative cohort size is expected to be high. Methods might include increasing the number of opportunities available for young people (perhaps by offering employers credits for hiring entry-level workers, expanding regional security forces, or using international aid to create an internal volunteer corps), expanding tertiary schooling options (if appropriate jobs will later be available), ensuring universal suffrage for young adults, and maintaining a fair and open political system.

A better understanding of contextual factors leading to civil war may improve our ability to prevent it in the future. Research on the causes of civil war should incorporate measures of relative cohort size. Unraveling the background factors that put a country at risk for conflict is arguably more important than finding the immediate “spark” of conflict, as policy is much better equipped to address structural problems than immediate factors. In many countries around the world, we cannot prevent large relative youth cohorts over the next two decades, but understanding the role of relative cohort size and planning wisely could help reduce the risk of future insurgency-based¹³ civil wars.

Notes

1. I define a civil war as an “internal armed conflict” according to the Armed Conflict Dataset from the International Peace Research Institute in Oslo (Strand et al., 2003; Gleditsch et al., 2002).

2. For the purposes of this paper, insurgency-based civil wars are defined as violent crises or wars involving a non-state group as a primary actor in the conflict, using the KOSIMO dataset (Heidelberg Institute for International Conflict Research, 1999).

3. Other authors have found a connection between “excess young men” and the outbreak of violence (Cincotta et al., 2003; Goldstone, 1991, 2001; Hammel & Smith, 2002; Mesquida & Wiener, 1999; Urdal, 2002).

4. See, for example, Cincotta et al. (2003); Choucri (1974); Goldstone (2002); O’Brien (2002); Mesquida and Wiener (1999); and Urdal (2002).

5. As youth unemployment rates are difficult to measure, particularly in the developing world, a relatively large youth cohort is a good proxy for the opportunity structure in a country. Hammel and Smith (2002) call the difference between adjacent cohorts the “demographically-induced unemployment rate.”

6. Youthful populations in and of themselves are unlikely to be a sufficient condition for civil war: insurgent groups must be able to form a coherent collective identity with which to challenge state authority, and they must also find opportunities for collective action (Diehl & Gleditsch, 2001). As Walter (2004) asserts, enlistment in a rebel group is only likely to be attractive “when two conditions hold. The first is a situation of individual hardship or severe dissatisfaction with one’s current situation. The second is the absence of any nonviolent means for change” (page 371).

7. As measured by the square of the political regime score assigned by the Polity IV dataset (Marshall, Jaggers, & Gurr, 2004).

8. Based on the observed range of relative cohort sizes from the dataset.

9. According to the United Nations, highly developed countries include those in Europe, North America, Japan, Australia, and New Zealand. The least developed countries include most of sub-Saharan Africa and parts of Asia and the Middle East. I put the remaining countries in a third category entitled “moderately developed.”

10. Author’s calculations based on figures from Population Reference Bureau (2005).

11. The main exceptions are conflicts in the former Soviet Union and Yugoslavia, where relative cohort size was small but other factors enabled protracted conflict.

12. Based on information about fertility rates from “Chechnya has highest birth rates in Russia” (2005),



By identifying large relative cohorts up to 10 years before they reach young adulthood, policymakers and funders might devise better strategies for easing the transition, and thus reduce the chances of conflict.

Ruddock et al. (1998), and Population Reference Bureau (2005).

13. Insurgent groups cannot always be deemed morally wrong (consider, for example, anti-colonial movements in many countries), but when groups feel they have no other means besides violence to enact social change, the costs for society can be enormous.

References

- Abate, F. (Ed.) (1998). *The Oxford American English dictionary* (revised ed.). New York: Oxford University Press.
- Bloom, David E., David Canning, & Pia N. Malaney. (1999). *Demographic change and economic growth in Asia* (CID Working Paper). Cambridge, MA: Center for International Development at Harvard University.
- Bloom, David E., & Jeffrey G. Williamson. (1997). *Demographic transitions and economic miracles in emerging Asia* (Working Paper 6268). Washington, DC: National Bureau of Economic Research.
- "Chechnya has highest birth rates in Russia." (2005, April 21). *RIA Novosti*, Issue 571. Retrieved November 11, 2005, from http://daily.rianovosti.com/issue.html?iss_id=15161
- Choucri, Nazli. (1974). *Population dynamics and international violence: Propositions, insights and evidence*. Lexington, MA: Lexington.
- Cincotta, Richard P., Robert Engelman, & Daniele Anastasion. (2003). *The security demographic: Population and civil conflict after the Cold War*. Washington, DC: Population Action International.
- Collier, Paul, & Anke Hoeffler. (2001, October 21). *Greed and grievance in civil war*. The World Bank Group. Retrieved June 15, 2004, from http://www.worldbank.org/research/conflict/papers/greedgrievance_23oct.pdf
- Diehl, Paul F., & Nils Petter Gleditsch (Eds.). (2001). *Environmental conflict*. Boulder, CO: Westview.
- Easterlin, Richard A. (1968). *Population, labor force, and long swings in economic growth: The American experience*. New York: National Bureau of Economic Research & Columbia University Press.
- Easterlin, Richard A. (1978). "What will 1984 be like? Socioeconomic implications of recent twists in age structure." *Demography* 15(4), 397-432.
- Easterlin, Richard A. (1987). *Birth and fortune: The impact of numbers on personal welfare* (Second ed.). Chicago: University of Chicago Press.
- Elbadawi, Ibrahim, & Nicholas Sambanis. (2002). "How much war will we see? Explaining the prevalence of civil war." *Journal of Conflict Resolution* 46(3), 307-334.
- Fearon, James D., & David D. Laitin. (2003). "Ethnicity, insurgency, and civil war." *American Political Science Review* 97(1), 75-90.
- Gates, Scott. (2002). "Recruitment and allegiance: The microfoundations of rebellion." *The Journal of Conflict Resolution* 46(1), 111-130.
- Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, & Håvard Strand. (2002). "Armed conflict 1946-2001: A new dataset." *Journal of Peace Research* 40(5), 593-607.
- Goldstone, Jack A. (1991). *Revolution and rebellion in the early modern world*. Berkeley, CA: University of California Press.
- Goldstone, Jack A. (2001). "Demography, environment, and security." In Paul F. Diehl & Nils Petter Gleditsch (Eds.), *Environmental conflict*. Boulder, CO: Westview.
- Goldstone, Jack A. (2002). "Population and security: How demographic change can lead to violent conflict." *Journal of International Affairs* 56(1), 3-22.
- Gourevitch, Philip. (1998). *We wish to inform you that tomorrow we will be killed with our families: Stories from Rwanda*. New York: Farrar, Straus and Giroux.
- Hammel, Eugene, & Erik Smith. (2002). "Population dynamics and political stability." In Neil J. Smelser & Faith Mitchell (Eds.), *Discouraging terrorism: Some implications of 9/11*. Washington, DC: National Academies Press.
- Heidelberg Institute for International Conflict Research. (1999). *KOSIMO dataset 1999*. Retrieved March 1, 2005, from <http://www.hiik.de>
- Heston, Alan, Robert Summers, & Bettina Aten. *Penn world table* (Version 6.1) [Data file]. Center for International Comparisons at the University of Pennsylvania. Retrieved July 8, 2004, from <http://pwt.econ.upenn.edu> 2004
- Kennedy, Paul. (1993). *Preparing for the twenty-first century*. New York: Random House.
- Lutz, Wolfgang, Warren Sanderson, & Sergei Scherbov (Eds.). (2004). *The end of world population growth in the 21st century*. London: Earthscan.
- Macunovich, Diane. (2002). *Birth quake: The baby boom and its aftershocks*. Chicago: University of Chicago Press.
- Marshall, Monty, Keith Jagers, & Ted Robert Gurr. (2004). *Polity IV dataset 2004*. Retrieved December 12, 2004, from <http://www.cidcm.umd.edu/inscr/polity/>
- Mastny, Lisa. (2004, September/October). "The hazards of youth." *World Watch Magazine*, 18-21.
- Mesquida, Christian G., & Neil I. Wiener. (1999). "Male age composition and severity of conflicts." *Politics and the Life Sciences* 18(2), 181-189.
- Moller, Herbert. (1968). "Youth as a force in the modern world." *Comparative Studies in Society and History* 10(3), 237-60.
- National Intelligence Council. (2004). *Mapping the global future: Report of the National Intelligence*

- Council's 2020 Project*. Washington, DC: Government Printing Office. Available online at <http://www.foia.cia.gov/2020/2020.pdf>
- O'Brien, Sean. (2002). "Anticipating the good, the bad, and the ugly: An early warning approach to conflict and instability analysis." *Journal of Conflict Resolution* 46(6), 791-811.
- Pape, Robert. (2005). *Dying to win: The strategic logic of suicide terrorism*. New York: Random House, Inc.
- Population Reference Bureau (PRB). (2005). *2005 world population data sheet*. Washington, DC: PRB.
- Ruddock, Vera, Rebecca Wood, & Mike Quinn. (1998). "Birth statistics: Recent trends in England and Wales." *Population Trends* 94, 12-18. Retrieved November 11, 2005, from http://www.statistics.gov.uk/articles/population_trends/birthstats_pt94.pdf
- Sciolino, Elaine. (2001, December 9). "Radicalism: Is the devil in the demographics?" *The New York Times*, section 4, page 1.
- Sprinzak, Ehud. (2000, September/October). "Rational fanatics." *Foreign Policy* 120, 66-73.
- Staveteig, Sarah. (2004a, July). *Age structure, valuable resources, and the onset of civil war worldwide, 1960 - 2000*. Paper presented at the Young Scientists Summer Program Midsummer Workshop, International Institute for Applied Systems Analysis, Vienna, Austria.
- Staveteig, Sarah. (2004b). *The increased incidence of civil wars in sub-Saharan Africa: Assessing the effects of democratization and age structure*. Unpublished master's thesis, University of California-Berkeley.
- Staveteig, Sarah. (2005, July). *Relative cohort size and the risk of civil war worldwide, 1955 - 2000*. Paper presented at The XXV International Union for the Scientific Study of Population Conference, Tours, France.
- Strand, Håvard, Lars Wilhelmsen, & Nils Petter Gleditsch. (2003). *Armed conflict dataset* (Version 2.1). International Peace Research Institute. Available online at http://www.prio.no/page/Project_detail//9244/45926.html
- Strand, Håvard, Lars Wilhelmsen, & Nils Petter Gleditsch. (2004). *Armed conflict dataset* (Version 3.0). International Peace Research Institute. Available online at http://www.prio.no/page/Project_detail//9244/45926.html
- United Nations. (2003). *World population prospects: The 2002 revision* [CD-ROM]. United Nations.
- Urdal, Henrik. (2002, March). *The devil in the demographics: How youth bulges influence the risk of domestic armed conflict, 1950 - 2000*. Paper presented at International Studies Association 43rd Annual Convention, New Orleans, Louisiana.
- Walter, Barbara. (2004). "Does conflict beget conflict? Explaining recurring civil war." *Journal of Peace Research* 41, 371-388.
- World Bank. (2002). *World Bank development indicators 2000* [CD-ROM]. Washington, DC: World Bank.