Markov vs. Markov: Divorce by the Numbers

by
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An article entitled "The Decline of the Traditional Family" appeared in the February 4, 1999, edition of the *UB Reporter*, a campus newspaper at the State University of New York at Buffalo (Donovan 1999). In the article, Lynn Magdol, assistant professor of sociology, states that:

> *Marriage and family are idealized in this country, and, officially at least, we hold them to be sacred. On the face of it, our behavior seems to support that position. Nearly all of us express a desire for an exclusive, intimate association; at least 90 percent of us say we want to marry, most of us do and the majority of us want to have children.*

She goes on to say, however, that "as traditionally constituted … marriage and family apparently aren't satisfying the social and intimacy needs of many people." The article cites the following evidence:

> *Although most Americans do marry at some point, they are delaying marriage until they are older. Once married, demographers project that married couples have a 50 percent chance of divorcing. Andrew Cherlin, a leading family demographer, notes that the divorce rate in the 1980s was twice what it was in the 1950s, and has declined only moderately since then. "To put this in another perspective," says Magdol, "in 1880, two of every 1,000 couples divorced each year. Today, 20 of every 1,000 couples divorce each year—a 10-fold increase over 100 years."*

After presenting these somewhat dismaying statistics, the article reassures the reader of the importance of marriage by stating:

> *No one need worry that marriage is dead, however. Magdol points out that there are many physical, emotional, social and economic benefits offered to those who are married. Even if we experience divorce, we tend to remarry.*

Questions

1. Consider the statistics for divorce in America today as reported in the second paragraph of evidence. Why does one sentence claim a 50 percent chance of divorcing and another state a 20 out of 1000 chance? What is the difference between these statistics?
2. Using this statistical evidence, perform a Markov chain analysis of marriage and divorce. For each time period cited (1880, 1950s, 1980s, and today), construct a Markov chain model that will predict the chance of a couple eventually divorcing. How much more likely are today's couples to end up divorcing than in the 1880s? Is it a 10-fold increase? Explain why or why not.
3. Assume that a divorced person will remarry this year with probability $p > 0$. Adjust your model to estimate, in today's era, the fraction of time that a person spends married (from first marrying until death). How does this percentage vary with p? Can you find an estimate of p?
4. How valid are these models? What assumptions are you making? What are the strengths and weaknesses of a Markovian approach to analyzing marriage?