Leo Goodman, trailblazer in statistics and social sciences, dies at 92

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Leo Goodman, professor emeritus of sociology and statistics, died at the age of 92. (Photo courtesy of the Goodman family)

Leo Goodman, whose pioneering statistical analysis revolutionized the study of poverty, inequality and other social phenomena, died of a COVID-19-related lung infection on Dec. 22 at Alta Bates Summit Hospital in Berkeley. He was 92.

For three decades, Goodman was UC Berkeley's Class of 1938 Professor in the departments of sociology and statistics. He was widely considered to be among the founding fathers of modern statistics.

Among numerous other accomplishments, he pioneered techniques that are still considered a gold standard in sociology scholarship worldwide. Some of the key techniques used in today's machine learning stem from the work Goodman did in the 1990s and 2000s, his colleagues said.

"Statistics and social science today would be unrecognizable without his contributions. He will be missed immeasurably," said UC Berkeley sociology professor Trond Petersen, executive associate dean of the College of Letters and Science.

Not just a numbers guy

The Brooklyn-born, Princeton University-educated statistician led an intellectually vibrant social life. His friends ranged from mathematician John Nash, whose biography inspired the film, "A Beautiful Mind," to writer Saul Bellow and poet and novelist Sylvia Plath, a close friend of Goodman's former wife, Ann (née Davidow).

"Leo was a wonder: Handsome, blond, blue-eyed & Jewish, on a Guggenheim at Cambridge, (will) be visiting professor at Columbia next year in mathematical statistics, very warm-hearted; that unique combination of the intellectual & loving lovable Jew," Plath recalled in a letter she wrote in May 1960 describing Ann's then-fiancé.

The son of Ukrainian Jews who emigrated to New York to flee anti-Semitism, Goodman earned a doctorate in mathematics from Princeton at age 22. In 1950, he joined the faculty of the University of Chicago as one of the nation's youngest professors. For the next 67 years, he made his mark.

"Leo Goodman solved the major problem of quantitative social science, the intrinsic difficulty of studying categorical distinctions like race, religion and gender with statistics designed for continuous variables, like time and distance," Petersen said. "His fundamental insight was to count the people in the categories and use quantitative methods to understand those counts."

In addition to authoring more than 150 academic papers and four books, he led and/or collaborated on seminal work, establishing ever-new and different ways to measure non-numerical data.

Warm heart, brilliant mind

"As a statistician, he figured out a rigorous way of using the insights of modern statistics to analyze that kind of qualitative data in a quantitative way. His contributions have transformed the way we work," said Michael Hout, a UC Berkeley professor emeritus of sociology and demography.

"As a friend and mentor, he was gracious, generous, mild-mannered and very patient," added Hout, now a professor of sociology at New York University.

Indeed, at a time when the social sciences relied on traditional counting methods used in such fields as physics and engineering, Goodman — along with fellow trailblazers like University of Chicago mathematician William Kruskal — found numerical ways to track differences in race, class, gender, religion and other categories.

Three statistics used in software worldwide — Goodman-Kruskal Lambda, Gamma and Tau —are named after Goodman and Kruskal because of their contributions.

"Professor Goodman was a pioneer and leading figure in research at the interface of statistics and the social sciences, an area of greater-than-ever relevance today," said Sandrine Dudoit, UC Berkeley chair of statistics and a professor of statistics and of public health. "His legacy, bridging disciplines and addressing questions of great societal impact, is an inspiration for statisticians as they contribute to data science in terms of both theoretical and methodological foundations and applications to domain disciplines."

Leo Goodman was born on Aug. 7, 1928, in Brooklyn, New York, the son of Abraham Goodman and Mollie Goodman, née Sacks. He and his younger sister Janice were very close.

After graduating from Stuyvesant High School, he went on to earn a bachelor's degree in sociology and mathematics from the University of Syracuse, then a Ph.D. from Princeton, where his passion for statistics was ignited by his mentors, Sam Wilks and John Tukey.

Abraham and Mollie Goodman with son Leo and daughter Janice in the 1930s. (All photos courtesy of the Goodman family)

In 1950, he joined the faculty of the University of Chicago as an assistant professor of sociology and statistics. In a 1952 research paper, he revealed a flaw in how U.S. intelligence agencies during World War II had used vehicle serial numbers to estimate how many vehicles were in the German army, and he provided a better way of calculating their numbers.

In 1957, he met Ann Davidow, an artist. The two married in 1960 and had two sons, first Andy, then Tom. The couple divorced in 1976.

A mixed decade

In the 1970s, Goodman was elected to the National Academy of Sciences, the American Academy of Arts and Sciences and the American Philosophical Society. He was also named Outstanding Statistician of the Year by the American Statistical Association's Chicago chapter.

However, during that same decade, he developed a rare cancer in the muscles of his thigh. Instead of going along with doctors' recommendations that one of his legs be amputated, Goodman did his own research and found that certain chemotherapy, coupled with innovative surgery, could save his leg and allow him to walk.

Even though three of his four quadriceps were removed, over time he retrained his body so that he walked with barely a limp for the next 45 years, said his older son, Andy Goodman, who is Amazon's vice president for device operating systems.

In 1984, Goodman spent a year at Stanford University's Center for Advanced Study in the Behavioral Sciences and fell in love with the San Francisco Bay Area. Two years later, he was hired at UC Berkeley as a professor of sociology and statistics.

The accolades he received for his work over the next 30 years included the American Sociological Association's 1995 Award for a Career of Distinguished Scholarship. In 2005, the association also established the Leo A. Goodman Award to recognize contributions to sociological methodology.

Upbeat to the end

On and off campus, he was warm, humorous and upbeat. When asked how he was doing, he would answer, "Not good," and then, after a long pause, shout, "TERRIFIC!" friends and colleagues recalled.
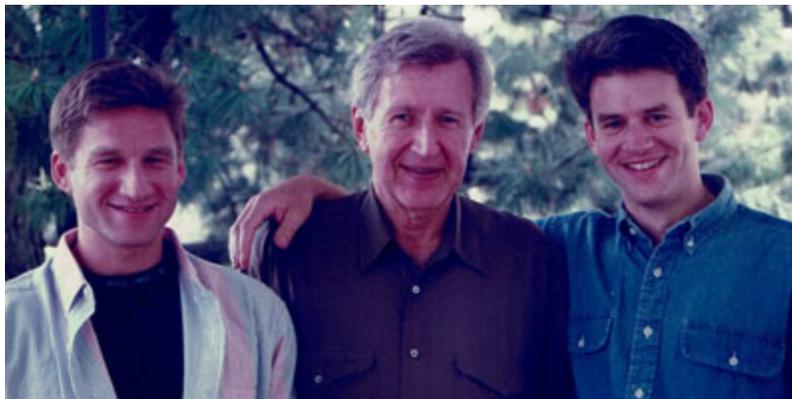
Leo Goodman, with sons Tom, left, and Andy, right.

Andy Goodman treasures the many letters he and his brother Tom received from their father.

"I recently found six long letters he wrote by hand over the course of a single summer when I was 17," Andy Goodman said. "They each ended with, 'I love you very much.'"

Goodman retired from UC Berkeley in January 2017 at age 88 and later moved into the Silverado Berkeley Memory Care Community. "He was very, very happy there," said Tom Goodman, an engineer at BlackRock investment management company.

This past December, amid a surge in the coronavirus pandemic, Goodman contracted COVID-19, along with several other residents and members of the Silverado staff. He was moved to Alta Bates Summit Hospital, where his sons could only communicate with him via FaceTime. They played for him his beloved Mozart, as well as Klezmer music.

When asked how he was feeling, he whispered, "Terrific."

Goodman is survived by sons, Andy Goodman and Tom Goodman, both of San Mateo County, California; sister, Janice Towers (née Goodman) of Larchmont, New York; his former wife, Ann Hayes of Boulder, Colorado, and five grandchildren.