The Price of Fame
An Actuarial Assessment of the Triple Celebrity Death Phenomenon

The idea that celebrities die in threes gained popularity with the Feb. 3, 1959, plane crash that killed musicians Buddy Holly, Richie Valens, and the Big Bopper. Believers are quick to point out instances when three celebrities have died in close succession, while skeptics argue that if you wait long enough there will eventually be three such deaths. So where are we left with this theory, mathematically speaking, nearly 50 years after that tragic plane crash? Moreover, what is the probability that celebrities actually do die “together” in groups of three?

This question depends on two key assumptions: how to define “celebrity” and how to define “together.” As we will explain, even when these terms are defined differently, we reached the conclusion that the phenomenon is not at all uncommon.

Defining “Celebrity”

First and foremost, it’s necessary to define the term “celebrity” as used above. Upon defining the term, it’s then possible to assess the number of living celebrities. According to Famous-Alumni.com, a famous person is “someone who is near or at the top of their profession whereby the profession is relevant to the public.” The website goes into further detail with regard to specific concentrations: entertainment, politics, sports, literature, business, and science. Within each of these categories, the surprise is that it doesn’t take that much to be famous. For instance, the realm of entertainment includes anyone who “has been associated with a popular musician, song, or event.” Furthermore, “scientists are included … if they have made a contribution to the world in some way.” For the purpose of our study, this provided a vague definition of “famous.”

Since it’s difficult to pinpoint the exact number of famous people, we used a simple simulation model to illustrate how results can vary according to the number of famous individuals. A work sheet was used to generate a population distribution of famous people by five-year age group, based on the general U.S. population distribution, which we assumed, for the purpose of this generalized evaluation, is the same as the distribution of celebrities, as given in the 2000 census. The work sheet was programmed to take an input number (the assumed total number of famous people) and distribute that number proportionally to the national population of each five-year age group.

Next, a mortality table of death rates for healthy lives in

van from the Pension Benefit Guaranty Corp. because it was readily available, determined the expected death rate for each age. As with the population distribution, we assumed the distribution of deaths within the celebrity community is the same as in the rest of the population. Because of the small probability of death at the age of 15 and under, the mortality table was redistributed to the age range of 15 to 110 and assembled in age groups of five years to match the population distribution.

For the purpose of this study, we used basic assumptions when dealing with the mortality and age distribution tables that were readily available. The overall focus wasn’t to pinpoint the exact measure of celebrities and their death rates but rather to construct a general study and derive the simplified conclusion that it’s not rare for this event to take place. Had the parameters been differently developed, we don’t doubt that the results would have been different, but we believe the general conclusion would have been the same.

Defining “Together”

The data in the age distribution and mortality table gave a projected probability that a given person would die within each age group during a year’s. Again, assumptions must be made on what constitutes “together.” Since a month seems too long and a week too short, we selected two weeks as an average time. The annual probability is thus multiplied by 2/52 to give the probability of a death in a two-week span. If the period were to change, the probability would increase with a larger period and decrease with a smaller.

After the establishment of the number of people
distributed by age and a mortality rate for each age group, it became time to use the computer simulation program to create a binomial distribution. This distribution was set up with the parameters \((n, p)\) where \(n\) = number of famous people in an age group and \(p\) = the probability of a death for that age group in a two-week period. The simulation program works by taking the parameters \((n, p)\) and calculating the number of total deaths across all age groups with a given number of trials. We arbitrarily chose to have the program run 10,000 independent trials, each of which results in a given number of total deaths and the number of times each “death count” occurs out of the 10,000. From these numbers, the probability of there being three or more deaths in a two-week period could be calculated.

The graph represented in Figure 1 can be constructed after deriving the given probabilities from the computer simulation program. This graph represents the probability of three or more celebrities dying in a two-week period. It shows that if there were only 5,500 famous people, the chance of three or more deaths occurring within two weeks is already more than 20 percent, with the chances continuing to grow as the population increases.

As a result of this study, it’s evident that the probability of three celebrities dying in a given period is not that small and should not be viewed as a mere coincidence or superstition. Although the exact number of famous people is clearly up for debate, even if there were only 9,500 celebrities currently alive, the chance of a triple-death event would already be at 50 percent.

Today’s definition of “celebrity” remains vague, but it could be argued that the current wave of reality TV programming and Internet videos is further altering our perception of what constitutes fame. If Andy Warhol’s prediction that “in the future, everyone will be famous for 15 minutes” actually comes to pass, the way we quantify fame might change dramatically, leading to an even higher probability of a celebrity-death hat trick.

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Celebrity Death Trios for 2007

Teddy Kollek
teacher of Jerusalem (Jan. 2)
Art Buchwald
humorist and columnist (Jan. 17)
Molly Ivins
columnist and author (Jan. 31)
Gian Carlo Menotti
opera composer (Feb. 1)
Anna Nicole Smith
playmate (Feb. 8)
Arthur Schlesinger Jr.
historian and author (Feb. 28)

Thomas Eagleton
U.S. senator and vice presidential candidate (March 4)
Ernest Gallo
co-founder of E&J Gallo Winery (March 6)
Bowie Kuhn
major league baseball commissioner (March 15)
Kurt Vonnegut
author (April 11)
Don Ho
Hawaiian musician (April 14)
Jack Valenti
president, Motion Picture
Association of America (April 26)
Walter Schirra
astronaut (May 3)

Jerry Falwell
minister and TV evangelist (May 15)
Yolanda King
minister and daughter of Martin Luther King Jr. (May 15)
Kurt Waldheim
Austrian president and U.N. secretary general (June 14)
Liz Claiborne
fashion designer (June 26)
Joel Siegel
TV film critic (June 29)

Tammy Faye Messner
TV evangelist (July 20)
Ingmar Bergman
film director (July 30)
Michelangelo Antonioni
film director (July 30)
Merv Griffin
TV host (Aug. 12)
Phil Rizzuto
baseball player and sports broadcaster (Aug. 13)
Leona Helmsley
hotelier (Aug. 20)

Luciano Pavarotti
opera singer (Sept. 6)
Jane Wyman
actress and ex-wife of Ronald Reagan (Sept. 10)
Marcel Marceau
pantomime (Sept. 22)
Deborah Kerr
actress (Oct. 16)
Joey Bishop
comedian (Oct. 17)
Robert Goulet
singer and actor (Oct. 30)

George Osmond
patriarch of singing Osmond family (Nov. 6)
Norman Mailer
author (Nov. 10)
Robert Craig
“Evel” Knievel
stunt daredevil (Nov. 30)
Ike Turner
rock musician (Dec. 12)
Dan Fogelberg
folk-rock musician (Dec. 16)
Oscar Peterson
jazz pianist (Dec. 23)