Additional Details:

What is now labeled as the Great Recession all started in August of 2007. Not many people were paying attention, but in the first week of the month, "the quants" in hedge funds and financial institutions were panicking. Their models broke. Financial markets were flat that day, but many investors were losing huge amounts on paper. No one understood what was happening. Their predictions were not working. One of the things that only came out later is that many financial models (from the financial trading markets, to mortgages, and credit loans) had all assumed that the things that were being modeled, behaved normally. Mathematically, many modelers assumed Gaussian behaviors for many variables. One CFO from a large financial institution (in)famously said they had experienced 25 standard deviation moves in the market several days in a row. Well, this quote was based upon an assumption of Gaussian behavior and was wrong. Risk tends to correlate. So instead of a nice normal distribution, the "tail" risk of the distributions is much more likely than would be predicted by Gaussian statistics. Thus, when you look at a histogram of the actual variable distribution, the ends of the distribution are slightly above (aka fat). This tail risk, while still unlikely, occurs more often than may be expected. It caught many data scientists off guard and was a contributor to the chaos that followed. The Great Recession turned out to be what many term a "black swan": a very rare, highly impactful event that seems obvious with hindsight. Humility in a data scientist is a necessary skill.

To learn more about the fat tailed distributions and the 2008 financial crisis, see below.
- https://web.mit.edu/Alo/www/Papers/august07.pdf
- https://www.nasdaq.com/articles/fat-tail-risk-what-it-means-and-why-you-should-be-aware-it-2015-11-02
- https://alphaarchitect.com/2014/06/monthly-stock-returns-one-fat-tail-and-a-dash-of-skewness/
- https://en.wikipedia.org/wiki/Black_swan_theory
- https://en.wikipedia.org/wiki/David_Viniar
- https://jpm.pm-research.com/content/34/4/76
- https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf