Benford's Law vs. the Boom: A Statistical Analysis of North Dakota Population from 1980 to 2015

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North Dakota has experienced population changes in the past decades from oil production as well as Red Fiver floods of 1997 and 2011, Minot flood of 2009 and a small oil boom in the early 1980s. Does the ND population follow the first digit rules distribution of Benford's Law – even during times of drastic population change. Unlike random data with equal chances of appearing, Benford's Law indicates a specific distribution of first number digits in large numbers sets – lower numbers occur more frequently than large numbers. I hypothesize that population changes from the significant historical events will cause the population distribution to deviate from Benford's Law. I obtained population data from the US census from 1980 to 2015. Excel formulas were created to select the first digit and sort/count the first digit of all cities' population. The resulting distribution was compared to the expected distribution using Chi Square tests. My hypothesis must be partially rejected as the recent oil boom did not change the distribution of first digits of ND Cities' population in a statistically significant manner. The hypothesis did hold true for the 1997 Red River Floods as the distribution was statistically significantly different than the expected. It is also interesting to note that the population decline of the Flood was statistically more significant than the population increase from the oil boom.

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