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A PROBLEM WITH PRESIDENTS

SUMMARY

The purpose of this problem was to analyze president birth and death data in order to calculate various statistical metrics and attempt to draw new conclusions. Through the use of Python, it was found that president life expectancy has increased over time. While the increase in and the distribution of lifespan are similar to that of the general population, it seems presidential age of death is higher than that of the general population.

METHOD

The given data on presidential birth and death information was processed using Python 3.10. The 'csv' and 'dateutil' modules helped in copying over the data to a new .csv file and adding the new variables, "year_of_birth," "lived_years," "lived_months," and "lived_days." The "pandas" module was used in conjunction with "tabulate" to turn .csv data into readable tables for the longest and shortest lived presidents as well as several statistics for the "lived_days" of all presidents.

Afterwards, "pandas" and "matplotlib" were used to plot the data to provide meaningful visual representations from which the conclusions were drawn. A histogram was used to display the "lived_days" data as this was the most useful means of representing the data's distribution.

Below are the aforementioned tables and histogram, alongside plots for the longest and shortest lived tables for ease of data visualization.

FIGURES

Oldest Presidents

PRESIDENT	year_of_birth	lived_years	true_lived_years	lived_months	lived_days
Jimmy Carter	1924	99	99.03	1188	36169
George Bush	1924	94	94.47	1133	34504
Gerald Ford	1913	93	93.45	1121	34133
Ronald Reagan	1911	93	93.33	1119	34088
John Adams	1735	90	90.67	1088	33119
Herbert Hoover	1874	90	90.19	1082	32943
Harry S. Truman	1884	88	88.63	1063	32373
James Madison	1751	85	85.28	1023	31150
Thomas Jefferson	1743	83	83.22	998	30397
Richard Nixon	1913	81	81.28	975	29688

Youngest Presidents

PRESIDENT	year_of_birth	lived_years	true_lived_years	lived_months	lived_days
John F. Kennedy	1917	46	46.48	557	16978
James A. Garfield	1831	49	49.83	598	18202
James K. Polk	1795	53	53.62	643	19583
Abraham Lincoln	1809	56	56.17	674	20516
Chester Arthur	1829	57	57.12	685	20863
Warren G. Harding	1865	57	57.74	693	21091
William McKinley	1843	58	58.62	703	21412
Theodore Roosevelt	1858	60	60.19	722	21985
Calvin Coolidge	1872	60	60.5	726	22099
Barack Obama	1961	62	62.18	746	22713

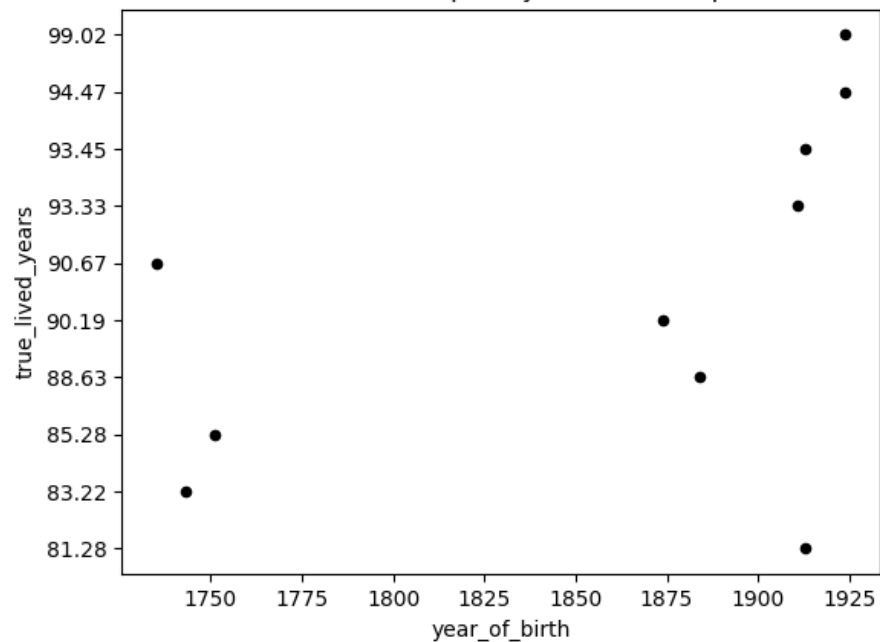| Statistic	Value
Mean	26463.51
Weighted Avg	-
Median	26227.0
Mode	16978
Maximum	36169
Minimum	16978
Std Deviation	4609.50

Presidential Lifespan by Birth Year: Bottom 10
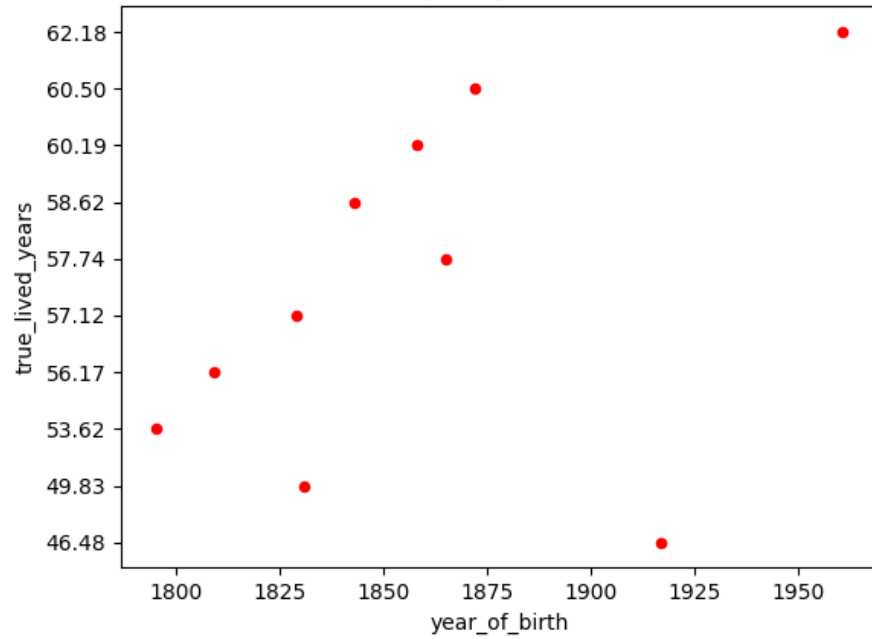
Distribution of Presidential Lifespans
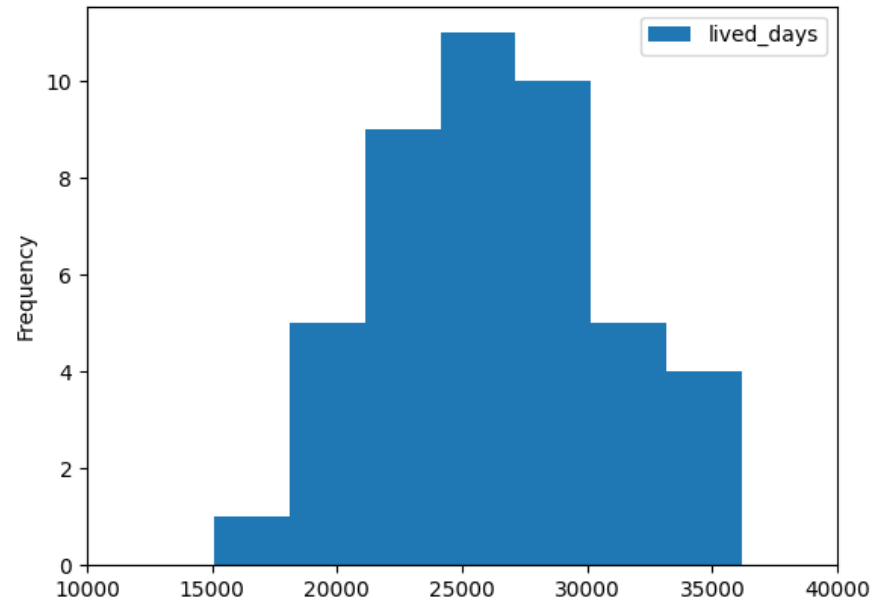
Presidential Lifespan by Birth Year: Top 10

CONCLUSIONS

Both the top and bottom 10 tables indicate that presidential lifespans trend towards increasing as birth dates get more recent. The histogram indicates a fairly normal distribution of lifespans in presidents, similar to that of the general population since the late 1700s.

The average life expectancy for presidents, around 72.5 years, is lower than that for the general population today, but much higher than that of the general population in the last three centuries. Although the data does not give a clear reason as to why this might be, we can certainly speculate.

Firstly, every president entered office over the age of 40. Life expectancy at birth and life expectancy after 40 are very different statistics, as even in the 1800s expected age of death for individuals over 40 was around 67 (which is close to the actual stats for presidents born in the 1800s). Life expectancy increases the older one gets, which might explain why presidents live longer.

Interestingly, while the lower end has outliers due to some presidents being assassinated, the more notable outlier is the cluster of presidents from the mid-to-late 1700s that managed to live so long. Thomas Jefferson, James Madison, and John Adams all manage to break top 10, with John Quincy Adams and Martin Van Buren being barely eked out. Interestingly, these presidents, alongside most of the top 10, tend to have been inaugurated later in their life. This, again, does not point to any noteworthy insight about presidency's impact on lifespan, but rather on the likelihood of living longer they older you get.

Ultimately, the only meaningful takeaway is that presidents follow a similar distribution in life expectancy as the rest of the population. If more analysis were to be done, including more data would be helpful. Perhaps weighting data based either on age at the start of presidency or on the deviation from life expectancy of the time period in which those presidents lived could help draw more conclusions.