

# A Report on a Problem with Presidents

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## Introduction

The given dataset contains the information of all 46 presidents of The United States starting from George Washington assuming office in 1789, to Joe Biden, the incumbent since 2021. The provided problem revolves around the distribution of the life expectancy of Presidents of the United States.

## Source Code

The files *notebook.ipynb* contain the Python code. I recommend using Jupyter Notebook to read the *.ipynb* file because it allows you to view Pandas Dataframes as tables, something Python does not natively do. The results of the Jupyter Notebook code are shown in the screenshots below.

## Observations

I added a variable called *recent date living* to calculate the age of a President. If the President died, this held the date of death, otherwise the current date if the president is alive. The values of living days, months, and years were determined using this variable.

All data manipulations and calculations were carried out in Python using pandas and numpy.

### • Top 10 Oldest Presidents

Jimmy Carter is the oldest living President, at 98 years old, and George H.W. Bush, who died in 2018 at the age of 94. The age field in the table below has been sorted in descending order.

Top 10 Presidents of the United States by age lived (Descending Order of Age)						
PRESIDENT	BIRTH DATE	BIRTH PLACE	DEATH DATE	LOCATION OF DEATH	year_of_birth	AGE
Jimmy Carter	1924-10-01 00:00:00	Plains, Georgia	Living	Living	1924	98
George Bush	1924-06-12 00:00:00	Milton, Mass.	2018-11-30 00:00:00	Houston, Texas	1924	94
Gerald Ford	1913-07-14 00:00:00	Omaha, Nebraska	2006-12-26 00:00:00	Rancho Mirage, Cal.	1913	93
Ronald Reagan	1911-02-06 00:00:00	Tampico, Illinois	2004-06-05 00:00:00	Los Angeles, Cal.	1911	93
John Adams	1735-10-30 00:00:00	Quincy, Mass.	1826-07-04 00:00:00	Quincy, Mass.	1735	90
Herbert Hoover	1874-08-10 00:00:00	West Branch, Iowa	1964-10-20 00:00:00	New York, New York	1874	90
Harry S. Truman	1884-05-08 00:00:00	Lamar, Missouri	1972-12-26 00:00:00	Kansas City, Missouri	1884	88
James Madison	1751-03-16 00:00:00	Port Conway, Va.	1836-06-28 00:00:00	Orange Co., Va.	1751	85
Thomas Jefferson	1743-04-13 00:00:00	Albemarle Co., Va.	1826-07-04 00:00:00	Albemarle Co., Va.	1743	83
Richard Nixon	1913-01-09 00:00:00	Yorba Linda, Cal.	1994-04-22 00:00:00	New York, New York	1913	81

- **Top 10 Youngest Presidents**

Barack Obama, the youngest living President, is 61 years old, and John F. Kennedy, the youngest deceased President, died in 1963 at the age of 46.

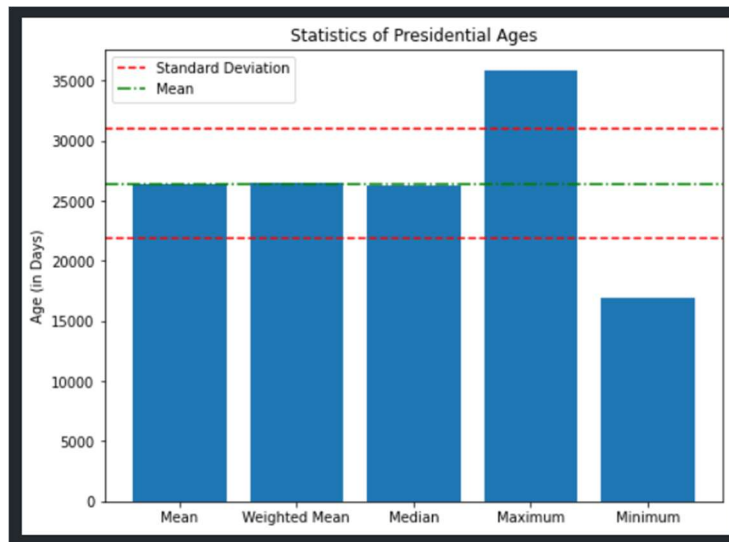
The age field in the table below has been sorted in ascending order.

Top 10 Presidents of the United States by age lived, (Ascending Order of Age)						
PRESIDENT	BIRTH DATE	BIRTH PLACE	DEATH DATE	LOCATION OF DEATH	year_of_birth	AGE
John F. Kennedy	1917-05-29 00:00:00	Brookline, Mass.	1963-11-22 00:00:00	Dallas, Texas	1917	46
James A. Garfield	1831-11-19 00:00:00	Cuyahoga Co., Ohio	1881-09-19 00:00:00	Elberon, New Jersey	1831	49
James K. Polk	1795-11-02 00:00:00	Mecklenburg Co., N.C.	1849-06-15 00:00:00	Nashville, Tennessee	1795	53
Abraham Lincoln	1809-02-12 00:00:00	LaRue Co., Kentucky	1865-04-15 00:00:00	Washington, D.C.	1809	56
Chester Arthur	1829-10-05 00:00:00	Fairfield, Vermont	1886-11-18 00:00:00	New York, New York	1829	57
Warren G. Harding	1865-11-02 00:00:00	Morrow County, Ohio	1923-08-02 00:00:00	San Francisco, Cal.	1865	57
William McKinley	1843-01-29 00:00:00	Niles, Ohio	1901-09-14 00:00:00	Buffalo, New York	1843	58
Theodore Roosevelt	1858-10-27 00:00:00	New York, New York	1919-01-06 00:00:00	Oyster Bay, New York	1858	60
Calvin Coolidge	1872-07-04 00:00:00	Plymouth, Vermont	1933-01-05 00:00:00	Northampton, Mass.	1872	60
Barack Obama	1961-08-04 00:00:00	Honolulu, Hawaii	Living	Living	1961	61

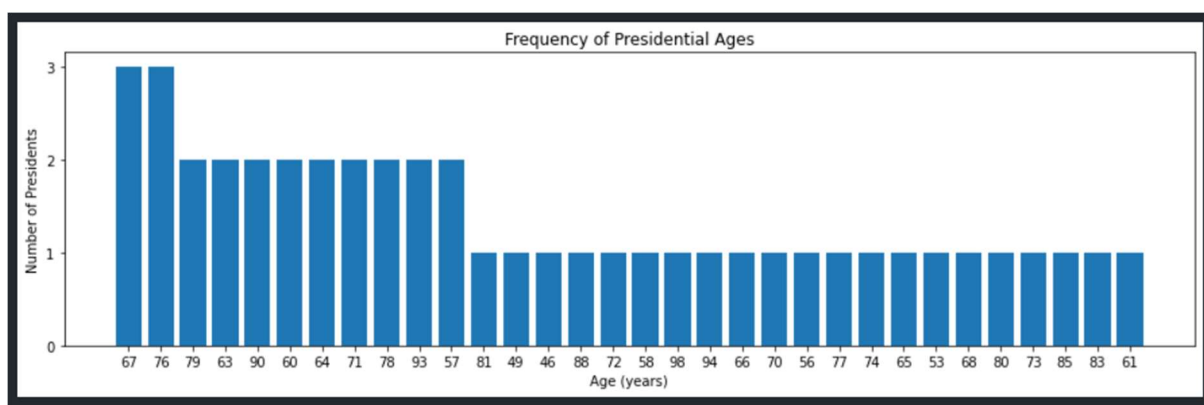
- **Statistical Analysis**

Statistic	Age in Days	Age in Years
Mean Age	26416.977778	72.375282
Weighted Mean Age	26471.173333	72.523763
Median Age	26227.000000	71.854795
Mode Age	[24455, 27740]	[67.0, 76.0]
Maximum Age	35820.000000	98.136986
Minimum Age	16978.000000	46.515068
Standard Deviation	4586.423039	12.565543

Upon analysis of the data, it was discovered that the weighted mean was 26, 471.17 days, or 72.52 years, whereas the mean age was 26, 416.98 days, or 72.37 years. The most common ages (mode) are 67 and 76, 3 each, while the median age is 26, 227 days, or 71.85 years. Jimmy Carter, who is currently 98 years old, is the oldest president still alive. George H.W. Bush, who passed away in 2018 at the age of 94, was the oldest president to have passed away. John F. Kennedy, who tragically died at the young age of 46, was the president with the lowest age. Finally, the life expectancy's standard deviation is 4, 586.42 days, or 12.56 years.



The most common ages are 67 and 76, and each of these ages has three Presidents under their count. Because living days were not often shared by any Presidents, the mode was determined using the variable living years. The frequency of each age in years is plotted below.



## - Conclusion

Following an analysis of the given dataset, the age range is wide, ranging from 46 to 98 years old. The average age of 72 years indicates that a President's life expectancy is slightly lesser, but close to the present male life expectancy in the United States, which was 75 years in 2020. [1] The median age closely follows this pattern, with most Presidents living over the age of 60.

## References

- [1] "Vital Statistics Rapid release - Centers for Disease Control and Prevention." [Online]. Available: <https://www.cdc.gov/nchs/data/vsrr/VSRR10-508.pdf>. [Accessed: 27-Oct-2022].