

A Problem With Presidents

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1 Introduction

After getting its independence in 1776, The United States of America has seen leadership and governance of a total of 46 presidents up till now. We are provided with data regarding each president who has served this country. This report gives you valuable insights about these presidents based on values proved in the given Excel sheet.

2 Code

I have written code to get insights from data and visualize this information in Python. I have implemented code in three files.

1. `filterData.py` In this file we extract data from required columns and initialize and format our data based on the requirements.
2. `show_Result.py` In this file we write code to plot two graphs that show useful information from the data about the president's age and more. We don't have to run this file individually.
3. `main.py` file which internally calls this file and executes the functions in the main file.

```
python3 main.py
```

3 Insights

- Mean age of all presidents (in days) is 26446.71 and 71.95 (in years)
- Weighted mean age of all presidents (in days) 26472.57 and 44.35 (in years)
- Median age of all presidents (in days) 26227.0 and 71.0 (in years)
- Most frequent age for 3 presidents each is 67.
- The oldest president (living) is Jimmy Carter with an age of 98 years as of June 6, 2023.

- The oldest president (deceased) was George Bush who lived 94 years.
- The youngest president (living) is Barack Obama with an age of 61 years.
- The youngest president (deceased) was John F. Kennedy who lived 46 years.

4 Observations

All the required observations are recorded below along with the images of the graph so required stats about the president's age.

4.1 Top 10 Oldest Presidents

The longest-living president of the united states is Jimmy Carter, of age 98 years. George H.W. Bush passed away in 2018 was of age 94 years, and is recorded as the oldest deceased president.

The top 10 rows of the table shown below describe the longest-lived to shortest-lived presidents.

PRESIDENT	BIRTH DATE	BIRTH PLACE	DEATH DATE	LOCATION OF DEATH	year_of_birth	current_living_date	AGE	lived_months	lived_days
Jimmy Carter	Oct 1, 1924	Plains, Georgia	ALIVE	ALIVE	1924	Jun 07, 2023	98	1162.677419	36043.000000
George Bush	June 12, 1924	Milton, Mass.	Nov 30, 2018	Houston, Texas	1924	Nov 30, 2018	94	1113.032258	34504.000000
Gerald Ford	July 14, 1913	Omaha, Nebraska	Dec 26, 2006	Rancho Mirage, Cal.	1913	Dec 26, 2006	93	1101.064516	34133.000000
Ronald Reagan	Feb 6, 1911	Tampico, Illinois	June 5, 2004	Los Angeles, Cal.	1911	June 5, 2004	93	1099.612903	34088.000000
John Adams	Oct 30, 1735	Quincy, Mass.	July 4, 1826	Quincy, Mass.	1735	July 4, 1826	90	1068.354839	33119.000000
Herbert Hoover	Aug 10, 1874	West Branch, Iowa	Oct 20, 1964	New York, New York	1874	Oct 20, 1964	90	1062.677419	32943.000000
Harry S. Truman	May 8, 1884	Lamar, Missouri	Dec 26, 1972	Kansas City, Missouri	1884	Dec 26, 1972	88	1044.290323	32373.000000
James Madison	Mar 16, 1751	Port Conway, Va.	June 28, 1836	Orange Co., Va.	1751	June 28, 1836	85	1004.838710	31150.000000
Thomas Jefferson	Apr 13, 1743	Albemarle Co., Va.	July 4, 1826	Albemarle Co., Va.	1743	July 4, 1826	83	980.548387	30397.000000
Richard Nixon	Jan 9, 1913	Yorba Linda, Cal.	Apr 22, 1994	New York, New York	1913	Apr 22, 1994	81	957.677419	29688.000000

4.2 Top 10 Youngest President

Barack Obama is currently the youngest living president at age of 61 years. John F. Kennedy, at the age of 46 years was the youngest deceased president.

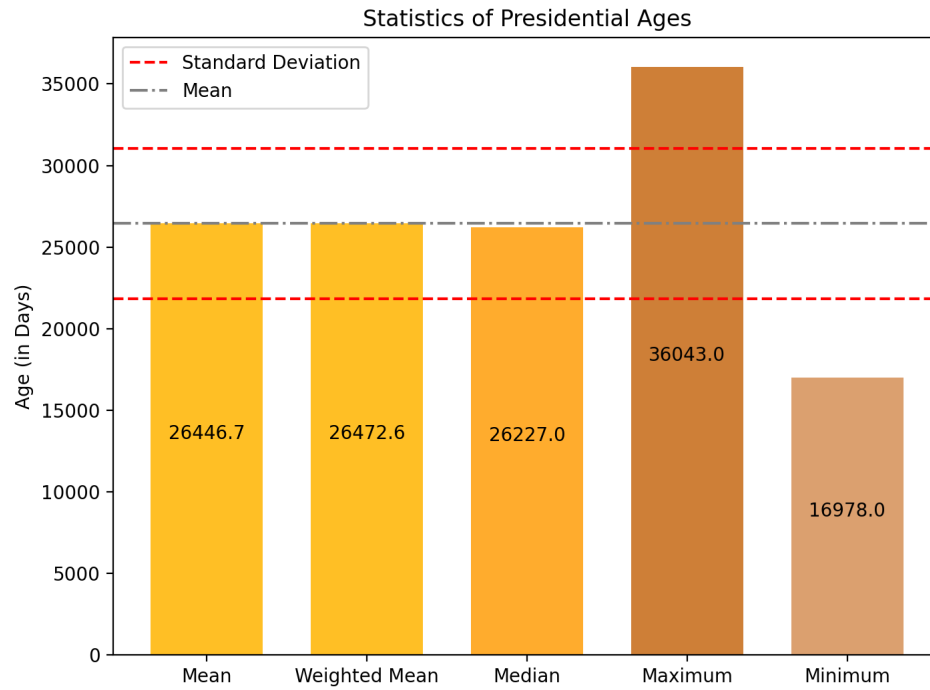
Top 10 Presidents of the United States from shortest lived to longest lived									
PRESIDENT	BIRTH DATE	BIRTH PLACE	DEATH DATE	LOCATION OF DEATH	year_of_birth	current_living_date	AGE	lived_months	lived_days
John F. Kennedy	May 29, 1917	Brookline, Mass.	Nov 22, 1963	Dallas, Texas	1917	Nov 22, 1963	46	547.677419	16978.000000
James A. Garfield	Nov 19, 1831	Cuyahoga Co., Ohio	Sep 19, 1881	Elberon, New Jersey	1831	Sep 19, 1881	49	587.161290	18202.000000
James K. Polk	Nov 2, 1795	Mecklenburg Co., N.C.	June 15, 1849	Nashville, Tennessee	1795	June 15, 1849	53	631.709677	19583.000000
Abraham Lincoln	Feb 12, 1809	LaRue Co., Kentucky	Apr 15, 1865	Washington, D.C.	1809	Apr 15, 1865	56	661.806452	20516.000000
Chester Arthur	Oct 5, 1829	Fairfield, Vermont	Nov 18, 1886	New York, New York	1829	Nov 18, 1886	57	673.000000	20863.000000
Warren G. Harding	Nov 2, 1865	Morrow County, Ohio	Aug 2, 1923	San Francisco, Cal.	1865	Aug 2, 1923	57	680.354839	21091.000000
William McKinley	Jan 29, 1843	Niles, Ohio	Sep 14, 1901	Buffalo, New York	1843	Sep 14, 1901	58	690.709677	21412.000000
Theodore Roosevelt	Oct 27, 1858	New York, New York	Jan 6, 1919	Oyster Bay, New York	1858	Jan 6, 1919	60	709.193548	21985.000000
Calvin Coolidge	July 4, 1872	Plymouth, Vermont	Jan 5, 1933	Northampton, Mass.	1872	Jan 5, 1933	60	712.870968	22099.000000
Barack Obama	Aug 4, 1961	Honolulu, Hawaii	ALIVE	ALIVE	1961	Jun 07, 2023	61	728.612903	22587.000000

4.3 Statistics

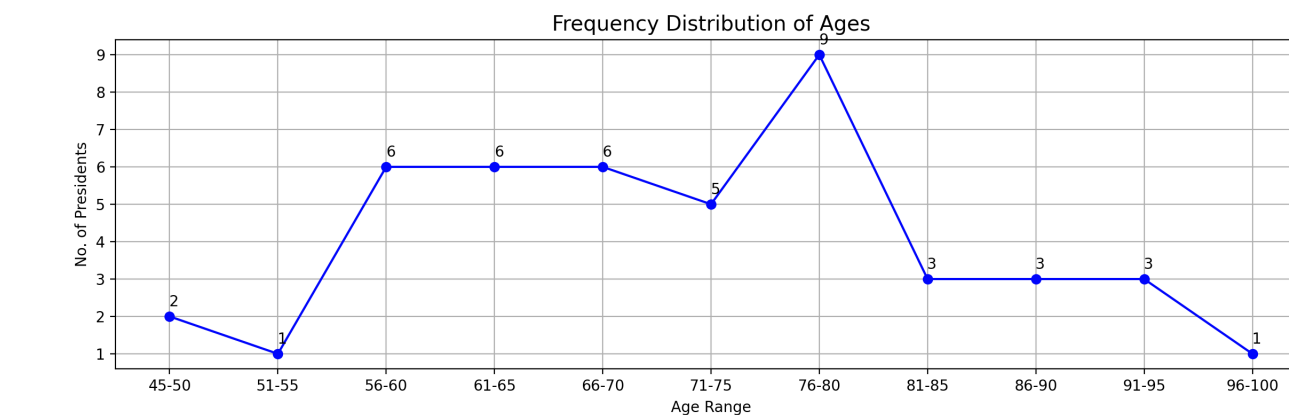
The mean age which was observed from given data is 26226.71 (in days) and 71.95 (in years). The weighted mean age observed was 26472.57 (in days) and 44.35 (in years). The median of all ages of presidents is 26227.0 (in days) and 71.0 (in years). The most frequent age is 67 for 3 presidents. The oldest president (living) is Jimmy Carter with an age of 98 years as of June 6, 2023. The oldest president (deceased) was George Bush who lived 94 years. The youngest president (living) is Barack Obama with an age of 61 years. The youngest president (deceased) was John F. Kennedy who lived 46 years.

	Statistic	Age (Days)	Age (Years)
0	Mean Age	26446.711111	71.955556
1	Weighted Mean Age	26472.575342	44.356164
2	Median Age	26227.0	71.0
3	Mode Age	[24455]	[67]
4	Maximum Age	36043.0	98
5	Minimum Age	16978.0	46
6	Standard Deviation	4600.823343	12.614846

To better visualize this information from data I have added a bar graph using the statistics received from data based on age (in days).



The line graph below shows the frequency distribution of ages of the presidents. I have created a bin of size 5 starting from 45 years of age and ranging to 100 years. The range varies from 45-50 to 96-100



5 Conclusion

Our research on this data shows the trends in life expectancy of all Presidents in office for the United States of America. The range of life expectancy lies between 46 to 98 years. The average age of president from the data is 72 years. The age of majority number of presidents in office were above.

6 Future Scope

Without taking into account any other factors that might have influenced the data, this analysis was conducted only on the basis of the numerical data. To obtain detailed observational statistics and aid in making future judgments, a more thorough analysis approach can be devised. For instance, the unnatural death of four of the top eight youngest Presidents assassination has a significant effect on the metrics calculated. Additionally, adding other information, such as the ages at which these Presidents assumed office, could be a useful contribution to our understanding of the patterns in the decisions made by US Presidents as they grew older.