Modeling and forecasting US presidential election 2024

Sinha, Pankaj and verma, Kaushal and Biswas, Sumana and Tyagi, Shashank and Gogia, Shaily and Singh, Aakhyat and Kumar, Amit

Faculty of Management Studies, University of Delhi

4 October 2024

Modeling and Forecasting US Presidential Election 2024

Pankaj Sinha, Kushal Verma, Sumana Biswas, Shashank Tyagi, Shaily Gogia, Aakhyat Singh and Amit Kumar

Faculty of Management Studies, University of Delhi

ABSTRACT

Forecasting the vote share for the upcoming US presidential elections involves multiple pivotal economic and non-economic factors. Critical macroeconomic forces such as the rate of economic growth, tax burden, inflation, and unemployment significantly influence the votes gained or lost by the incumbent. However, these are not the only determinants of presidential elections. The study also considers various non-economic factors that directly impact voting behaviour and can enhance prediction accuracy. These non-economic factors include scandals under the incumbent president, existing crime rates, law enforcement, June Gallup ratings reflecting the sitting president's approval, the average Gallup ratings over their term, and the results of the mid-term elections. Additionally, new non-economic factors such as illegal immigration and illegal aliens apprehended can significantly influence the outcome of the upcoming US presidential elections. To study the combined effects of economic and non-economic factors, data from each election cycle is used in an empirical model to predict the popular vote share percentage for the Democratic Party in the 2024 elections. The findings suggest that a longer tenure in power, June Gallup ratings, average Gallup ratings, scandal ratings, and economic growth rate significantly impact the popular vote share of the incumbent party candidate. The final empirical model predicts that Kamala Harris, the Democratic Party candidate, will receive a popular vote share of 48.60% ± 0.1% in the 2024 Presidential Elections of the United States.

1.   INTRODUCTION

The United States President holds an extremely highly influential position in the global arena. Whoever occupies this chair is an essential figure on the worldwide stage, affecting various economies across the globe. Multiple researchers have tried to predict accurate results using many economic and non-economic factors to anticipate the outcome of this quadrennial event. Various studies in the past have included only economic parameters as significant determinants for getting a reasonably accurate forecasted number for the percentage of votes received by the party in power. On the contrary, some studies have included only non-economic parameters as essential forces influencing the elections and, thereby, the percentage share of votes received by the current party in power. Both approaches have unique problems and challenges in arriving at the predicted vote share percentage. Thus, this study adopts a hybrid approach of employing economic and non-economic probable determinants to examine how they would jointly affect the vote share of the current party in power and, thereby, predict the same.

Several studies in the past primarily focused on the economic factors for forecasting the election outcome for the president of the US. Fair (1978, 2016) focused on various economic factors such as inflation rate, real per capita GDP growth rate, unemployment rate, etc. The change in real GDP on a per capita basis proved to be slightly better than the unemployment rate in forecasting the outcome of the elections (Fair, 1978). The model used in the study by Abramowitz (1988) highlighted that the growth in economic activity during the first half of the year of the election is instrumental in predicting the outcome of the elections. Another study highlighted the importance of the economy's growth rate

in predicting election results (Lichtman, 2005; Lichtman, 2008). The percentage change in disposable income per capita is the most significant force impacting presidential elections under the Bread and Peace model (Hibbs, 2000; Hibbs, 2012). However, the Erikson and Wlezien (1996) model included a more holistic approach to exploring major macroeconomic factors impacting the elections. Sinha and Bansal (2008) used Fair's model to forecast the result and deduced predictive density under hierarchical priors.

The rise in general price levels at the national level is a crucial element used by various researchers to predict the outcome of the US presidential election. Similar to inflation, Cuzan, Heggen, and Bundrick (2000, 2016) analyzed simulation runs on fiscal models.

Over the years, a change in the unemployment rate has also been given due consideration as a very impactful factor in determining the vote share for US Presidential elections. Another study suggested that the persistence of unemployment at the national level is the major factor in predicting election results (Jérôme & Jérôme, 2011). On the contrary, another study depicts a weak association between the percentage of vote share received by the current party in power and the employment level in their respective tenures (Silver, 2011). Apart from these factors, there are many more that impact the election results, such as oil and gold prices and exchange rates.

Multiple studies have used non-economic parameters to forecast the vote shares of the US presidential elections. Lewis-Beck and Rice (1982) and Sigelman (1979) used the Gallup rating to predict the expected percentage share of votes to be received by the party in power immediately before the elections after capturing a strong correlation between the two variables, i.e., vote share percentage and Gallup rating, in the past literature. However, just one non-economic factor is not sufficient to ascertain the percentage share of votes garnered by the presidential candidate of the current party in office. Various other economic and non-economic factors come into play, as demonstrated by Abramowitz (1988), where the time for change and economic growth factors were also used to obtain accurate results.

Multiple non-economic factors that have impacted the Presidential election results include scandals, international crises, military interventions, and wars. Mueller (1970) highlighted that the non-economic factors come into play when the economic performance is relatively unaffected. However, suppose the economy is contracting or is experiencing a slow growth cycle. In that case, the non-economic forces are overshadowed by the strong influence of the economic forces, making it quite apparent that economic parameters with negligible or no impact of non-economic variables majorly influence elections. Another very crucial non-economic macro event that significantly steers the direction of presidential election outcomes is the involvement of the country in wars, that is, both direct and indirect participation or engagement either on a standalone basis or in collaboration with close allies (Litchman & Keilis-Borok, 1996; Hibbs, 2000; Hibbs, 2012)

Another important non-economic factor is the results of the biennial mid-term elections, which serve as a rough measure of the success of the current party in power. Results of mid-term elections indicate to a large extent how the current party in power will fare in the elections for the post of president in the US (Tufte, 1975).

Sinha et al. (2020) further developed a final model for election outcome forecasting using three significant forces from the non-economic category, namely the job approval rating released by Gallup for the month of June in the election year, the running duration of the current party in power, and the corresponding rating to the number of scandals under the incumbent President's rule.

The above discussion indicates that a mix of economic and non-economic parameters impacts the election vote share percentage. Therefore, this study attempts to arrive at the popular vote share forecast for the party in power in the upcoming elections for the US President in 2024, using a multiple linear regression model that incorporates a mix of both economic as well as non-economic variables

to make the forecast more efficient and robust. The impact of these variables, both individually and as part of a group, has been analyzed, which helped arrive at the final proposed empirical model deployed for the prediction of the election results.

2.   DESCRIPTION OF VARIABLES CONSIDERED

This paper considers several variables from both the economic category and the non-economic basket, which would impact the population's electoral behaviour in the upcoming United States presidential elections. Below, we have enumerated all the variables used in the model and their significance. The description of the variables is given below:

2.1 Economic Variables[1]

 The significant economic factors that have been considered for predicting the incumbent party's vote share in the upcoming US presidential elections have been listed. These factors capture the level of unemployed workforce in the US (rate of unemployment), tax burden on business entities (rate of corporate income tax), rise in general price levels (inflation), change in the level of economic activity (economic growth) and some international indicators such as the rate of exchange of US dollar with Great Britain Pound (GBP), price of oil and gold. These international indicators directly and indirectly affect the economy of the United States and may consequently strongly influence the result of the upcoming elections in the US. The critical macro-economic factors that are incorporated in the formulation of the vote share prediction model in this study have been explained below:

1. **Unemployment rate:** The unemployment rate has been taken as the average rate for the first three months in the year of election (January to March). Data for the same has been extracted from the published reports of the US Bureau of Labor Statistics.
2. **Inflation:** The average percentage rise in the general price levels (inflation) for the preceding year, that is, the year immediately before the election year is taken, that the current year's statistics are not entirely released. Inflation rates have been calculated based on the US Inflation Calculator's monthly published figures of the Consumer Price Index.
3. **Economic Growth Rate:** The mean of quarterly values was calculated to capture the annual growth rate in the level of economic activity. Federal Bank of St. Louis has been referred to for the data collection.
4. **Price of Gold**: Mean values of gold prices are calculated on a yearly basis without adjusting for inflation (Unit taken- dollar price of one ounce) are used. The National Mining Organization (U.S.) database obtains these values.
5. **Gold Price Index:** It is captured as a categorical variable
      i. It takes a value of 0 if the gold price in the year preceding the election is greater than the price in the year of the election.
      ii. It takes a value of 1 if the gold price in the year preceding the election is lower than the price in the year of the election.

6. **Exchange Rate:** The June (exchange rate) price of One British Pound in US dollar terms in the election year is used to capture the strength of the US currency in the international markets (unadjusted for seasonal variations).

---

[1] Refer Appendix A5 on United States economic data

7. **Oil Prices:** Yearly mean values of non-inflation-adjusted crude oil prices at the national level in terms of dollar price for each barrel are used. The data has been sourced from the US EIA website.
8. **Corporate Tax Rate:** In this variable, the average tax rate is considered, and it has been calculated using this formula: -

$$t = 1 - \frac{PAT}{PBT}$$

(PAT is profit after tax, and PBT is profit before tax)
The data for every year is taken as an average of the data collected in January, April, July and October, except for the present year, where the data has been considered till April 2024. This was referred to from the National Income database on the FRED website.
9. **Corporate Tax Impact:** This represents the increase or decrease in the average corporate tax rate concerning the previous year. It has been converted into a binary variable as follows: -
    a. Index 0: An increase in the tax rate
    b. Index 1: A decrease in the tax rate

2.2 Non-economic Variables

Major non-economic factors that have been considered to calculate the vote share forecast for the current party in power for the upcoming US presidential Elections have been listed. A few critical factors include crime rate, job approval rating published by Gallup for the month of June in the election year, mean values of Gallup rating, campaign spending, term duration of the incumbent party, corporate tax effect, and illegal immigration numbers. Despite the non-economic nature of these variables, they help us gauge the standing of the incumbent administration on the global stage and in front of their domestic audience. The various critical non-economic variables incorporated for empirical analysis in this study are explained below:

1. **Gallup Job Approval Rating**: It is a measure that captures the proportion of the US population satisfied or dissatisfied with the current party in power during their tenure. The rating for June in the year of the election is used in this study, owing to the fact that it is relatively free from electoral campaigns. The data is sourced from the official Gallup website (Refer to Appendix A3).
2. **Average Gallup Rating:** This rating is the arithmetic average of the five Gallup ratings for the incumbent President. These ratings include Job Approval, US Satisfaction, Economic Confidence, Economic Concern and Party Affiliation. The data is sourced from the official website of Gallup Rating (Refer to Appendix A3).
3. **Scandals:** This variable represents the number of scandals that occurred during the incumbent President's period. Owing to their negative perception by the voters, it is one of the major components used in our model. It has been converted into a ternary index as follows: -
    Index 0: Absence of any significant scandal during the tenure of the current sitting president.
    Index 1: One or more scandals during the tenure of the current sitting president.
    Index 2: A scandal during the tenure of the current sitting president which led to their impeachment.
    The data has been sourced from the US House of Representatives and Wikipedia archives. (Refer Appendix A2)

4. **Mid-Term Performance:** This variable is calculated as mentioned in Sinha et al. (2012), i.e.:

$$M = \frac{(House\ Seats \times House\ Results) + (Senate\ Seats \times Senate\ Results)}{House\ Seats + Senate\ Seats}$$

(Refer Appendix A4)

5. **Crime Rate[2]:** It is calculated for every 1,00,000 people in the US. The category of crimes considered includes property crimes, robbery, violence, assault, murder, rape, burglary, larceny-theft & vehicle theft. The data is sourced from the US disaster center's website. However, the unavailable data points have been calculated using regression.

6. **Period of Power[2]:** This indicates the period for which the incumbent party was at the helm of affairs (in power). It is captured by a categorical variable explained below:
   a. It takes a value of 0 if the current party in power usurped the presidential position for only one previous term.
   b. It takes a value of 1 if the current party in power usurped the presidential position for two or more previous terms.

7. **Campaign Spending Index[2]:** The figures about spending on election campaigns have been extracted from the database of the Federal Election Commission (U.S.). It has been converted into a ternary index as follows: -
   a. Index 0: Ratio of spending by incumbent and opposition < 1
   b. Index 1: Ratio of spending by incumbent and opposition ≥1 but < 2
   c. Index 2: Ratio of spending by incumbent and opposition ≥2

8. **Incumbent President Running[2]:** This binary variable reflects the incumbent president's re-running.

9. **Illegal immigration[2]:** This represents (in million individuals) the number of unauthorized immigrants residing in the US. The data has been sourced from the FRED website.

10. **Illegal Aliens Apprehended[2]:** This refers to border patrol apprehension and ICE administrative arrest. It has been calculated in millions. The data has been collected from the official website of the Department of Homeland Security.

3. METHODOLOGY

The vote share prediction for the party in power is achieved using a linear regression empirical model incorporating the variables selected from economic and non-economic groups explained earlier. The dependent variable in our analysis is the popular vote share, and the independent or explanatory variables consist of a group of nine economic factors and ten non-economic factors. The study includes the values of all the variables from 1952 to 2020 for empirical analysis. The period covered in the study includes the values of each variable against the year of election starting from 1952 with an interval of 4 years (time gap between 2 elections). All the dependent and independent variables are explained in section 2. The values of each variable used in the study are shown in the appendix. Table 1 provides the list of variables and the identification codes used in the models.

---

[2] Refer to Appendix A6

Table 1- Identification codes for variables

Sl. No.	Variables	Identification code
A	**Dependent Variable**	
	Popular vote share	PVOTE
B	**Independent variable**	
	Economic variables	
1	Unemployment rate	Unemploy1
2	Inflation	Inflation1
3	Economic Growth Rate	GDPR
4	Gold Prices	Gold_Return
5	Gold Price Index	Gold_index
6	Exchange Rate	Exchange1
7	Oil Prices	Oil1
8	Corporate Tax Rate	Tax_R1
9	Corporate Tax Impact	Tax
	Non-Economic Variables	
1	Gallup Job Approval Rating	Jun_Gal
2	Average Gallup Rating	Avg_Gal
3	Crime Rate	Crime_R
4	Mid-Term Performance	Mid_Term
5	Period of Power	Power
6	Campaign Spending Index	Spending
7	Incumbent President Running	Incum_PRun
8	Scandals	Scandals
9	Illegal immigration	Illegal_Immig
10	Illegal Aliens	Illegal_Aliens

The economic variables of Unemploy1 (unemployment rate), Inflation1 (inflation rate), Exchange1 (exchange rate) and Gold_Return (Gold prices) are made stationary. The empirical model used for arriving at the final forecasting model is shown in Equation 1.

$$PVOTE_t = \beta_0 + \sum_i^t c_i X_i + \varepsilon_t \qquad (1)$$

PVOTE$_t$ in equation 1 represents the popular vote share percentage received by the candidate of the party in power in each subsequent election. X$_i$ in equation 1 represents all the explanatory variables explained above that may affect the vote share percentage of the incumbent party. ε$_t$ is the error term in year t. These variables impacting vote share were gathered from literature and based on logical relationships, as explained in section 2. The study starts with a total of 19 explanatory variables and subsequently narrows down the number to the most significant ones. It is achieved by following two processes of stepwise backward elimination and an intuitive, iterative process of elimination.

The stepwise backward elimination method is first applied with the set of all the economic explanatory variables and then by including all the non-economic variables separately in the other model. This method involves the inclusion of all the variables in the model and the variable which is found to be the most insignificant (variable with the highest p value) is dropped from the model at each step. A similar process is followed for each iteration till a model is obtained, which has all the remaining variables that are significant at the preferred significance level. The detailed evolution of these models is shown in Table 2 and Table 3.

4.   INFERENCE OF RESULTS

4.1 Stepwise Backward Elimination
Development of Model-1
Impact of Economic variables: The output of the backward stepwise regression analysis using economic variables is presented in Table 2. The backward elimination technique is used to eliminate the most insignificant variables one by one at each iteration, as shown in Table 2.

<u>**Table 2- Impact of Economic Variables (Backward Stepwise Elimination Results)**</u>

Sl. No.	Model	Year	R^2	P-value
1.	PVOTE = C + C1Unemploy1 + C2Gold_index + C3GDPR + C4Gold_Return + C5Inflation1+ C6Oil1 + C7Exchange1 + C8Tax + C9Tax_R1	1956-2020	0.65	Unemploy1 = 0.675 Gold_index = 0.129 GDPR = 0.199 Gold_Return = 0.658 Inflation1 = 0.074** Oil1 = 0.551 Exchange1 = 0.553 Tax = 0.875 **Tax_R1 = 0.902**
2.	PVOTE = C + C1Unemploy1 + C2Gold_index + C3GDPR + C4Gold_Return + C5Inflation1+ C6Oil1 + C7Exchange1 + C8Tax	1956-2020	0.65	Unemploy1 = 0.667 Gold_index = 0.1** GDPR = 0.166 Gold_Return = 0.622 Inflation1 = 0.054** Oil1 = 0.51 Exchange1 = 0.532 **Tax = 0.907**
3.	PVOTE = C + C1Unemploy1 + C2Gold_index + C3GDPR +	1956-2020	0.65	Unemploy1 = 0.445 Gold_index = 0.056**

Sl. No.	Model	Year	R^2	P-value
	C4Gold_Return + C5Inflation1+ C6Oil1 + C7Exchange1			GDPR = 0.097** **Gold_Return = 0.598** Inflation1 = 0.04* Oil1 = 0.49 Exchange1 = 0.495
4.	PVOTE = C + C1Unemploy1 + C2Gold_index + C3GDPR + C4Inflation1+ C5Oil1 + C6Exchange1	1956-2020	0.63	Unemploy1 = 0.427 Gold_index = 0.051* GDPR = 0.054** Inflation1 = 0.019* Oil1 = 0.389 **Exchange1 = 0.515**
5.	PVOTE = C + C1Unemploy1 + C2Gold_index + C3GDPR + C4Inflation1+ C5Oil1	1956-2020	0.62	**Unemploy1 = 0.474** Gold_index = 0.03* GDPR = 0.055** Inflation1 = 0.018* Oil1 = 0.375
6.	PVOTE = C + C1Gold_index + C2GDPR + C3Inflation1+ C4Oil1	1956-2020	0.60	Gold_index = 0.02* GDPR = 0.022* Inflation1 = 0.013* **Oil1 = 0.469**
7.	PVOTE = C + C1Gold_index + C2GDPR + C3Inflation1	1956-2020	0.58	Gold_index = 0.021* GDPR = 0.017* Inflation1 = 0.01*

(*-Value significant at 5% level of significance)
(**-Value significant at 10% level of significance)

Seven iterations of backward stepwise regression were performed to arrive at the final model shown in serial number 7 of Table 2 after eliminating six economic variables. The economic variable analysis reveals that the Gold Price Index (Gold_index), Economic Growth Rate (GDPR) and Inflation (Inflation1) significantly impact vote share at a 5% level of significance in the 7th iteration. Thus, Inflation1, GDPR and Gold_index are found to be significant predictors of vote share. These three economic variables will be included in the final stage analysis to build the final forecasting model.

Development of Model-2
Impact of non-economic variables: The output of the analysis using non-economic variables is presented in Table 3. The backward elimination technique is used to eliminate the most insignificant variables one by one to filter the most significant variables. The first model considers eight non-economic variables for analysis.

Table 3- Impact of Non-Economic Variables (Backward Stepwise Elimination Results)

Sl. No.	Model	Year	R^2	P-value
1	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C4Crime_R + C5Mid_Term + C6Incum_Prun + C7Power + C8Spending	1952-2020	0.79	Scandals = 0.474 Jun_Gal = 0.04* Avg_Gal = 0.256 Crime_R = 0.729 **Mid_Term = 0.937** Incum_Prun = 0.809 Power = 0.553 Spending = 0.681
2	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C4Crime_R + C5Incum_Prun + C6Power + C7Spending	1952-2020	0.79	Scandals = 0.397 Jun_Gal = 0.026* Avg_Gal = 0.225 Crime_R = 0.721 **Incum_Prun = 0.784** Power = 0.494 Spending = 0.648
3	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C4Crime_R + C5Power + C6Spending	1952-2020	0.79	Scandals = 0.301 Jun_Gal = 0.01* Avg_Gal = 0.125 **Crime_R = 0.757** Power = 0.376 Spending = 0.683
4	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C5Power + C6Spending	1952-2020	0.79	Scandals = 0.302 Jun_Gal = 0.006* Avg_Gal = 0.113 Power = 0.32 **Spending = 0.609**
5	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C5Power	1952-2020	0.78	Scandals = 0.184 Jun_Gal = 0.001* Avg_Gal = 0.06* **Power = 0.303**
6	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal	1952-2020	0.76	Scandals = 0.071** Jun_Gal = 0.000* Avg_Gal = 0.044*

(*-Value significant at 5% level of significance)
(**-Value significant at 10% level of significance)

Six iterations of backward stepwise regression were performed to arrive at the final model shown in serial number 6 of Table 3 after eliminating five non-economic variables. The non-economic variable analysis

reveals that June Gallup Job Approval Rating (Jun_Gal) and Average Gallup Rating (Avg_Gal) are significantly impacting vote share at a 5% level of significance, and Scandal Rating (Scandals) is significantly impacting vote share at a 10 % significance level in the 6th iteration. Thus, Jun_Gal, Avg_Gal and Scandals are significant predictors of popular vote share. These three non-economic variables will be included in the final stage analysis to build the final forecasting model.

Development of Model-3
FINAL REGRESSION MODEL (Stepwise Backward Elimination)
The group of 6 variables with three economic and three non-economic variables selected in the previous sections are incorporated together in the final step of stepwise backward elimination. These are the Gold Price Index, Economic Growth Rate, Inflation, Scandal Rating, June Gallup Job Approval Rating and Average Gallup Rating. The outcome of the final model is shown in Table 4.

Table 4- Combined forecasted model considering significant economic and non-economic variables

Sl. No.	Model	Year	R^2	P-value
1.	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C4Gold_index + C5GDPR + C6Inflation1	1956-2020	0.81	Scandals = 0.225 Jun_Gal = 0.009* Avg_Gal = 0.094* Gold_index = 0.222 GDPR = 0.159 **Inflation1 = 0.739**
2	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C4Gold_index + C5GDPR	1956-2020	0.82	Scandals = 0.078** Jun_Gal = 0.001* Avg_Gal = 0.033* **Gold_index = 0.158** GDPR = 0.128
3	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + C4GDPR	1956-2020	0.78	Scandals = 0.09** Jun_Gal = 0.001* Avg_Gal = 0.04* **GDPR = 0.26**
4	PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal	1952-2020	0.76	Scandals = 0.071** Jun_Gal = 0.000* Avg_Gal = 0.044*

(*-Value significant at 5% level of significance)
(**-Value significant at 10% level of significance)

From the above analysis, it can be concluded that inflation, gold price index, and economic growth rate are becoming insignificant variables and do not impact vote share percentage when used with non-economic factors. The 4th iteration model has been considered the final model, as shown in serial number 4 of Table 4. Thus, the final empirical model for forecasting the vote share includes Scandal Rating, June Gallup Job Approval Rating and Average Gallup Rating.

FINAL PROPOSED MODEL 1

The above analysis, based on stepwise backward elimination, concludes that the final proposed model for forecasting the popular vote share of the incumbent party in the 2024 Presidential Elections of the US

incorporates the three non-economic factors of Scandal Rating, June Gallup Job Approval Rating and Average Gallup Rating. The final proposed model is represented in Equation 2

PVOTE = C + C1Scandals + C2Jun_Gal + C3Avg_Gal + ε   (2)

To forecast the Popular Vote Share of the Incumbent party in the 2024 US Presidential Elections, actual values of the three shortlisted independent variables for 2024 have been considered as given in Table 5. The 2024 election for the post of President is one of the closest contests in the history of US elections. Kamala Harris represents the Democratic party, and Donald Trump is contesting from the Republican party. Here, the study uses the final model to forecast Kamala Harris's vote share from the incumbent party.

Table 5- Value of independent variables from the year 2024

Independent variables	2024_Values
Scandals	0
Jun_Gal	38
Avg_Gal	43

The forecasted popular vote share of the Incumbent Democratic Party presidential candidate Kamala Harris is 48.70%. The R^2 of the proposed model 1 is 76.19% and adjusted R^2 is 71.09%. The model is significant, with the F statistic at a 1 % significant level. Table 6 shows the outcome of the final model.

Table 6: FINAL MODEL 1

Source	Sum of Squares	df	MS	Number of observations	=	18
				F(3, 14)	=	14.93
Model	0.056571	3	0.018857	Prob > F	=	0.0001
Residual	0.01768	14	0.001263	R-squared	=	0.7619
				Adj R-squared	=	0.7109
Total	0.074251	17	0.004368	Root MSE	=	0.03554

Variables	Coefficient	Std. Error	t-Statistics	P>t	[95% confidence interval]	
Scandals	-0.02552	0.013036	-1.96	0.071	-0.05348	0.002442
Jun_Gal	0.005627	0.001223	4.60	0.000	0.003004	0.00825
Avg_Gal	-0.00322	0.001457	-2.21	0.044	-0.00634	-0.0000936
Constant	0.411612	0.052439	7.85	0.000	0.299143	0.524082

Backtesting for proposed model-1

	Prediction for the year 2016					Prediction for the year 2020				
Variable	Variable values	Coefficient	Actual 2016	Predicted 2016	Error 2016	Variable values	Coefficient	Actual 2020	Predicted 2020	Error 2020
Scandals	0	-0.03826	0.4802	0.5651	-0.0849	2	-0.0298	0.468	0.4339	0.0341
Jun_Gal	51.6	0.006042				38	0.005494			
Avg_Gal	48	-0.00398				41	-0.00298			
Constant		0.444361					0.406724			

4.2 Intuitive Iteration-Based Modelling for Selection of Predictor Variables

The second method used to construct the prediction model is based on logical, intuitive iteration. It is a hybrid of logic-based intuitive iteration and stepwise backward elimination used in section 4.1. The key economic variables are selected from the list of 9 economic variables using the method in section 4.1. It selects the same three variables, Inflation1, GDPR, and Gold_index, to be included in further refinement of the forecasting model in the third step. The key non-economic factors are selected by grouping them in different sets based on the logical classification of variables and regressing the dependent variable (vote share-PVOTE) in each set separately. The sets are classified with variable nature as numbers, binary, directly related to the incumbent president, and directly related to the incumbent party. The classification set with variable nature as numbers was further extended by clubbing with immigration data to create another set. The six intuitive, iterative sets of non-economic factors used in various regression models for predicting vote share are shown in Table 7.

Table 7- Non-Economic Variables influencing popular vote share of the incumbent party

Sl. No.	Set Definition	Model	Year	R^2 Value	P Value
1.	All non-economic variables	PVOTE = C(1) + C(2)Scandals + C(3)Jun_Gal + C(4) Avg_Gal + C(5)Mid_Term + C(6)Incum_PRun + C(7) Power + C(8)Spending + C(9)Crime_R	1952-2024	0.79	Scandals = 0.4741 Jun_Gal = 0.0401 Avg_Gal = 0.2562 Mid_Term = 0.9368 Incum_Prun = 0.8090 Power = 0.5527 Spending = 0.6808 Crime_R = 0.7288
2.	Nature of variable is Number	PVOTE = C(1) + C(2)Jun_Gal + C(3) Avg_Gal + C(4)Mid_Term + C(5)Crime_R	1952-2024	0.71	Jun_Gal = 0.0009* Avg_Gal = 0.0682 Mid_Term = 0.5258 Crime_R = 0.6051
3.	Variable nature is number + Immigration	PVOTE = C(1) + C(2)Jun_Gal + C(3) Avg_Gal + C(4)Mid_Term + C(5)Crime_R + C(6) Illegal_Immig + C(7) Illegal_Aliens	1988-2024	0.69	Jun_Gal = 0.2444 Avg_Gal = 0.3453 Mid_Term = 0.3714 Crime_R = 0.8988 Illegal_Immig = 0.8149 Illegal_Aliens = 0.8222
4.	Variables directly related to party	PVOTE = C(1) + C(2)Mid_Term + C(3)Power + C(5)Spending	1952-2024	0.5	Mid_Term = 0.8676 Power = 0.1562 Spending = 0.0405*
5.	Variables directly related to president	PVOTE = C(1) + C(2)Scandals + C(3)Avg_Gal + C(4)Incum_PRun	1952-2024	0.78	Scandals = 0.1023 Jun_Gal = 0.0005* Avg_Gal = 0.0390* Incum_Prun = 0.3948
6.	Nature of Variables is binary	PVOTE = C(1) + C(2)Incum_PRun + C(3)Power	1952-2024	0.31	Incum_Prun = 0.3328 Power = 0.0409*

(*-Value significant at 5% level of significance)
(**-Value significant at 10% level of significance)

The regression results of vote share (PVOTE) on the six sets of non-economic factors mentioned above are shown in Table 7. The non-economic variable analysis reveals that June Gallup Job Approval Rating (Jun_Gal), Average Gallup Rating (Avg_Gal), Period of Power (Power) and Campaign Spending Index

(Spending) were found to be significantly impacting vote share at a 5 % significance level. The two variables representing the issue of immigration were also not found to be statistically significant, even at a 10 % significance level. Thus, Jun_Gal, Avg_Gal, Spending, and Power are found to be significant predictors of vote share using the logic-based intuitive iterative process. The final stage analysis will include These four non-economic variables to build the final forecasting model.

The group of seven variables with three economic and four non-economic variables selected in this section are incorporated together in the final step of stepwise backward elimination, as explained in section 4.1. These are the Gold Price Index, Economic Growth Rate, Inflation, June Gallup Job Approval Rating, Average Gallup Rating, Campaign Spending Index, and Period of Power. The final Model, after incorporating both economic and non-economic variables using backward stepwise elimination, found the economic growth rate in the economic variable and June Gallup Rating, Average Gallup Rating, and Period of Power in the non-economic variable to be significant predictors of vote share (PVOTE). It can be concluded that inflation, gold price index, and campaign spending were insignificant variables that impacted the vote share percentage. Thus, the final empirical model used for forecasting the vote share includes Economic Growth Rate, June Gallup Job Approval Rating, Average Gallup Rating, and Period of Power. GDPR, Avg_Gal and Power were significant at 10%, whereas Jun_Gal was significant at a 5 % significance level in the final proposed model, as shown in Table 9.

FINAL PROPOSED MODEL 2

The above analysis, based on a hybrid approach of intuitive iteration and stepwise backward elimination, concludes that the final proposed model for forecasting the popular vote share of the incumbent party in the 2024 Presidential Elections of the US incorporates three non-economic factors and one economic factor. The final proposed model is represented in Equation 3.

$$PVOTE = C + C1GDPR + C2Jun\_Gal + C3Avg\_Gal + C4Power + \varepsilon \qquad (3)$$

To forecast the Popular Vote Share of the Incumbent party in the 2024 US Presidential Elections using the proposed model 2, actual values of the four shortlisted independent variables for 2024 have been considered as given in Table 8. Here, the study uses the final model proposed, model 2, as shown in equation 3, to forecast the vote share of Kamala Harris from the incumbent party.

Table 8- Value of independent variables from the year 2024

Independent variables	2024_Values
GDPR	0.016719
Jun_Gal	38
Avg_Gal	43
Power	0

The forecasted vote share of the Incumbent Democratic Party presidential candidate Kamala Harris is 48.5946%. The R^2 of the proposed model 2 is 80.04%, and the adjusted R^2 is 73.9%. The model is significant, with the p-value of the F statistic being less than 1 %, as shown in Table 9.

Table 9: FINAL MODEL 2

Variables	Coefficient	Std. Error	t-Statistic	p-value
GDPR	0.732161	0.396791	1.845205	0.0879**
Jun_Gal	0.005016	0.001216	4.124336	0.0012*
Avg_Gal	-0.002876	0.001392	-2.066860	0.0593**
Power	-0.037265	0.017376	-2.144671	0.0515**
C	0.406772	0.046877	8.677367	0.0000*

(* Represents significance at 5%, ** Represents significance at 10%)

Parameters	Values
R-Squared	0.800413
Adjusted R-Squared	0.739001
S.E. of regression	0.033763
Sum squared resid	0.014820
Log Likelihood	38.37875
F-Statistic	13.03360
Prob(F-statistic)	0.000175
Mean Dependent Var	0.496706
S.D. Dependent Var	0.066089
Akaike info criterion	-3.708750
Schwarz criterion	-3.461424
Hannan-Quinn criteria.	-3.674647
Durbin Watson stat	1.938197

Backtesting

Variable	Coefficient	Actual 2016	Predicted 2016	Error 2016	Coefficient	Actual 2020	Predicted 2020	Error 2020
GDPR	0.72	0.48	0.51	-0.03	0.79	0.47	0.50	-0.03
Jun_Gal	0.01				0.00			
Avg_Gal	0.00				0.00			
Power	-0.03				-0.04			
Constant	0.40				0.40			

Backtesting our model with actual data gives an approximate—error of 3% for the last two years.

Figure 1: Model 2 Comparison with actual data

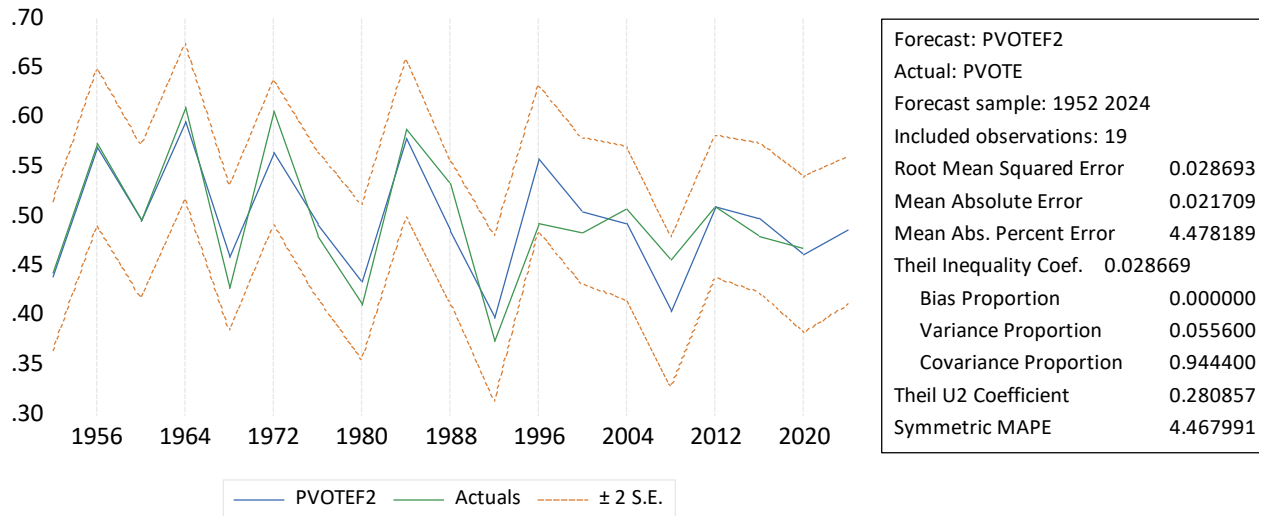|	
Forecast: PVOTEF2	
Actual: PVOTE	
Forecast sample: 1952 2024	
Included observations: 19	
Root Mean Squared Error	0.028693
Mean Absolute Error	0.021709
Mean Abs. Percent Error	4.478189
Theil Inequality Coef.	0.028669
Bias Proportion	0.000000
Variance Proportion	0.055600
Covariance Proportion	0.944400
Theil U2 Coefficient	0.280857
Symmetric MAPE	4.467991

Figure 1 compares the incumbent party's predicted and actual vote share in different election years from 1956 to 2020. Figure 2 plots the residuals' graph and provides the skewness, kurtosis, and p-value of Jarque-Bera. It is evident from the values of these parameters that residuals are normally distributed, with the p-value for Jarque-Bera being 0.989356, as also shown in Table 10, thereby accepting the null hypothesis that residuals are normally distributed. The p-values of heteroskedasticity and autocorrelation are 0.8708 and 0.0525, which indicates no autocorrelation and the presence of homoskedasticity.

Figure 2: Residuals Normality Test

Series: Residuals	
Sample 1952 2020	
Observations 18	
Mean	-4.05e-18
Median	0.001974
Maximum	0.052002
Minimum	-0.066499
Std. Dev.	0.029525
Skewness	-0.074244
Kurtosis	3.080543
Jarque-Bera	0.021402
Probability	0.989356
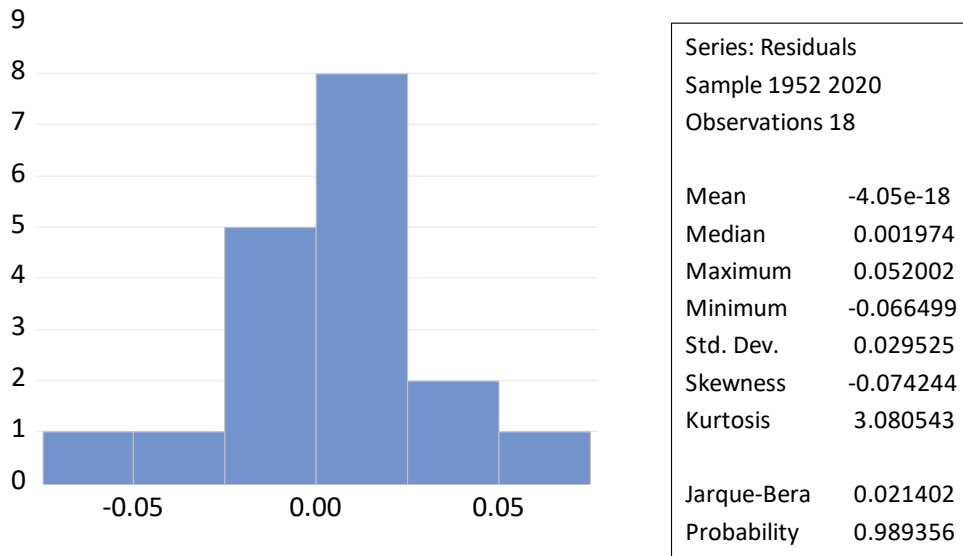
Table 10: Assumptions Testing

Test for Residuals	P Value	Conclusion
Residuals Normality Tests	0.989356	The sample comes from a normal distribution
Breusch Godfrey Serial Correlation LM Test	0.0525	No serial Correlation in residuals
Heteroskedasticity Test: Breusch Pagan Godfrey Test	0.8708	Residuals are homoskedastic

Figure 3: Stability Tests
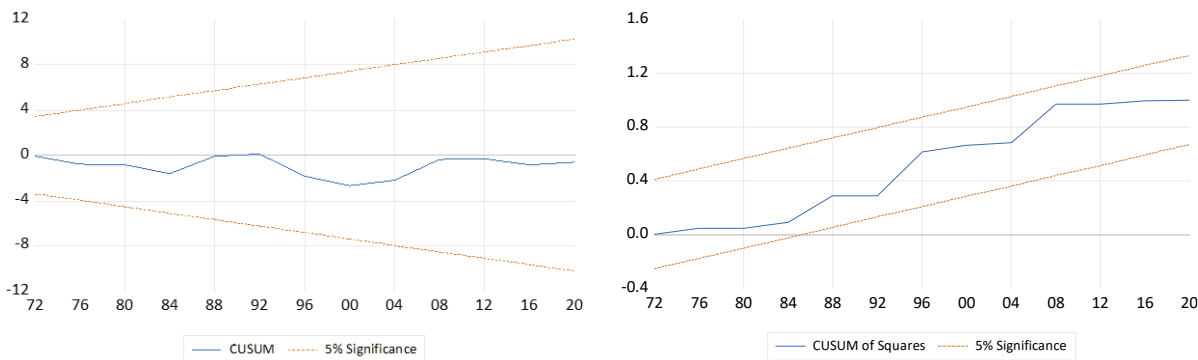
The CUSUM (Cumulative Sum of Recursive Residuals) test checks the stability of parameters. The CUSUM of Squares test focuses on detecting sudden shifts or breaks in volatility. The cumulative sum of squared residuals (Blue line), as shown in Figure 3, is between the dashed orange lines representing 5% significance bands. Here, the line starts rising but remains within bounds, suggesting no strong evidence of structural breaks or instability in the model's parameters. However, there is a slight increase in variance towards the end. The model is stable at a 5% significance level for both CUSUM and CUSUM of Squares.

The study applied two approaches, stepwise backward elimination, and intuitive, iterative process, to the economic and non-economic explanatory variables of the vote share percentage. The two approaches arrived at two final models for predicting the vote share percentage of the incumbent party. The first model (Final Model 1), which consisted of 3 non-economic variables, forecasted the vote share of Kamala Harris (incumbent party presidential candidate) to be 48.70%, whereas the second model (Final Model 2), consisting of economic and non-economic variables arrived at a forecasted vote share of 48.60%. From both the models, it can be concluded that Kamala Harris's predicted vote share will be between 48.60% and 48.70% in the upcoming 2024 US presidential elections.

5.   CONCLUSION

The study develops a prediction model to forecast the popular vote share percentage expected to be received by the Democratic (incumbent) party presidential candidate, Kamala Harris, in the forthcoming US Presidential elections in November 2024. The study employs stepwise backward elimination and logic-based intuitive, iterative elimination on various critical economic and non-economic factors impacting election results.

The first model, built using the first approach, finds only non-economic variables—June Gallup Ratings, Average Gallup Ratings, and Scandal Ratings—to be significant predictors. In contrast, the model derived from the second approach selects economic growth rate, June Gallup Ratings, Average Gallup Ratings, and Period of Power as critical predictors of the vote share percentage for the incumbent party candidate. The forecasted vote share for Kamala Harris is 48.70% from model 1 and 48.60% from model 2. Therefore, the study concludes that Kamala Harris would receive a popular vote share of 48.60% ± 0.1% in the 2024 US Presidential Elections.

Variables such as scandals, continuity of remaining in power for two or more terms, economic growth rate, job approval ratings for June (election year), and average job approval ratings for the tenure of the incumbent party released by Gallup will be crucial factors influencing the electoral behaviour of the US population in the forthcoming 2024 US Presidential Election.

REFERENCES

Abramowitz, A. I. (1988). An improved model for predicting presidential election outcomes. *PS: Political Science & Politics, 21*(4), 843-847.

Bureau of Labor Statistics. (2020). Civilian Unemployment Rate. Retrieved from https://www.bls.gov/charts/employment-situation/civilian-unemployment-rate.htm

Christopher. (n.d.). United States Crime Rates 1960 to 2019. http://www.disastercenter.com/crime/uscrime.htm

Corporate Profits After Tax (without IVA and CCAdj). (2024, September 26). https://fred.stlouisfed.org/series/CP

Cuzán, A. G., Heggen, R. J., & Bundrick, C. M. (2000, July). Fiscal policy, economic conditions, and terms in office: Simulating presidential election outcomes. In *Proceedings of the World Congress of the Systems Sciences and ISSS International Society for the Systems Sciences, 44th Annual Meeting, July* (pp. 16-20).

Election Statistics: 1920 to Present | US House of Representatives: History, Art & Archives. (n.d.). https://history.house.gov/Institution/Election-Statistics/Election-Statistics/

Erikson, R. S., & Wlezien, C. (1996). Of time and presidential election forecasts. *PS: Political Science & Politics, 29*(1), 37-39.

Fair, R. C. (1978). The effect of economic events on votes for president. *The Review of Economics and Statistics*, 159-173.

Fair, R. C. (2017). Congressional Prediction for 2018: October 29, 2017, Vote-share equations: November 2014 update. Available at: https://fairmodel.econ.yale.edu/vote2016/index2.htm

Gallup, Inc. (2024, September 21). 2024 Presidential Election Center - Gallup. Gallup.com. https://news.gallup.com/610757/2024-presidential-election-center.aspx#ite-610769

Graefe, A., Jones, R. J., Armstrong, J. S., & Cuzán, A. G. (2016). The PollyVote Forecast for the 2016 American Presidential Election. *PS: Political Science & Politics, 49*(4), 687-690.

Hibbs, D. A. (2012). Obama's reelection prospects under "Bread and Peace" voting in the 2012 US presidential election. *PS: Political Science & Politics, 45*(4), 635–639.

Hibbs Jr, D. A. (2000). Bread and peace voting in US presidential elections. *Public Choice, 104*(1), 149–180.

Jérôme, B., & Jérôme-Speziari, V. (2011). Forecasting the 2012 US Presidential Election: What Can We Learn from a State-Level Political Economy Model? Available at SSRN 1915071.

Leip, D. (n.d.). (2024). Presidential General Election Results. © 2012 David Leip. https://uselectionatlas.org/RESULTS/national.php

Lewis-Beck, M. S., & Rice, T. W. (1982). Presidential popularity and presidential vote. *Public Opinion Quarterly, 46*(4), 534–537.

Lichtman, A. J. (2005). *The Keys to the White House: A Surefire Guide to Predicting the Next President.* Lexington Books.

Lichtman, A. J. (2008). The keys to the white house: An index forecast for 2008. *International Journal of Forecasting, 24*(2), 301-309.

Lichtman, A. J., & Keilis-Borok, V. I. (1981). Pattern recognition applied to presidential elections in the United States, 1860-1980: Role of integral social, economic, and political traits. *Proceedings of the National Academy of Sciences, 78*(11), 7230-7234.

List of Individuals Impeached by the House of Representatives | US House of Representatives: History, Art & Archives. (n.d.). https://history.house.gov/Institution/Impeachment/Impeachment-List/

Macrotrends | The Long-Term Perspective on Markets. (n.d.). https://www.macrotrends.net/

Mueller, J. E. (1970). Presidential popularity from Truman to Johnson. *American Political Science Review, 64*(1), 18-34.

National income: Corporate profits before tax (without IVA and CCAdj). (2024, September 26). https://fred.stlouisfed.org/series/A053RC1Q027SBEA

National Mining Association. Historical Gold Prices, 1833 to Present. Retrieved from https://nma.org/wp-content/uploads/2019/02/his_gold_prices_1833_pres_2019.pdf

Net migration for the United States. (2020, September 11). https://fred.stlouisfed.org/series/SMPOPNETMUSA

Real gross domestic product per capita. (2024, September 26).
https://fred.stlouisfed.org/series/A939RX0Q048SBEA#0

Sigelman, L. (1979). Presidential popularity and presidential elections. *Public Opinion Quarterly, 43*(4), 532–534.

Silver, N. (2011). On the maddeningly inexact relationship between unemployment and re-election. Retrieved from http://fivethirtyeight.blogs.nytimes.com/2011/06/02/on-the-maddeningly-inexact-relationship-between-unemployment-and-re-election/

Sinha, P., & Bansal, A. K. (2008). Hierarchical Bayes prediction for the 2008 US Presidential election. *The Journal of Prediction Markets, 2*(3), 47-59.

Spending: by the numbers - FEC.gov. (n.d.). FEC.gov. https://www.fec.gov/data/spending-bythenumbers/?election_year=2024

Statista. (2024a, July 5). Unauthorized immigrant population U.S. 1990-2022.
https://www.statista.com/statistics/646261/unauthorized-immigrant-population-in-the-us/

Statista. (2024b, July 5). U.S. immigration - illegal aliens apprehended 1990-2022.
https://www.statista.com/statistics/247071/illegal-aliens-apprehended-in-the-us/

Tufte, E. R. (1975). Determinants of the outcomes of midterm congressional elections. *American Political Science Review, 69*(3), 812–826.

U.S. Crude Oil First Purchase Price (Dollars per Barrel). (n.d.).
https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=f000000__3&f=a

U.S. Dollars to U.K. Pound Sterling Spot Exchange Rate. (2024, September 3).
https://fred.stlouisfed.org/series/EXUSUK

US Inflation Calculator. (2024, September 11). Current US inflation rates: 2000-2024. US Inflation Calculator | http://www.usinflationcalculator.com/inflation/current-inflation

APPENDIX

A1: Popular and Electoral Votes received by Incumbent party candidates

Year	Popular vote	Electoral vote
1952	44.33%	16.80%
1956	57.37%	86.10%
1960	49.55%	40.80%
1964	61.05%	90.30%
1968	42.72%	35.50%
1972	60.67%	96.70%
1976	48.01%	44.60%
1980	41.01%	9.10%
1984	58.77%	97.60%
1988	53.37%	79.20%
1992	37.45%	31.20%
1996	49.23%	70.40%
2000	48.38%	49.40%
2004	50.73%	53.20%
2008	45.60%	32.20%
2012	51.01%	61.70%
2016	48.02%	42.20%
2020	46.80%	43.10%

A2: Scandals during Presidential Terms and the Corresponding Ratings

Year	Incumbent President	Scandals	Rating
1952	Harry S. Truman	1. Continuous accusations of spies in the US Govt. 2. Foreign policies: Korean War, Indo-China War, White House renovations 3. Steel and coal strikes 4. Corruption charges	1
1956	Dwight D. Eisenhower	None	0
1960	Dwight D. Eisenhower	1. U-2 Spy Plane Incident 2. Senator Joseph R. McCarthy Controversy 3. Little Rock School Racial Issues	1
1964	John F. Kennedy	Extra-marital relationship	0
	Lyndon B. Johnson	None	
1968	Lyndon B. Johnson	1. Vietnam war 2. Urban riots 3. Phone Tapping	1
1972	Richard Nixon	Nixon Shock	0
1976	Richard Nixon	Watergate	2
	Gerald Ford	Nixon Pardon	
1980	Jimmy Carter	1. Iran hostage crisis 2. 1979 energy crisis 3. Boycott of the Moscow Olympics	1
1984	Ronald Reagan	Tax cuts and budget proposals to expand military spending	0
1988	Ronald Reagan	1. Iran-Contra affair 2. Multiple corruption charges against high-ranking officials	1
1992	George H W Bush	1. Renegation on an election promise of no new taxes 2. "Vomiting Incident"	1
1996	Bill Clinton	1. Firing of White House staff 2. "Do not ask, don't tell" policy	1
2000	Bill Clinton	Lewinsky Scandal	2
2004	George W Bush	None	0
2008	George W Bush	1. Midterm dismissal of 7 US attorneys 2. Guantanamo Bay Controversy and torture	1
2012	Barack Obama	None	0
2016	Barack Obama	None	0
2020	Donald Trump	1. Ukraine Impeachment Scandal 2. Tax Evasion	1
2024	Joe Biden	No major scandals	0

A3: Gallup Ratings

Year	Incumbent President	June Gallup Rating	Average Gallup Rating
1952	Harry S. Truman	31.5	36.5
1956	Dwight D. Eisenhower	72	69.6
1960	Dwight D. Eisenhower	59	60.5
1964	Lyndon B. Johnson	74	74.2
1968	Lyndon B. Johnson	41	50.3
1972	Richard Nixon	57.5	55.8
1976	Gerald Ford	45	47.2
1980	Jimmy Carter	33.6	45.5
1984	Ronald Reagan	54	50.3
1988	Ronald Reagan	50	55.3
1992	George H W Bush	37.3	60.9
1996	Bill Clinton	55	49.6
2000	Bill Clinton	57.5	60.6
2004	George W Bush	48.5	62.2
2008	George W Bush	29	36.5
2012	Barack Obama	46.4	49.0
2016	Barack Obama	51.6	48.0
2020	Donald Trump	38	41
2024	Democratic Candidate	38	43

A4: Mid-Term Election Results (1948-2018)

Year	Incumbent Party	Mid-Term Election Year	House Seats		House Result	Senate Seats		Senate Result	Midterm Values
			D	R		D	R		
1952	Democratic	1948	263	171	1	54	42	1	1.00
		1950	234	199		48	47		
1956	Republicans	1952	213	221	-1	46	48	-1	-1.00
		1954	232	203		48	47		
1960	Republicans	1956	234	201	-1	49	47	-1	-1.00
		1958	283	153		64	34		
1964	Democratic	1960	262	175	1	64	36	1	1.00
		1962	258	176		67	33		
1968	Democratic	1964	295	140	1	68	32	1	1.00
		1966	248	187		64	36		
1972	Republicans	1968	243	192	-1	58	42	-1	-1.00
		1970	255	180		54	44		
1976	Republicans	1972	242	192	-1	56	42	-1	-1.00
		1974	291	144		61	37		
1980	Democratic	1976	292	143	1	61	38	1	1.00
		1978	277	158		58	41		
1984	Republicans	1980	242	192	-1	46	53	1	-0.54
		1982	269	166		46	54		
1988	Republicans	1984	253	182	-1	47	53	-1	-1.00
		1986	258	177		55	45		
1992	Republicans	1988	260	175	-1	55	45	-1	-1.00
		1990	267	167		56	44		
1996	Democratic	1992	258	176	-1	57	43	-1	-1.00
		1994	204	230		48	52		
2000	Democratic	1996	207	226	-1	45	55	-1	-1.00
		1998	211	223		45	55		
2004	Republicans	2000	212	221	1	50	50	1	1.00
		2002	204	229		48	51		
2008	Republicans	2004	202	232	-1	44	55	0	-0.81
		2006	233	202		49	49		
2012	Democratic	2008	256	178	-1	55	41	1	-0.62
		2010	193	242		51	47		
2016	Democratic	2012	200	234	-1	53	45	1	-0.60
		2014	188	247		44	54		

Year	Incumbent Party	Mid-Term Election Year	House Seats		House Result	Senate Seats		Senate Result	Midterm Values
			D	R		D	R		
2020	Republicans	2016	194	241	-1	46	52	1	-0.61
		2018	235	199		45	53		
2024	Democratic	2020	222	213	-1	50	50	1	-0.62
		2022	213	222		51	49		

A5: Economic Data

Year	Annual rate of growth of real GDP per capita (%)	Unemployment	Inflation (Avg. inflation of previous yr)	Gold price index	Gold Price ($/ounce)	US Crude Oil First Purchase Price	Ex. Rate (USD/GBP)	Corporate Tax Rate	Corporate tax effect
1952	0.02316159387	3.07	7.9	0	34.69	2.53	2.8	0.46	0
1956	0.003471291481	4.03	-0.4	1	34.99	2.79	2.8	0.41	1
1960	0.005229826884	5.13	0.7	1	35.27	2.88	2.81	0.41	1
1964	0.0431713762	5.47	1.3	1	35.31	2.88	2.79	0.37	1
1968	0.0387081742	3.73	3.1	1	40.31	2.94	2.39	0.38	0
1972	0.04131957905	5.77	4.4	1	58.24	3.39	2.5	0.34	1
1976	0.04372577843	7.73	9.1	1	124.81	8.19	1.8	0.30	1
1980	-0.01402273958	6.3	11.3	1	612.63	21.59	2.33	0.27	1
1984	0.06303806202	7.87	3.2	0	360.65	25.88	1.34	0.27	0
1988	0.03234358078	5.7	3.6	1	436.78	12.58	1.78	0.32	0
1992	0.02153747129	7.37	4.2	0	343.82	15.99	1.77	0.28	1
1996	0.02568280163	5.53	2.8	1	387.81	18.46	1.56	0.28	1
2000	0.02947803714	4.03	2.2	0	279.11	26.72	1.52	0.30	0
2004	0.02915177089	5.7	2.3	1	409.72	36.77	1.83	0.22	1
2008	-0.00818484521	5	2.8	1	872.37	94.04	1.85	0.18	1
2012	0.01500375437	8.27	3.2	1	1668.86	94.52	1.59	0.15	1
2016	0.0103575452	4.93	0.1	0	1251.92	38.29	1.35	0.17	0
2020	-0.02541622458	3.83	1.8	1	1,773.73	36.86	1.28	0.12	1
2024	0.01671909481	4.2	4.1	1	2,295.76	77.49	1.27	0.16	0

A6: Non-Economic Data

Year	Crime rate	Incumbent President Running	Period of power	Campaign spending Index	Illegal Immigration (In Million)	Illegal Aliens (In Million)
1952	223.4	0	1	0	-	-
1956	789.7	1	0	2	-	-
1960	1887.2	0	1	1	-	-
1964	1998.35	1	0	0	-	-
1968	2624.4	0	1	0	-	-
1972	3549.85	1	0	2	-	-
1976	4566.18	1	1	1	-	-
1980	5267.7	1	0	0	-	-
1984	5646.73	1	0	1	-	-
1988	5317.2	0	1	1	3.5	1.1699
1992	5780.83	1	1	0	5.7	1.2585
1996	5448.25	1	0	1	6.14	1.6500
2000	4724.23	0	1	0	8.46	1.8147
2004	4119.85	1	0	1	9.97	1.2642
2008	3854.08	0	1	0	11.60	1.0438
2012	3444.35	1	0	1	11.43	0.7957
2016	3049.85	0	1	1	11.75	0.6838
2020	2383.6	1	0	0	10.51	0.6093
2024	1960.9	0	0	2	10.65	2.1557