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**A Political Canary: An Empirical Study of the Correlation Between
Hatch Act Complaints and How the Electoral College Votes**

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I thank Andy F. Popper at American University's Washington College of Law for taking a leap of faith with me while I researched and wrote on a subject that went largely unknown (to the general public) for 75 years.

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Abstract

The American public witnesses hundreds, if not thousands, of violations of the Hatch Act—an administrative law designed to keep partisan politics out of Government—each year. This study aimed to determine whether there is a correlation between the number of Hatch Act complaints reported in the fiscal year leading up to a Presidential election and how divisive the political landscape is during that Presidential election. Political divisiveness was defined as how close the winning Presidential candidate was to receive fifty percent of the electoral college.

To assess the theory that an increase in Hatch Act complaints is an early indicator of a closer Presidential election, the study researched forty years of Hatch Act records and developed a prediction model using multiple regression. This regression model showed that a negative correlation existed between the percent change in Hatch Act complaints during the fiscal year leading up to a Presidential election and the margin by which a Presidential candidate won the election. The regression model created in this study accurately predicted the electoral college results for eight of the past ten Presidential elections; predicting both the 2016 and the 2020 elections within one electoral vote ($p \leq 0.05$). These results verify the need for increased funding for enforcement of Hatch Act violations during the years leading up to a Presidential election.

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INTRODUCTION

Each year, Americans report hundreds of potential Hatch Act violations to the Office of Special Counsel (“OSC”). The Hatch Act Unit (“HAU”) within the OSC investigates these alleged violations. In addition to investigating these alleged violations, the HAU issues thousands of opinions in response to questions it receives from federal agencies, members of Congress, and the public. By studying the past forty years of alleged Hatch Act violations reported to the OSC, it was possible to gauge the divisiveness of the political landscape during a Presidential election year. Through this analysis, it became evident that a correlation existed between the percent change in Hatch Act complaints reported during the fiscal year leading up to a Presidential election from the immediately preceding fiscal year and the percentage of the electoral college the winning Presidential candidate received. This correlation allows observers to predict the electoral college results of a Presidential election and understand the need for additional Hatch Act enforcement during election years.

I. The Office of Special Counsel

Founded in 1979 as an independent agency, the OSC was tasked with focusing on the investigation and prosecution of alleged wrongdoings by federal employees and prohibited personnel practices by federal agencies.¹ OSC’s investigative and prosecutorial power and authority comes from four Federal statutes: the Hatch Act, the Whistleblower Protection Act, the Civil Service Reform Act, and the Uniformed Services Employment and Reemployment Act.

The HAU of the OSC is tasked with investigating alleged Hatch Act violations, processing complaints, authoring opinions, and filing disciplinary actions with the Merit Systems Protection Board (“MSPB”). Each year, the HAU receives hundreds of potential Hatch Act violations in the form of

¹ 5 U.S. Code § 2302.

“complaints.”² Complaints are submitted through the HAU’s email address or by calling the HAU’s telephone hotline. These complaints are reviewed, investigated, and settled based on when they are reported and the severity of the alleged violation.

II. The Hatch Act

Passed in 1939 under its original title: *An Act to Prevent Pernicious Political Activities*, it prohibited executive branch employees, absent the President and Vice President, from engaging in certain “pernicious” political activities.³ Later renamed *The Hatch Act* (the “Act”) to honor the Senator of New Mexico who sponsored the bill, Carl Hatch.⁴ Congress and the Roosevelt administration passed the Act to ensure that Federal employees felt “encouraged to exercise fully, freely, and without fear of penalty or reprisal, and to the extent not expressly prohibited by law, their right to participate or to refrain from participating in the political processes of the Nation.”⁵ To accomplish this goal, the Act prohibited Federal employees, even in their personal capacity, from engaging in several types of political activities.

Activities prohibited by the Act include (1) intimidating or bribing voters in a Federal election; (2) rewarding persons for the support or opposition of a political party; (3) receiving or soliciting political contributions from persons who receive work relief; (4) disclosing or receiving, for political purposes, a list of persons receiving aid; (5) using their official authority to influence or interfere with an election; and (6) engaging in political management or campaigning.⁶ Under the language of the Act, any Federal employee who engaged in any of the prohibited activities would forfeit their Federal position and be permanently barred from Federal employment.⁷

² *Infra see generally* note 20.

³ Pub. L. 76-252.

⁴ Hatch Act, Encyclopedia Britannica, <https://www.britannica.com/topic/Hatch-Act-United-States-1939> (last updated Apr. 5, 2019).

⁵ 5 U.S.C. § 7321.

⁶ Pub. L. 76-252. *See* 5 U.S.C. § 7323.

⁷ Pub. L. 76-252, § 9(b). These punishments were later amended and codified in 5 U.S.C. § 7326.

Over the past eighty-one years, the Act has been amended numerous times. Some of these amendments have been minor—clarifying that the Act does not apply to the Alaska Railroad⁸—while others significant and scope changing—expanding the Act to include the District of Columbia and the States.⁹ Another major change to the Act was introduced by the 1993 amendment that modified the Act to allow Federal employees to take part in political campaigns on their off-duty or personal time.¹⁰ Currently, and as a result of the Hatch Act Modernization Act of 2012,¹¹ employees who violate the Act are subject to disciplinary action consisting of, but not requiring, removal, reduction in grade, debarment from Federal employment for a period not to exceed 5 years, suspension of employment, an administrative reprimand, or an assessment of a civil penalty not to exceed \$1,000.¹²

METHODOLOGY

III. The Data

Over the past forty years, since the OSC's founding in 1979, the HAU of the OSC has tracked several different metrics regarding its activity during the past fiscal year.¹³ These metrics include (1) formal written advisory opinion requests received, (2) formal written advisory opinions issued, (3) telephone inquiries requesting general information, (4) total advisory opinions issued (oral and written), (5) new complaints received, (6) complaints referred for investigation, (7) complaints processed and closed, (8) warning letters issued, (9) corrective actions taken by cure letter recipients, (10) disciplinary action complaints filed with the MSPB, (11) disciplinary actions obtained (by negotiation or so ordered by the MSPB), and (12) complaints pending at the end of the fiscal year.¹⁴

⁸ Pub. L. 79-684.

⁹ Hatch Act Modernization Act of 2012, 112 H.R. 4152.

¹⁰ Pub. L. 103-94.

¹¹ Pub. L. 112-230.

¹² 5 U.S.C. § 7326.

¹³ *Infra see* note 20-21.

¹⁴ *Infra see* note 20-21.

Information for each of these metrics was collected by reviewing the OSC’s Annual Reports to Congress. Specifically, the Annual Reports for Fiscal Years 1980 — 2019. Data does not exist for FY 1979 because 1980 was the first year the OSC submitted an Annual Report to Congress. The OSC Annual Report is written by OSC’s head office with collaboration from the four organizational units making up OSC. Each unit of the OSC focuses on one of the four statutes the OSC is tasked with enforcing: the Civil Service Reform Act, the Whistleblower Protection Act, the Hatch Act, and the Uniformed Services Employment & Reemployment Rights Act.¹⁵ The OSC enforces these statutes for and to the benefit of Federal employees by protecting their workplace rights. In addition to protecting the rights of Federal employees, the OSC’s status as an independent agency ensures the government maintains its integrity during the investigatory process of alleged wrongdoing.

Given the timespan of this data set, it was unsurprising that gaps in the data were discovered. While missing data did not impede the study’s ability to observe the general trends that the data produced, it did limit which of the twelve metrics could be used in the multiple regression analysis.¹⁶ This limitation was unfortunate as the data collected for several metrics appeared to have promise. However, the New Complaints Received and Disciplinary Action Complaints Filed with the MSPB metrics ran the entirety of the study without gaps.¹⁷

a. New Complaints Received by The Hatch Act Unit

A “Complaint” is received by the HAU when any person submits an allegation of an employee of a Federal, State, or D.C. agency violating the Act. While data points were collected for all twelve metrics, New Complaints Received was the primary focus of the analysis due to the completeness of the data. New

¹⁵ About OSC, U.S. Office of Special Counsel, <https://osc.gov/Pages/About.aspx> (last visited Sept. 26, 2020).

¹⁶ *Infra* Methodology, II.

¹⁷ The OSC did not submit data in 1983 for “disciplinary action complaints filed with the MSPB” due to the suspension of prosecutions in the first half of fiscal year 1983. This was due to perceived policy issues arising out of *Special Counsel v. Jim J. Dokes* (HQ1206000020).

Complaints Received was one of the two metrics that was consistently reported in OSC’s Annual Report for the past forty years, as shown in Table 1. The second complete metric is the number of disciplinary action complaints filed by the HAU with the MSPB.¹⁸

FY 1980 108	FY 1981* 69	FY 1982 115	FY 1983 86	FY 1984 93	FY 1985* 105	FY 1986 83
FY 1987 78	FY 1988 80	FY 1989* 102	FY 1990 149	FY 1991 92	FY 1992 137	FY 1993* 134
FY 1994 130	FY 1995 104	FY 1996 108	FY 1997* 75	FY 1998 83	FY 1999 71	FY 2000 98
FY 2001* 185	FY 2002 213	FY 2003 196	FY 2004 248	FY 2005* 245	FY 2006 299	FY 2007 282
FY 2008 445	FY 2009* 496	FY 2010 526	FY 2011 451	FY 2012 503	FY 2013* 277	FY 2014 151
FY 2015 106	FY 2016 197	FY 2017* 253	FY 2018 263	FY 2019 281	FY 2020 440 ¹⁹	

Table 1. The number of complaints received by the OSC’s Hatch Act Unit from Fiscal Years 1980–2020. ^{20 21}

* Indicates a Presidential election occurred during the fiscal year

Figure 1, in addition to depicting the number of complaints received each year, contains a secondary x-axis aligning the number of complaints received with the President at that time. Which President occupied the oval office during a given year does not add empirical value to the chart. Instead, it is a reference tool to assist readers in placing the period as readers may remember an “era” more clearly

¹⁸ See *id.*

¹⁹ Telephone interview with Ericka Hamrick, Deputy Chief, Hatch Act Unit, OSC., (Nov. 9, 2020).

²⁰ 2019 OSC Annual Report to Congress, p. 28-31; 2018 OSC Annual Report to Congress, p. 32-34; 2017 OSC Annual Report to Congress, p. 32-34; 2015 OSC Annual Report to Congress, p. 33-35; 2014 OSC Annual Report to Congress, p. 40-42; 2013 OSC Annual Report to Congress, p. 28-30; 2011 OSC Annual Report to Congress, p. 19-21; 2010 OSC Annual Report to Congress, p. 15-18; 2009 OSC Annual Report to Congress, p. 15-18; 2007 OSC Annual Report to Congress, p. 28-31; 2006 OSC Annual Report to Congress, p. 28-30; 2005 OSC Annual Report to Congress, p. 16-18; 2003 OSC Annual Report to Congress, p. 10-12; 2002 OSC Annual Report to Congress, p. 14-15; 2001 OSC Annual Report to Congress, p. 15-17; 1999 OSC Annual Report to Congress, p. 17-18; 1997 OSC Annual Report to Congress, p. 16-17; 1995 OSC Annual Report to Congress, p. 12-13; 1994 OSC Annual Report to Congress, p. 13; 1993 OSC Annual Report to Congress, p. 7-8; 1991 OSC Annual Report to Congress, p. 15; 1990 OSC Annual Report to Congress, p. 14; 1989 OSC Annual Report to Congress, p. 14; 1987 OSC Annual Report to Congress, p. 21-22; 1986 OSC Annual Report to Congress, p. 11-12; 1985 OSC Annual Report to Congress, p. 17; 1983 OSC Annual Report to Congress, p. 16; 1982 OSC Annual Report to Congress, p. 11; 1981 OSC Annual Report to Congress, p. 27.

²¹ 2016 OSC Annual Report to Congress, p. 40-43; 2012 OSC Annual Report to Congress, p. 24-25; 2008 OSC Annual Report to Congress, p. 16-19; 2004 OSC Annual Report to Congress, p. 12-14; 2000 OSC Annual Report to Congress, p. 17-19; 1996 OSC Annual Report to Congress, p. 13-14; 1992 OSC Annual Report to Congress, p. 15; 1988 OSC Annual Report to Congress, p. 2; 1984 OSC Annual Report to Congress, p. 21; 1980 OSC Annual Report to Congress, p. 27-29.

than a specific fiscal year. Whether who is in office is a significant factor is discussed in more detail in the *Analysis* section of this paper.

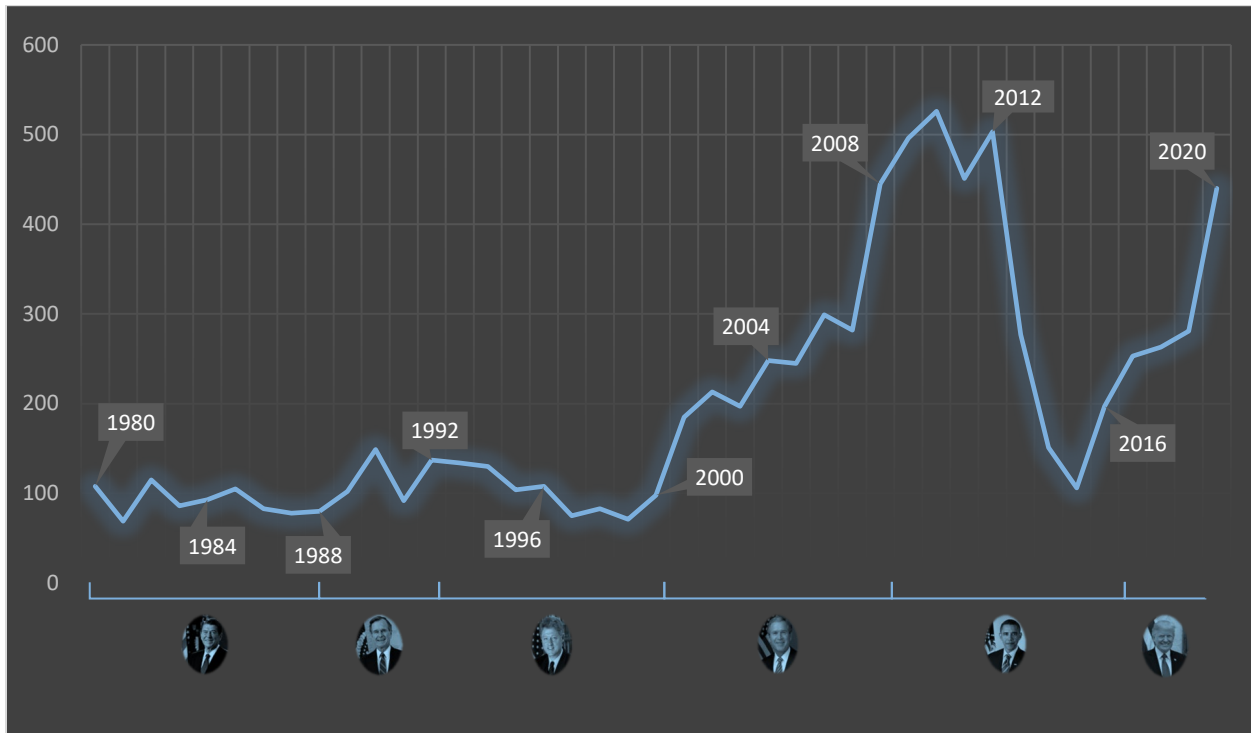


Figure 1. Hatch Act Complaints Received by the OSC's Hatch Act Unit. The number of complaints received by the HAU during a fiscal year. Highlighting Presidential election years and that year's President.²²

Given that Presidential elections do not occur every year, it was necessary to reduce the data to only the relevant years. In addition to reducing the data, the number of new complaints received was converted to the annual percent change in new complaints filed, depicted in Table 2. This conversion allowed for a keener observation of the effect the change in complaints has on the closeness of a Presidential election. Data for 1980 is missing because the OSC did not submit an Annual Report to Congress in 1979.

²² *Supra* note 19-21.

1984 8.14%	1988 2.56%	1992 48.91%	1996 3.85%	2000 38.03%
2004 26.53%	2008 57.80%	2012 11.53%	2016 85.85%	2020 56.58%

Table 2. The percent change in the number of complaints received during the fiscal year leading up to an election and the prior fiscal year.²³

The annual percent change of the number of complaints filed was calculated by first finding the difference between the number of complaints submitted during the target year and the number of complaints submitted in the year immediately preceding the target year. The resulting number was multiplied by one hundred and then divided by the number of complaints received during the year immediately preceding the target year. The following equation, (1), visualizations this calculation:

$$\text{percent change} = \frac{(X_{\text{Target Year}} - X_{\text{Preceding Year}}) \times 100}{X_{\text{Preceding Year}}} \quad (1)$$

Further, Table 3 shows a clear depiction of how Presidential election years impact the number of complaints the HAU receives. This percent change was used as one of the two independent variables in this study's multiple regression analysis.²⁴

Two interesting patterns emerged upon converting the number of complaints received each year to the percent change in complaints received. First, from FYs 1983–2016, as shown in Table 3, there was a decrease in the number of complaints filed during the fiscal year two years before a Presidential election. FY 2019 was the first time that there was not a decrease in the number of complaints received by the HAU in the fiscal year two years before a Presidential election. Secondly, the Presidential term making up FYs 2016–2020 is the only term to not have a decrease in any one year since the OSC began tracking the number of complaints received by the HAU in 1980.

²³ *Supra* note 19-21.

²⁴ *Infra* Methodology, II.

FY 1980 -	FY 1981* -36.11%	FY 1982 66.67%	FY 1983 -25.22%	FY 1984 8.14%	FY 1985* 12.90%	FY 1986 -20.95%
FY 1987 -6.02%	FY 1988 2.56%	FY 1989* 27.50%	FY 1990 46.08%	FY 1991 -38.26%	FY 1992 48.91%	FY 1993* -2.19%
FY 1994 -2.99%	FY 1995 -20.00%	FY 1996 3.85%	FY 1997* -30.56%	FY 1998 10.67%	FY 1999 -14.46%	FY 2000 38.03%
FY 2001* 88.78%	FY 2002 15.14%	FY 2003 -7.98%	FY 2004 26.53%	FY 2005* -1.21%	FY 2006 22.04%	FY 2007 -5.69%
FY 2008 57.80%	FY 2009* 11.46%	FY 2010 6.05%	FY 2011 -14.26%	FY 2012 11.53%	FY 2013* -44.93%	FY 2014 -45.49%
FY 2015 -29.80%	FY 2016 85.85%	FY 2017* 28.43%	FY 2018 3.95%	FY 2019 6.84%	FY 2020 56.58%	

Table 3. An observed decrease in the number of complaints received by the HAU during the fiscal year two years before a Presidential election compared to the previous fiscal year.²⁵

* Indicates a Presidential election occurred during the fiscal year

b. Disciplinary Action Complaints Filed with the Merit Systems Protection Board

The Merit Systems Protection Board (“MSPB”) is an independent, quasi-judicial agency of the Executive branch created under the Civil Service Reform Act of 1978.²⁶ One of the MSPB’s functions is to be the initial appellate review for Federal employees who have had personnel actions filed against them. While the MSPB’s jurisdiction is unique and nuanced, it does include Hatch Act violations.²⁷ Federal employees who are found to have violated the Hatch Act may be subject to the following penalties: removal from federal service, reduction in grade, debarment from Federal employment for a period not to exceed 5 years, suspension, reprimand, or a civil penalty not to exceed \$1,000.²⁸

The MSPB process is straightforward. An employee, after receiving a personnel action they disagreed with, may file an appeal with the appropriate MSPB office where an administrative law judge issues an initial decision.²⁹ If the employee is unsatisfied with the judge’s decision, they may petition to

²⁵ *Supra* note 19-21.

²⁶ Pub. L. 95-454.

²⁷ Jurisdiction, Merit Systems Protection Board, <https://www.mspb.gov/About/jurisdiction.htm> (last visited Oct. 25, 2020).

²⁸ Penalties and Relevant Law, Federal Employee Hatch Act Information, U.S. Office of Special Counsel, <https://osc.gov/Services/Pages/HatchAct-Federal.aspx> (last visited Oct. 25, 2020).

²⁹ Jurisdiction, Merit Systems Protection Board, <https://www.mspb.gov/About/jurisdiction.htm> (last visited Oct. 25, 2020).

have their case heard by the MSPB board members. Next, if the employee wishes to appeal the board members' decision, they may file an appeal with the United States Court of Appeals for the Federal Circuit or, in cases involving allegations of discrimination, a U.S. District Court.³⁰

The number of disciplinary action complaints filed with the MSPB each year was collected in the same manner as the New Complaints Received data set, by reviewing the OSC's Annual Reports to Congress for FYs 1980–2019. Table 4 depicts this data set.

FY 1980 6	FY 1981* 5	FY 1982 13	FY 1983 0	FY 1984 5	FY 1985* 6	FY 1986 2
FY 1987 6	FY 1988 11	FY 1989* 5	FY 1990 1	FY 1991 3	FY 1992 13	FY 1993* 24
FY 1994 9	FY 1995 3	FY 1996 3	FY 1997* 3	FY 1998 0	FY 1999 3	FY 2000 4
FY 2001* 8	FY 2002 4	FY 2003 4	FY 2004 7	FY 2005* 11	FY 2006 6	FY 2007 1
FY 2008 3	FY 2009* 10	FY 2010 7	FY 2011 3	FY 2012 0	FY 2013* 2	FY 2014 1
FY 2015 2	FY 2016 3	FY 2017* 0	FY 2018 2	FY 2019 0		

Table 4. The number of disciplinary action complaints filed with the MSPB by the HAU from Fiscal Years 1980–2019.³¹

* Indicates a Presidential election occurred during the fiscal year

After review, the number of disciplinary action complaints filed with the MSPB was not included as an independent variable in the regression analysis. The disciplinary action complaints, while an important metric, are self-contained within the OSC and neither affect nor are they impacted by the behavior of the general population. Additionally, some Hatch Act violations are never prosecuted as they require the employee's supervisor to initiate a personnel action against the employee. A recent example of this phenomenon involves Kellyanne Conway, former counselor to President Trump, who by the OSC's

³⁰ Judicial Review, Merit Systems Protection Board, <https://www.mspb.gov/About/review.htm> (last visited Oct. 25, 2020).

³¹ *Supra* note 20-21.

investigation violated the Hatch Act over fifty times while she held her position.³² Kellyanne Conway was never the subject of disciplinary action for these violations.

Therefore, the number of complaints filed with the MSPB likely had no impact on the population’s political awareness or political involvement as the HAU’s ability to investigate or charge Federal employees with violating the Hatch Act is limited to the OSC’s ability to prosecute. However, there exists the possibility that the lack of disciplinary action may have an impact on the number of complaints reported, but any potential correlation of these two factors is outside the scope of this study.

c. Demographics of Congress

A congressional demographic was chosen as the second independent variable due to the data’s availability and it is one of the better ways to see how the country is politically split. *The Brookings Institute* has, in its *Vital Statistics on Congress* white paper, collated the partisan representation of the Senate and House of Representatives dating back to 1855.³³ By utilizing this white paper it was possible to see the percentage of Congress that was the same party as the sitting President during Presidential election years.

Table 5 shows that percentage.

96th 63%	97th 46%	98th 41%	99th 44%	100th 41%	101st 41%	102nd 49%
103rd 59%	104th 47%	105th 47%	106th 48%	107th 51%	108th 52%	109th 54%
110th 47%	111th 59%	112th 46%	113th 47%	114th 43%	115th 55%	116th 47%

Table 5. The percentage of a Congress that was the sitting President’s party from the 96th Congress in 1980 and to the 116th Congress in 2020.³⁴

³² U.S. Office of Special Counsel, *Report of Prohibited Political Activity Under the Hatch Act for Kellyanne Conway* (2019) (reporting violations ranging from posting partisan political messaging on Twitter to calling Democratic Presidential candidates “woodchips” during an interview).

³³ *Vital Statistics on Congress, Chapter 1: Demographics of Members of Congress*, The Brookings Institute, p. 66–68, (Mar. 4 2019), <https://www.brookings.edu/wp-content/uploads/2019/03/Chpt-1.pdf>.

³⁴ *Id.*

The percentages shown in Table 5 were calculated by taking the number of seats a party held in each of the two chambers of Congress and dividing that number by Congress' total number of seats. For example, during the 96th Congress in 1980 James Carter was President. President Carter was a Democrat. In the 96th Congress, Democrats held sixty-one seats in the Senate and 277 seats in the House of Representatives.³⁵ The 63 percent demographic was calculated by adding the sixty-one Senate seats with the 277 House of Representative seats and dividing the resulting number by the total number of seats in Congress, 535. This can be visualized by the following equation:

$$\text{Percentage of Congress that is the President's Party} = \frac{(X_{Pres. Senate Seats} + X_{Pres. House seats})}{535} \quad (2)$$

As seen in (2), $X_{Pres. Senate Seats}$ represents the number of sitting Senators who are the same party as the current President. Similarly, $X_{Pres. House seats}$ represents the number of sitting Representatives who are the same party as the President.

This method was duplicated for each Congress through the 116th Congress. The resulting percentages, listed in Table 5, were then used as the second independent variable for the regression analysis.³⁶

d. The Polarity of the Electoral College in Presidential Elections

Every four years, Americans cast their votes for President. However, in casting their ballots Americans are not directly voting for a Presidential candidate. Instead, the Constitution requires Americans to vote for their state's electors.³⁷ States then assign electors based on a statewide popular vote.³⁸ The number of electors a state has is determined by population, with each state getting three

³⁵ *Id.* at 66.

³⁶ *Infra* Methodology, II.

³⁷ U.S. Const. art. II, § 1, cl. 3; *Chiafalo v. Washington*, 140 S. Ct. 2316, 2317 (2020).

³⁸ All states, except Maine and Nebraska, utilize a winner-take-all system. Maine and Nebraska use a one-elector-per-district method resulting in candidates receiving an elector for the districts where they won the popular vote.

votes to start. The larger a state’s population, the more electors it is given. These electors, in turn, vote for the Presidential candidate assigned to them by their party. Whichever Presidential candidate receives a majority of the total electoral votes —270 out of 538 — becomes President-Elect.³⁹

Why 538? 538 is the number of Senators, one hundred, plus the number of Representatives in the House, 435, plus Washington D.C.’s three electors; the twenty-third amendment gave Washington D.C. three electoral votes despite it not being represented in Congress.⁴⁰

A state’s electoral votes translate to the number of electors that the state sends to Congress to vote for a Presidential candidate. However, these electors are not bound to vote for the candidate that won their state’s popular vote. Instead, electors merely “pledge” to vote for the candidate.⁴¹ Electors who vote for a candidate other than the candidate that won their state’s popular vote are considered to be “faithless electors”⁴² and may be removed from their position, fined, or both depending on their state.⁴³

While this summary oversimplifies the history of the electoral college, it should be sufficient to provide a general understanding of how American ballots and the electoral college work together in Presidential elections.

Voter and electoral college data, as shown in Table 6, was collected through *270toWin*’s historical timeline of presidential races going back to 1980. The raw elector votes were then used to determine the percentage of the total electoral college votes the winning Presidential candidate received, which can be seen in Table 7. Due to faithless electors, the two main political parties did not have a combined total of 538 electoral votes in the 1988, 2000, 2004, and 2016 Presidential elections.

³⁹ U.S. Const. art. II, § 1, cl. 3; U.S. Const. amend. XII.

⁴⁰ U.S. Const. amend. XXIII.

⁴¹ *Chiafalo*, 140 S. Ct. 2316, 2321-22 (2020).

⁴² *The Oxford English Dictionary*.

⁴³ *Chiafalo*, 140 S. Ct. 2316, 2321-22 (2020).

	1980	1984	1988	1992	1996	2000	2004	2008	2012	2016	2020
Republicans	489	525	426	168	159	271	286	173	206	304	232
Democrats	49	13	111	370	379	266	251	365	332	227	306

Table 6. The number of elector votes each of the two main political received in Presidential elections.⁴⁴

	1980	1984	1988	1992	1996	2000	2004	2008	2012	2016	2020
Republicans	90.9%	97.6%	79.2%	31.2%	29.6%	50.4%	53.2%	32.2%	38.3%	56.5%	43.1%
Democrats	9.1%	2.4%	20.6%	68.8%	70.4%	49.4%	46.7%	67.8%	61.7%	42.2%	56.9%

Table 7. The percentage of elector votes each of the two main political received in Presidential elections.⁴⁵

While *270toWin* did provide the necessary information to chart which candidate won the election, the winner of a Presidential election was not recorded as a data point. That information did not significantly impact the analysis and was not included in the regression model. Therefore, any predictive models produced by this regression analysis do not include which Presidential candidate will receive the necessary elector votes to win the Presidential election. Models produced from this analysis instead can be used to predict the how the electors will vote.

II. Linear and Multiple Regression as a Prediction Model

Regression is a prediction model that can identify a relationship between an observed variable, commonly called an independent variable, e.g., a person’s level of education, and the variable of interest, commonly known as the dependent variable, e.g., a person’s salary. These prediction models, however, require several assumptions: (1) homogeneity of variance, (2) independence of observations, (3) normality, and (4) a linear relationship. Homogeneity of variance can be described as a consistent error value across the entire independent variable range. Independence and normality relate to the ability to collect data without impacting it and that the data is equally distributed across the entire range. The last assumption is that the relationship between the dependent and independent variables is a linear one.

⁴⁴ *Historical Presidential Map Timeline, 270 to Win*, <https://www.270towin.com/historical-presidential-elections/timeline/>.

⁴⁵ *See Id.*

Figure 2 charts the results of a single-variable linear regression analysis: the percent change in complaints received by the HAU in the fiscal year immediately leading up to the Presidential election and the previous year and its correlation with the percentage of electoral votes a Presidential candidate receives. Fiscal Year 1980 was excluded from all regression models because 1980 was the first year the OSC submitted an Annual Report to Congress, and it is impossible to determine the percent change in the complaints for FY 1980 without knowing the number of complaints submitted in FY 1979.

The equation used for this linear regression is:

$$\text{percentage of elector votes} = \beta_0 + (\beta_{\text{Complaints}} \times X_{\text{Complaints}}) \quad (3)$$

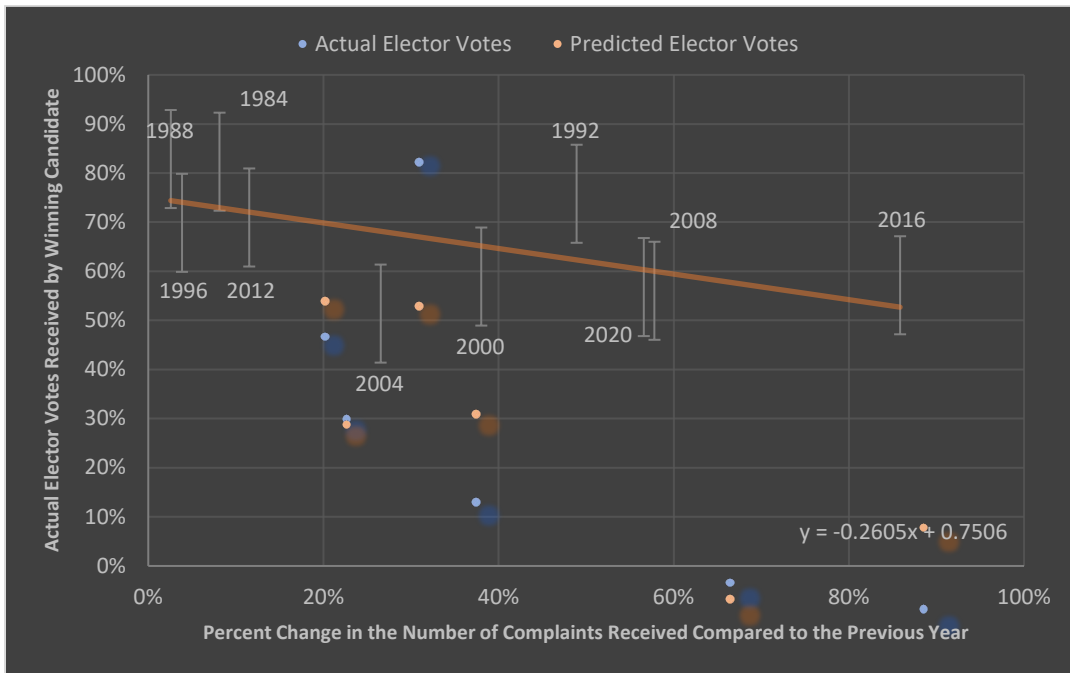


Figure 2. Correlation between the percent change in Hatch Act complaints received from the previous fiscal year and percentage of elector votes the winning Presidential candidate received.

Figure 2 shows the charted results of (3). The slope of the line of best fit in Figure 2 allows for the visualization of the estimated correlation between the percent change in the number of Hatch Act complaints received by the HAU during a fiscal year and the percent of elector votes the winning Presidential candidate receives. As shown in the bottom-right corner of Figure 2, the line of best fit has a slope of negative 0.26. Therefore, for every one percent increase in the percent change of complaints

received by the HAU, there is an associated 0.26 percent decrease in the number of electors the winning Presidential candidate receives.

Regression analyses can use a single independent variable, as seen in Figure 2, or with multiple variables, called Multiple Regression. While a regression model can be created using a single variable, the addition of multiple variables allows for more accurate predictions with tighter margins of error.

A two-variable multiple regression model would be calculated with the following equation:⁴⁶

$$y = \beta_0 + (\beta_1 \times X_1) + (\beta_2 \times X_2) + \epsilon \quad (4)$$

In (4), y represents the dependent variable and can be understood as the percentage of elector votes the winning candidate receives in a Presidential election. β_0 is the “baseline” percentage of electoral votes a Presidential candidate receives assuming all other measured variables were zero, also known as the y-intercept. β_1 and β_2 are the change in y associated with X_1 and X_2 , respectively. ϵ represents the equation’s error value; “error” in this instance does not mean that the equation is flawed. Instead, it refers to the difference between the equation’s predicted value, \hat{y} , and the actual observed value, y .⁴⁷ As such, ϵ is not included when calculating or retroactively determining the predicted value. The equation for finding the predicted value is:

$$\hat{y} = \beta_0 + (\beta_1 \times X_1) + (\beta_2 \times X_2) \quad (5)$$

(5) can be written qualitatively as follows:

$$\text{percentage of elector votes} = \beta_0 + (\beta_{\text{Complaints}} \times X_{\text{Complaints}}) + (\beta_{\text{Congress}} \times X_{\text{Congress}}) \quad (5)(a)$$

In (5)(a), $X_{\text{Complaints}}$ represents the percent change in new complaints filed between the fiscal year immediately preceding a Presidential election and the previous fiscal year. X_{Congress} is the percentage of congress that is the same party as the current President. The question asked under this

⁴⁶ D. James Greiner, *Causal Inference in Civil Rights Litigation*, 122 Harv. L. Rev. 533, 540-41 (2008).

⁴⁷ *Id* at note 25.

model is whether any correlation exists between $X_{Complaints}$ and *percentage of elector votes* and whether the correlation is statistically significant. Statistical significance means that any change in the *percentage of elector votes* that is a result of $X_{Complaints}$ is not due to randomness.

a. Previous Uses of Regression in Presidential Election Predictions

Modern researchers have used regression modeling as a tool in election forecasting since the early 1980s. Alan Lichtman, a professor of History at American University, was one of the first to use pattern analysis and regression to predict which candidate in a Presidential election would receive the higher percentage of the popular vote.⁴⁸ Lichtman's prediction model relies on thirteen qualitative keys, detailed in his book *Keys to the White House*, to develop an index method forecasting model.⁴⁹ His Keys model, utilizing the thirteen keys has been used to determine which Presidential candidate would win the popular vote in every election since 1860.⁵⁰ The Keys model was reduced to the following equation by Professors Armstrong and Cuzán.⁵¹

$$\text{percentage of popular vote going to the incumbent} = 37.3 + (1.77 \times (\text{Keys favoring Incumbent})) \quad (6)$$

Lichtman's Keys model forecasts that the percentage of the popular vote an incumbent will receive—assuming there is only a two-party split—is determined by combining the 37.3 base percentage an incumbent always receives with the result of several favorable keys multiplied by Lichtman's Keys coefficient.⁵² To this day, the Keys model is considered to be one of the more—if not most—accurate model for predicting which Presidential candidate will win the popular vote.

⁴⁸ See generally Keilis-Borok, V. I. & Lichtman, A. J. (1981). "Pattern Recognition Applied to Presidential Elections in the United States, 1860–1980: The Role of Integral Social, Economic, and Political Traits". *Proceedings of the National Academy of Sciences*. 78 (11): 7230–34.

⁴⁹ See generally Alan J. Lichtman, *The Keys to the White House* (1996).

⁵⁰ Armstrong, J. Scott and Cuzán, Alfred G., *Index Methods for Forecasting: An Application to the American Presidential Elections*, FORESIGHT: International Journal of Applied Forecasting, 10, Feb. 2006.

⁵¹ *Id.* at 12.

⁵² *Id.*

ANALYSIS AND RESULTS

I. Explanation of Assumptions

a. Normality in the Observed Independent Variables

As previously stated, one of the required assumptions in a regression analysis is the normality of the variable of interest, the dependent variable. Whether a data set has normality is established by determining whether the data is normally distributed—commonly referred to as having a bell curve distribution. When a study involves the social sciences, such as this one, normality is critical for the creation of an accurate prediction model. A normal distribution can be determined by charting the probability output of the multiple regression equation onto a normal probability plot.⁵³ A normal distribution exists when the normal probability plot has a linear trendline. Figure 3 depicts the normal probability plot for the multiple regression analysis used in this study.

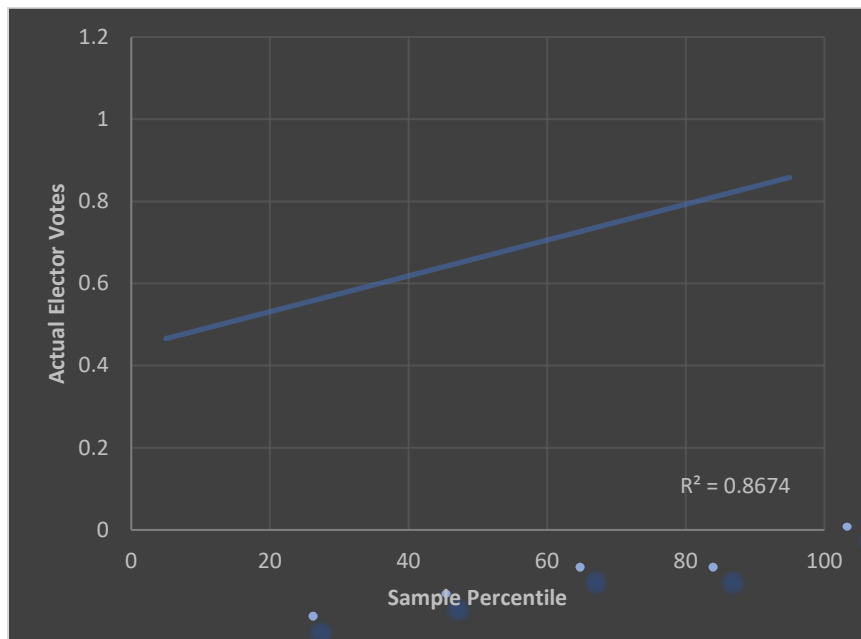


Figure 3. Normal Probability Plot for the multiple regression analysis of the percent change in Hatch Act complaints received,

⁵³ Engineering Statistics Handbook, <https://www.itl.nist.gov/div898/handbook/eda/section3/normprpl.htm> (last visited Oct. 25, 2020).

the polarity of Congress, and the percentage of elector votes the winning Presidential candidate received.

As shown in Figure 3, the normal probability plot of this regression analysis has a linear trendline. The R^2 value, 0.87, represents the regression model's goodness-of-fit. R is the coefficient of multiple correlation and evaluates how well any variance of the dependent variable in a regression model compares to the total variance of the actual data. It is determined with the following equation:⁵⁴

$$R^2 = 1 - \frac{\text{sum squared regression}(SSR)}{\text{total sum of squares}(SST)} \quad (7)$$

(7) can be more easily understood as:

$$R^2 = \frac{\text{variance explained by the model}}{\text{total variance of the actual data}} \quad (7)(a)$$

Figure 3 depicts an R^2 value of 0.87, calculated using (7). Meaning, 87 percent of the variance in the y value (percentage of elector votes the winning Presidential candidate received) is accounted for by the x values (percent change in Hatch Act complaints received from the previous fiscal year and the polarity of Congress). This relatively high R^2 value combined with Figure 3 indicates that there is normality in the data.

b. Linear Line of Best Fit

The correlation between the number of complaints filed in a fiscal year and the number of electoral votes the winning Presidential candidate receives is a linear one. This correlation was determined even though the winning Presidential candidate cannot receive less than fifty percent of the electoral college. From a mathematics standpoint, the line of best fit becomes an asymptote as it approaches the fifty percent mark of the electoral college—creating a lower limit of 270 electoral votes, or 50.03 percent.

⁵⁴ Statistics Dictionary, <https://stattrek.com/statistics/dictionary.aspx?definition=coefficient-of-multiple-determination> (last visited Oct. 25, 2020).

To account for this asymptote, the regression analysis' line of best fit would need to be a quadratic non-linear trendline. However, this is not necessary as the differences between the model's linear trendline and a theoretical quadratic non-linear trendline are likely minimal—especially when moving further away from the lower limit of fifty percent. Further, it is not possible to determine whether any differences between the two trendlines would be statistically significant with the current data. As more Presidential elections occur and additional data is added to the model, a quadratic non-linear trendline should emerge. Allowing for—potentially—more accurate predictions.

This non-linear trendline, if actualized, could allow for a tighter fit when the winning Presidential candidate receives a percentage of the electoral college that nears fifty percent. However, as previously mentioned, a non-linear trendline is not necessary to observe the correlation between the number of Hatch Act complaints reported to the HAU during the fiscal year leading up to a Presidential election and the percentage of the electoral college that the winning Presidential candidate receives.

II. Using Multiple Regression to Predict Electoral College Results

Regression models are, generally, only predictive when the values used fall within the model's range of measured results. Fortunately, the measured values of the percent change in Hatch Act Complaints and the percentage of Congress that is the current President's party cover an expansive range. The percent change in the number of Hatch Act complaints reported to the HAU ranges from 2.24 percent, during the 1984 Presidential election, to 85.85 percent, during the 2016 Presidential election.⁵⁵ The percentage of Congress that is the current President's party is not at issue because 47 percent of the 116th Congress is the same party as the current President and that value falls within the observed Congressional

⁵⁵ 2016 OSC Annual Report to Congress, p. 40-43; 1984 OSC Annual Report to Congress, p. 21.

party demographics range.⁵⁶ The percent change in the number of Hatch Act complaints is also not at issue as the FY 2020 percent change is well within the established range.

Retroactively applying the regression model to past Presidential elections, seen in Table 7, shows the model’s accuracy. In the past ten Presidential elections, the regression model was within ten percent of the electoral college’s actual vote breakdown eighty percent of the time. Ten percent was chosen as the cutoff mark because it equates to one swing state. The two mispredictions were the Presidential elections of 1984, Reagan (R) v. Mondale (D), and 2008, McCain (R) v. Obama (D). This result, considering the small sample size, indicates that there is likely a statistically significant correlation between the number of Hatch Act complaints reported to the HAU in the fiscal year leading up to an election and the number of electors the winning Presidential candidate received during the election.

	Predicted Percentage of the Electoral College	Actual Percentage of the Electoral College the Candidate Received
1980	--	90.9%
1984	82.31%	97.58%
1988	82.87%	79.18%
1992	75.79%	68.77%
1996	69.88%	70.45%
2000	58.93%	50.37% ⁵⁷
2004	51.40%	53.16%
2008	56.04%	67.84%
2012	70.96%	61.71%
2016	57.15%	56.51%
2020	56.79%	56.88%

⁵⁶ *Vital Statistics on Congress, Chapter 1: Demographics of Members of Congress*, The Brookings Institute, p. 66–68, (Mar. 4, 2019), <https://www.brookings.edu/wp-content/uploads/2019/03/Chpt-1.pdf>.

⁵⁷ Had Al Gore won Florida, he would have won the Presidential election with 54.09% of the electoral vote. In both instances, the model’s prediction was within ten percent of the actual outcome.

Table 7. Contrasting the actual electoral votes the winning Presidential candidate received with the predicted electoral votes the candidate would receive according to the regression model.⁵⁸

While the size of the data set hinders the model’s confidence bounds, it does not take away from the fact that the results are statistically significant—despite the confidence levels being imprecise. Over time, as additional data points are added, the model will evolve to allow for greater precision and become a more accurate predictor of electoral college results in Presidential elections.

a. Applying the Regression Model to the 2020 Presidential Election

The 2020 Presidential election was expected to have the highest voter turnout in over a century—much of which occurred during the early voting periods.⁵⁹ Given this exponential increase, many pollsters had to recalibrate their projections. Fortunately, this study’s regression model does not rely on voter turnout as a determinative factor, and, therefore, could be used as a predictive tool without modification. Using the result of the equation discussed in Section II of the Methodology portion of this paper;⁶⁰ it was possible to determine the model’s predicted value, \hat{y} , by inputting the FY 2020 data into (5). Specifically, inputting 56.58 percent for $X_{Complaints}$ and 46.73 percent for $X_{Congress}$.

This produced a predictive model where the winning Presidential candidate of the 2020 election would receive 56.79 percent of the elector votes or 305.53 electoral votes. This percentage is a result of evaluating (5), discussed in Section II of the Methodology portion of this paper, with the FY 2020 data.⁶¹

This result represents what the *percentage of elector votes* could be after accounting for all variables in the regression analysis. As seen in Table 8. Standard error represents the equation’s estimated precision of the analysis’ prediction. A smaller standard error translates to a more precise estimate. As

⁵⁸ *Historical Presidential Map Timeline, 270 to Win*, <https://www.270towin.com/historical-presidential-elections/timeline/>.

⁵⁹ Kevin Schaul et. al., *2020 Turnout Is On Pace To Break Century-Old Records*, Washington Post, (Nov. 5, 2020), <https://www.washingtonpost.com/graphics/2020/elections/voter-turnout/>.

⁶⁰ *Supra* Methodology, II.

⁶¹ *Id.*

more data points are added to the model, the standard error values for each of the variables will likely decrease. The predicted range, or confidence bounds, were not calculated because the small data set the model is based on gives in an imprecise range of predicted results. The numbers displayed in Table 7 represent the mean result of the model's equations.

	β Coefficients	Standard Error	P-Value
β_0 Intercept	1.805	0.364	0.002
Percent Change in Hatch Act Complaints	-0.256	0.109	0.05
Congress Percentage that is the President's Party	-2.336	0.801	0.02

Table 8. β Coefficients, P-Value, and Standard Error values for the study's multiple regression analysis.

Despite the confidence bounds being imprecise, the results of this regression model are statistically significant. As shown in Table 8, the largest P-Value of any variable is 0.05. The P-Value represents a given result's level of significance and is used to rule out the "null hypothesis" when evaluating the results of a regression model. The "null hypothesis" tests whether there is no difference between certain characteristics of a population.⁶² The lower the P-Value, the higher probability that any observed change in the dependent variable is not due to chance, and, therefore, a rejection of the null hypothesis. Scientific and academic communities generally accept any P-Value equal to or less than 0.05 to be statistically significant. This is because a P-Value of 0.05 means it can be said with 95 percent certainty that a correlation exists between the variables.

b. The Model's Inability to Predict the Winning Presidential Candidate

The multiple regression model created in this study cannot predict which candidate in a Presidential election will win the election. This limitation was intentional. This study's hypothesis of Hatch Act complaints being a political canary⁶³ for the electorate's level of political engagement did not focus

⁶² *The Oxford English Dictionary*.

⁶³ A play on words stemming from the idiom "canary in a coal mine." Coal miners used a canary, a species of bird, to aid them in determining the safety of mining conditions. Miners used canaries because a canary would show symptoms of the harmful conditions early on, indicating to the miners the potential danger of continuing.

on which political party voters engaged with. The study, and the resulting analysis, focused instead on the correlation between the number of Hatch Act complaints received by the HAU in a fiscal year and the closeness of a Presidential election. Thereby measuring how the Hatch Act can be used to show the political divisiveness within the country.

This hypothesis was supported by the general trend that when a Presidential race was close, the HAU saw, in the year leading up to the election, an uptick in the number of Hatch Act complaints it received regardless of who the candidates were.⁶⁴

III. Meeting Enforcement Demands During an Election Year: Verification Through Regression

Each year, the HAU manages dozens of press inquiries, responds to hundreds of complaints, and issues thousands of opinions. Due to this workload, the HAU is, generally, unable to respond to every inquiry before the end of the fiscal year. Table 9 shows how many Hatch Act complaints remained in the HAU’s queue at the end of a fiscal year. The HAU processes and reviews these pending complaints during the next fiscal year. At no point, to this study’s knowledge, does the HAU leave a complaint unprocessed indefinitely.

FY 1980 --	FY 1981* 91	FY 1982 80	FY 1983 63	FY 1984 25	FY 1985* 21	FY 1986 37
FY 1987 --	FY 1988 --	FY 1989* --	FY 1990 --	FY 1991 --	FY 1992 --	FY 1993* --
FY 1994 --	FY 1995 --	FY 1996 --	FY 1997* --	FY 1998 --	FY 1999 --	FY 2000 --
FY 2001* --	FY 2002 264	FY 2003 254	FY 2004 146	FY 2005* 79	FY 2006 112	FY 2007 142
FY 2008 323	FY 2009* 430	FY 2010 422	FY 2011 233	FY 2012 286	FY 2013* 96	FY 2014 65
FY 2015 40	FY 2016 139	FY 2017* 456	FY 2018 133	FY 2019 132	FY 2020 323	

Table 9. The number of Hatch Act complaints pending at the end of each fiscal year.⁶⁵

⁶⁴ Telephone interview with Ana Galindo-Marrone, Chief, Hatch Act Unit, OSC. (Mar. 30, 2020).

⁶⁵ *Supra* note 19-21.

* Indicates a Presidential election occurred during the fiscal year

While the HAU does process these complaints, it is sometimes not until months after the fiscal year has ended. Potentially allowing for the Federal employee to continue violating the Hatch Act. The regression model developed in this study could be used to justify increasing the HAU of the OSC's budget for the two fiscal years leading up to a Presidential election.

At the end of FY 2016, there was a 247 percent spike in the number of pending complaints when compared to FY 2015. At the end of FY 2020, there was a 145 percent spike. These spikes could have been avoided if the HAU had been given additional funding during fiscal years leading up to the Presidential election to account for the predicted—and observed—increase in complaints.

One solution for avoiding future spikes could be for the HAU to receive a budgetary increase for the fiscal years immediately preceding and during a Presidential election to recruit detail appointments from the ethics offices of other Federal agencies. These detail appointments could work similarly to how the Executive Office of the President handles the detail appointments of ethics specialists: six-month non-revokable detail paid for by the office hosting the detailed employee. The temporary increase in the HAU's budget would allow it to host these detail appointments on an as-needed basis. The detailed employees could prioritize working through the queue of pending complaints to ensure that as few complaints as possible are left unresolved at the end of the fiscal year.

A secondary solution would be to permanently increase the HAU's budget based on the average percent change of complaints reported during the fiscal year leading up to an election. This study is not advocating for a blanket increase in the HAU's yearly budget by roughly thirty-one percent. Instead, this study suggests increasing the number of full-time employees working in the HAU by that amount. Assuming the HAU currently has twelve full-time employees, a thirty-one percent increase would result in the HAU receiving funding for three to four additional full-time employees.

These additional employees would allow for the HAU to significantly reduce the number of complaints still pending at the end of the fiscal year. The benefits of which have already been previously discussed. More so, these additional full-time employees would likely increase the HAU's ability to investigate alleged violations as well as take the necessary corrective or disciplinary action against violators.

CONCLUSION

The results of this model demonstrate, with statistical significance, that this study's hypothesis was correct: the number of complaints the HAU receives during the fiscal year immediately preceding a Presidential election is an early indicator—a canary—of the closeness of that Presidential election. This was demonstrated through the regression model's predictions of the past ten Presidential elections ($p \leq 0.05$). While the accuracy of the model's predictions may be of interest to pollsters, the model has additional practical uses as a tool for predicting the enforcement needs of the HAU and the OSC. The statistically significant correlation this study discovered gives weight to increasing the HAU's funding to meet the anticipated increase in enforcement demands during Presidential election years.