A Statistical, Historical, and Political Approach to Analyzing Maine's Election Data

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The purpose of this project was to analyze the recently digitized Maine state referendum results from a statistical, historical, and political perspective. Working in collaboration with Professor O'Brien and Gillian King, we compiled and modeled referendum results dating back to 1944. As for the statistical approach, I modeled the geographic distributions of town voting results using the statistical programming software "R Studio." In R studio, I created an interactive web application called a "shiny app", which allows users to select a year and question number and the map will automatically update with the corresponding information. The app lets users hover over the towns in Maine to identify the town name, as well as the proportion of yes votes for the selected year and question. Finally, the app allows users to download the data set used to create the map, so that future researchers can use our data for various other models. A link to the shiny app with a subset of data from 2012-2017 is available at the following link. In addition to this programming work, I also was introduced to web development by creating a github pages site to organize my research. An unfinished version of the website is available at the following link. While unfinished, Professor O'Brien intends to use the structure of the website to organize his final results for his research on Maine referendums. These two resources, along with the work done to make the referendum results available as excel documents, have laid the groundwork for an open-source database that can be used by future researchers and students.

As for the historical and political approach, I consulted literature on Maine's political and electoral history. The first book I read was *Maine Politics and Government* by Kenneth Palmer. Palmer's discussion of the suburbanization of southern Maine in the late 20th and early 21st centuries provided important insight into the disparities in voting patterns between towns in Maine's two congressional districts. I then read *The Lobster Coast: Rebels, Rusticators, and the Struggle for a Forgotten Frontier* by Colin Woodard. While much of this book is a story-like narrative dedicated to the relationship between Maine's ecology and culture, Woodard also makes some valuable insights into recent demographic changes in the state. Woodard explains that the increase in property taxes in southern and midcoast Maine has forced long-time homeowners to move away from the southern coast, again alluding to the visible discrepancy in voting behavior between towns in northern and southern Maine. Lastly, I read Professor Potholm's book *This Splendid Game: Maine Campaigns and Elections, 1940-2002*. Potholm mainly focuses on the influence of campaigns in Maine elections, but he also discusses the electoral significance of Franco-Americans along with the history of Maine referendums. Potholm characterizes Franco-Americans as the "most important swing vote in the Pine Tree State", allowing us to contextualize the voting behavior of towns with large Franco-American populations. In addition, Potholm's discussion of the 1980 referendum of the Maine Yankee nuclear plant, and how it popularized contentious referendum ballots, aided our analysis of referendum results in the 20th and 21st centuries. I also interviewed professor Potholm as part of this project, in which he expanded on the impact of campaigns and the significance of the 1980 referendum.

From this project, I gained invaluable coding experience in R studio, as well as important introductory skills in web development. As a computer science minor, this summer was critical to my development of practical coding skills. Moreover, as a Government and Legal studies major, this project promoted intellectual development as I gained a vastly improved understanding of Maine's political landscape and history. This project was a fantastic experience, and I want to thank Professor O'Brien, Bowdoin college, and the sponsors of this fellowship for giving me the opportunity to undertake this meaningful and personally fulfilling work.