PROBABILITY OF REFORMING AMERICA’S HEALTH CARE SYSTEM:

REFORM INSPIRED BY THE UNITED KINGDOM AND SWEDEN

Project Approved:

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ABSTRACT

Health care is essential for a healthy, long life, and establishing a health care system is an essential governmental task. While some countries, like Sweden and the United Kingdom, have created universal health care systems, the United States maintains a complicated public-private health system. Bayes Theorem suggests an overwhelming percent of Americans would need to support a universal system before the United States’ Senate passed universal care legislation. Two Secure State Republicans, two Secure State Democrats, one Swing State Republican, and one Swing State Democrat case applications during the summer 2017 Senate votes on health reform support the Bayes Theorem findings.
Introduction

Health care reform is a widely discussed, key issue for politicians. Talk of health care reform was a feature in the 2016 United States presidential election because of rhetoric calling for “repeal and replace” of the Affordable Care Act (ACA). However, the United States is not alone in its focus on health care; rising medical expenses and questions concerning the efficiency of health care systems have made health care policy a talking point in almost all major-developed countries. Despite health care’s prominence in the political climate, the political science field has left several holes in health-care-policy research.

I address the question: how do governmental structures, institutions, and societal factors at the time health care policies are made affect the type of healthcare system formed? The variations and effectiveness in welfare health care systems versus privatized health care systems has been under-researched in political science. Additionally, the current saliency of health care reform in America elevates the health care formation question. A greater understanding of institutional characteristics that enable successful welfare-state health care is developed within the paper, so possible prescriptions can be made for how the United States can overcome institutional roadblocks and adopt health care policies that preserve America’s free-market principles while providing all Americans access to truly affordable, quality health care.

I use background information from the United Kingdom of Great Britain and Northern Ireland and Sweden to compare the United States’ health care system with the welfare-based health care systems of Britain and Sweden. Bayes Theorem is used to quantify the potential of the United States’ Senate passing health care legislation that is similar to Sweden’s or the United Kingdom’s universal systems. Bayes Theorem is applied to the United States Senate using polling data asking if Americans view health care coverage as a federal responsibility.
This paper proceeds as follows: first, health care policy decisions are reviewed through institutional/theoretical approaches and case studies. Next, the historical foundations of the United States’, the United Kingdom’s, and Sweden’s health care policies are presented. Following the historical framework, Bayes Theorem is employed. Finally, I explain my examination of the outcomes from the Bayes Theorem’s solutions, apply the Bayes Theorem findings to case studies of six senators running for re-election in 2018, and recommend how the United States can potentially improve its health care system.

**Literature Review**

Much of the current literature concerning health care policy can be separated into two categories: institutional approaches that present a theoretical argument and single or comparative case studies explaining health care systems, which often end with a recommendation or empirical assertion.

**Institutional/Theoretical Approaches**

One theoretical argument proposed asserts policy changes in quality assurance systems are the result of complex interactions between major events, public discourses, and governance structures.\(^1\) Kodate makes this argument based on a study of institutions’ impact on government responsiveness and policy changes regarding the universal health care systems of England, Sweden, and Japan. He describes how the countries’ systems formed and how the systems operate today. Using this information, Kodate examines each countries’ quality assurance system by analyzing print media for patterns of issue saliency, occurrence of prominent events, and level of government criticism. A possible issue with Kodate’s study is the use of print media as his main research tool because of the potential for media bias, pressure from authorities that could limit policy criticism, or an unconcerned population that keeps

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journalists from reporting on health policies. Kodate concludes that constant high-pressure issue saliency, prominent events, and the government balancing the general public’s desires and medical professionals’ interests are crucial elements in the development of quality assurance systems. Kodate’s work provides a strong conclusion for policy decisions in England, Sweden, and Japan, but does not explain how the influences on these countries’ decision-making apply outside of universal health care systems.

Jacob S. Hacker addresses some of the differences between welfare and non-welfare-state health care reform. Hacker’s study focused on recent health care reform progress in Britain, Canada, Germany, the Netherlands, and the United States to explore comparative health policy analysis and cross-national research on the welfare-state. He argues that policy development has been “reform without change and change without reform,” and he supports his claim with cross-national statistics on health spending, medical financing characteristics, and detailed investigations into each country’s recent policy deployments. Hacker concludes that change and reform vary depending on whether a country’s political systems are veto-free, which causes a general decline in the state’s financing role; or veto-ridden, which causes a general overall increase in financing but has not caused the predicted spending reductions. Hacker also notes whether medical systems are hierarchical or decentralized contributes to the variance in reforms. Hacker’s findings lack an in-depth comparison between health care reforms in a welfare-state and in the United States, which leaves a damaging gap in research because of the current push to reform the United States’ health care system.

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3 Ibid., 693
4 Ibid., 722
5 Ibid., 722
Other scholars, such as Sven Steinmo, study the development of the welfare-state from a perspective outside of health care. Steinmo researched tax policy formation in Sweden, Britain, and America and concluded that changing political institutions unique to each country account for changes in their tax policies, which can also be seen in health care policy formation.6

Scholars, such as Ezekiel J. Emanuel and Lawrence R Jacobs, focus on institutional approaches within one country. Emanuel explains the history and problems of the United States’ health care system that led to the ACA.7 Emanuel analyzes the changes that have already occurred and potentially will occur because of the ACA. He makes six predictions for what is likely to happen in the next ten years because of legislators, medical professionals, insurance companies, and patients’ responses to the ACA. Similarly, Jacobs demonstrates it is “the political processes that created the ACA,” and he predicts that health insurance will become a social right, authority over medical decisions will become part of a collective decision-making process, and have more inclusive representation instead of narrow interest-group representation.8 However, Emanuel’s and Jacobs’ predictions are likely to not come to fruition because of recent reform proposals. I attempt to make sense of and revise their predictions within the United States’ changing health care policy context.

Case Studies

While scholars have made strong theoretic assertions related to health care, case studies are more common for health care policy research. Scholars often focus exclusively on one country’s health care system, such as Christy F. Chaplin, Larry E. Carter, and James T. LaPlant, who study health care
policies in the United States. Chaplin compares the American Medical Association’s and the Health Insurance Association of America’s influence on the American health care system to illustrate how America’s public-private path dependent insurance-company model formed.\(^9\) Carter and LaPlant take a different approach to the American health care system. They examine states’ roles in policy adoption to “determine those states that are pioneers-or innovators” based on the diffusion theory process regarding “the role of the problem environment, population density, political factors, and regional influences....”\(^10\) Carter and LaPlant’s studies support that ideology is significant to health care reform adoption, and liberalism strongly correlated with early adoption.\(^11\)

Comparative case studies are another common method for health policy research. Michael I. Harrison, Sue E. Odom, Michael E. Deis, and Robert Cox all researched elements of welfare-state health care policy in relation to other state’s policies. Each scholar included Sweden as one of the welfare-state countries. Harrison concluded that policy implementation in the United Kingdom, Sweden, and the Netherlands depended on “power distributions in the health and political systems, accepted decision process in health and politics, previous policies, and established political values.”\(^12\) Harrison is not alone in the importance he places on established political values. Odom and Deis credit the Nordic model’s success on the population’s path dependency, which is the idea “that once a country or region has started down a track, the costs of reversal are very high. There will be other choice points, but the


\(^11\) Ibid., 23

entrenchments of certain institutional arrangements obstruct an easy reversal of the initial choice.”

Odom and Deis further state, “Although the model has a high tax burden, the citizens appreciate the health care services provided by [Denmark and Sweden] and are reluctant to consider changes to the system.” Cox also explains the idea of path dependency in Scandinavian countries as important because “people believe in the model and...shape their [policy] goals on those beliefs.”

Summary

Institutional approaches and case studies help scholars understand the health care systems of differing countries. Institutional approaches have resulted in several predictions for the future of America’s health care system, and case studies have given valuable insight into the operational structures affecting health care policies. This paper focuses on the institutions, historical factors, and political cultures of the United Kingdom and Sweden that fostered health care policies that contain costs and provide quality universal care. By using Game Theory principles, I go beyond tradition institutional and case study approaches to predict the probability of universal health care legislation passing in the Senate. In my conclusion, I compare features of Britain’s and Sweden’s systems to the United States to find areas that British and Swedish policy approaches can improve America’s health care system.

Game Model

Background

15 Ibid. 353.
Prior to developing the United States’ health care legislation explanation, this paper draws on lessons from British and Swedish political institutions that were present when the United Kingdom and Sweden created their health care systems. The paper then compares the institutional features of the United Kingdom and Sweden with the United States. Each country has unique political institutions with differing actors, affecting each country’s relevant health care legislation influencers.

The United Kingdom

The United Kingdom is a constitutional monarchy; the monarch largely serves as the head of state with limited governing authority. The United Kingdom governing authority is mostly concentrated in its parliamentary system that has two houses: the House of Commons who are democratically elected and the House of Lords who are largely appointed based on heredity.\(^\text{17}\) The parliamentary system is run by a prime minister who is the leader of the majority party in the House of Commons, a cabinet of senior government officials, and ministers appointed by the prime minister.\(^\text{18}\) The ministers are chosen from members of the House of Commons and House of Lords. Ministers are responsible for the actions of their designated departments. The key government players in England’s health care policy decisions are Parliament, the Department of Health, the Secretary of State for Health, National Health Service (NHS), and the Monitor (who regulates the economics of “public and private providers and can intervene if performance deteriorates significantly”).\(^\text{19}\) NHS decisions for Northern Ireland, Scotland, and Wales are made by “the Northern Ireland Assembly, the Scottish Government and the Welsh Assembly


Government respectively.” In addition to the governmental actors, “organized medical professionals, particularly the British Medical Association (BMA), [played] a privileged role in formulating and implementing health policy...” The majority of British people are insured through NHS, only about 11 percent of people purchased supplementary private coverage as of January 2016.

Sweden

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Wales’ health care system known as National Health Service of Wales, and it is publically funded providing healthcare to Wales’ citizens. Scotland health care system is known as National Health Service Scotland, and it is made of 14 regional boards that are responsible for the protection and improvement of their population’s health and delivery of services. Northern Ireland’s health care system operates under the name Health and Social Care Services, and it provides services through 6 health trusts, general practices, Health and Social Care Board, and other health and social care service agencies.


23 Ibid. 54.
Sweden has three levels of government: national, regional, and local. The head of Sweden’s government is the prime minister that is appointed by the Riksdag. The prime minister is assisted by 23 ministers that are assigned to specific government departments. Legislative power is concentrated at the national level in the Riksdag, or Swedish parliament, that is elected by citizens over the age of 18. The Riksdag is assisted by the Government Offices (ministries, central government agencies, and public administrations).

“All three levels of Swedish government are involved in the health care system. At the national level, the Ministry of Health and Social Affairs is responsible for overall health and health care policy, working in concert with eight national government agencies. At the regional level, 12 county councils and nine regional bodies (regions) are responsible for financing and delivering health services to their citizens. At the local level, 290 municipalities are responsible care of the elderly and the disabled. The local and regional authorities are represented by the Swedish Association of Local Authorities and Regions (SALAR)."

The majority of Swedish people receive health insurance from the national health care system.
The United States

The United States’ federal government is divided into three branches: legislative, judicial, and executive. The leader of the United States government is the president in the executive branch, but health care policies/laws are made by Congress in the legislative branch. Health care legislation becomes law after it is passed in the Senate and the House then signed into law by the president. However the federal government is not alone in maintaining America’s health care system, state and local governments also shape policies, finance and deliver health care, and run health care programs. In addition to federal, state, and local government, the United States’ health care system is unique because of the complex relationship between the publicly and privately funded insurance systems. As of January 2016, approximately 66 percent of the United States’ population has private insurance from an

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28 Ibid. 157.
employer or individually obtained. Due to the complicated public-private insurance system; interest groups, lobbyists, and professional medical associations, such as the American Medical Association and the Health Insurance Association of America, are also players because they influence policymakers’ decisions.

### Institutional Characteristics

#### The United Kingdom

The United Kingdom’s health care system is defined by Jacob S. Hacker as veto-free and hierarchical, which means that “legislative and executive powers are fused...” and the government plays a significant role in financing and regulating medical care. The NHS operates the health care system

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31 Chapin (October 2010).
from general tax revenue, which strengthens the centralized/hierarchical nature of health care policies.\textsuperscript{34}

The United Kingdom’s NHS “was established in 1948 and is the main health care system available to all four countries [that make up the United Kingdom].”\textsuperscript{35} NHS “provides preventive medicine, primary care and hospital services to all those ‘ordinarily resident’ in England” and the NHS in England “remains free at point of use for all UK residents.”\textsuperscript{36} The United Kingdom’s veto-free and centralized decision-making structure unsurprisingly enabled the United Kingdom to establish a nationalized/universal health care system. The United Kingdom’s Prime Minister and majority of Parliament were part of the Labour Party at the time of NHS’s creation. According the Labour Party’s 1945 election manifesto, the Labour Party promised to “put the community first and the sectional interests of private business after.”\textsuperscript{37} Putting the community first meant ensuring jobs, good food, good homes, and health services that the Labour Party felt should be available for free to all.\textsuperscript{38} NHS’s creation during rebuilding after World War II also influenced the core principles of NHS and Parliament’s ability to establish the system. NHS was established in 1948 based on the principles that health care meets the

\textsuperscript{34} Mossialos, Wenzl, Osborn, and Sarnak (January 2016). 6. General tax revenue for the National Health Service in this context refers specifically to England; Northern Ireland, Scotland, and Wales are not included in the article’s research.


\textsuperscript{38} Ibid.
needs of everyone, it is free at the point of delivery, and it is based on clinical need not ability to pay.  

As noted by Timothy Hicks,

“The immediate post-war period, extending perhaps as far as the first ten years, constituted the most fertile environment for "critical junctures" allowing major health reforms. New political realities and the need for rebuilding of all sorts made policy breaks from the past possible in a way that is unlikely to have been the case in the more settled period that followed.”

The Labour Party’s concentrated authority and nation’s post-war sentiments fostered a legislative environment that made NHS possible.

**Sweden**

Sweden’s health care system is also characterized as veto-free and hierarchical. Sweden’s executive government belonging to the same majority party (Social Democratic) in its parliamentary system allowed the executive government to create health care policies with a low probability of being vetoed by representatives in the Riksdag (parliament). The national health care system is mainly funded by general tax revenue from county councils, but some national tax revenue is also used to fund health care.

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40 Hicks (January 2013). 211.

41 Ibid. 710.


Sweden's first large health care legislation was the National Health Insurance Act passed in 1946 and implemented in 1955. The act passed with relative ease because of the Social Democrats majority control of the government. The Act created a compulsory insurance system that maintained fee-for-service care with fixed limits on care charges, but state-provided insurance reimbursed patients a maximum of 75 percent of costs up to a fixed level.

Sweden's current system is the result of the 1982 Health and Medical Services Act. The Act requires county councils and municipalities ensure all living in Sweden can receive quality health care. The regional and local authorities are represented by the Swedish Association of Local Authorities and Regions (SALAR), which serves as an employers’ organization and a representative organization for local governments to create better self-government conditions and develop the welfare system for local and regional authorities. The system is funded by proportional income taxes levied by county councils and municipalities.

Health care reforms are largely proposed at the local level then refined and voted on by the Riksdag before becoming law. At the time the Act was passed, the Social Democratic Party held the majority in the Riksdag. Sweden's Social Democratic Party's fundamental values are freedom, equality, and solidarity, which have influenced party members' votes on health care policies. The Social

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45 Hicks (January 2013). 219.
46 Ibid. 217.
47 Ibid. 220.
50 Anell, Glanngard, and Merkur (2012). 49.
51 Ibid., 103.
Democratic Party’s values that most apply to health care policies are equality and solidarity. Equality in health care for the party means that “everyone must have the right to good quality and sufficient health care, regardless of his/her economic resources.”\textsuperscript{53} The importance of solidarity in health care for the party is reflected in Sweden’s basic health care principle of need and solidarity. Solidarity is also emphasized in having a tax-funded system because of the party’s idea that “we are at one and the same time donors and recipients” of the system.\textsuperscript{54} The Riksdag passing the 1982 Health and Medical Service Act was predictable because of the Social Democratic Party’s values. The Social Democratic Party leading Sweden’s government for a majority of the time since the Party’s first victory in 1932\textsuperscript{55} makes it predictable that the Social Democratic Party will continue to be a leading force in Swedish institutions. Future Swedish health care reforms will likely continue to strengthen the welfare state and re-enforce the Social Democratic Party’s values.

The United States

The United States’ decentralized decision making and financing of health care creates “the most veto-point-ridden polity of any rich democracy.”\textsuperscript{56} The United States’ has a multitude of veto-points because of its federal and separation of powers government structure.\textsuperscript{57} Congress can pass health care legislation that the president can sign or veto. If the president vetoes a bill, the bill may die or with a two-thirds majority Congress can override the president’s veto and establish new health care laws. In addition to federal veto-points, state governments also act as veto-points because of states’ ability to decide how to implement welfare, run benefits programs, and distribute aid. Health care reforms are also subject to more informal veto-points in the United States than in Sweden and the United Kingdom.

\textsuperscript{53} Ibid. 30.
\textsuperscript{54} Ibid. 31.
\textsuperscript{56} Hacker (2004). 697.
\textsuperscript{57} Ibid. 711.
Previously mentioned interest groups and lobbyists have greater influence on policymakers’ decisions in the United States because of the higher electoral costs politicians face and interest groups help cover, which can influence policymakers to vote against universal health care initiatives that a financing interest group opposes. Medicare and Medicaid are the publicly funded health care programs in the United States. Medicare is funded by payroll taxes, premiums, and federal general revenues; and Medicaid is funded by taxes and is state-run within broad federal guidelines.58

Lessons from the United Kingdom and Sweden

The United Kingdom’s and Sweden’s veto-free systems, homogenous political party majority in the government’s major institutions, and the ending of World War II as an inflection point in the political climate helped the countries implement universal health care. Based on the United Kingdom’s and Sweden’s path to universal coverage and overcoming veto-points, America’s inflection points and veto structures require examination. The United Kingdom’s and Sweden’s backgrounds are used to develop the probability of the United States establishing a universal health care system. I hypothesize the United States Senate has a greater probability of passing universal coverage legislation when:

- an inflection point in the United States’ political climate increases demand for federally-instituted health care
- an overwhelming (more than 75 percent) number of Americans view health care as a federal responsibility

While the ideal game would look at each American veto-point, the Senate is the focus of this game’s structure.

Game Structure

The game will test the change in members of the United States’ Senate’s probability of voting in support of further universalization of the health care system. Bayes Theorem finds the probability senators might support increasing the government’s responsibility in ensuring health care coverage is provided to all Americans based on national poll data.

Assigned Values

Previous probability (A) for supporting increased government involvement in providing health care is based on how a senator voted on December 24, 2009 for HR 3590: Patient Protection and Affordable Care Act. While previous probability is not from exact poll results, senator’s previous probabilities are a measure of senators’ general propensity to support the Affordable Care Act based on the senator’s ideological, party connections. Additionally, values are assigned to senators versus using variable research for simplicity and rank ordering. The prior probabilities are not meant to measure exact senatorial preferences, but the probabilities demonstrate the relative values of senators with different beliefs and constituencies. The use of such rank ordering is often used in game theoretic research.59 The outside influence (B) affecting previous probability (A) is polling results from a national survey that determined the percentage of Americans who favor increasing the government’s responsibility in health care coverage.

The first application will examine a general probability that any senator, regardless of their individual incentives, will change their support for universal coverage. A senator that voted for the Affordable Care Act is assigned a previous probability (A) of .40 because the Affordable Care Act moved toward establishing universal insurance coverage.60 A senator that voted against the Affordable


Care Act is assigned a previous probability (A) of .20 because they are less likely to support a universal system like the Affordable Care Act shifted American health care toward. Outside influence (B) for supporting health care as the responsibility of the federal government in November 2009 is .47 and in November 2016 is .52.61

General Solution – 2009 Probability that a senator will support universal health care given national support that health care is the responsibility of the federal government

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P (A | B) = \frac{P (B | A) \times P (A)}{P (B | A) \times P (A) + P (B | \neg A) \times P (\neg A)}
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For: \[P (A | B) = \frac{.47 \times .40}{.47 \times .40 + .53 \times .60} = .37\]
Against: \[P (A | B) = \frac{.47 \times .20}{.47 \times .20 + .53 \times .80} = .18\]

- The outcome for a senator that voted “for” the Affordable Care Act with 47 percent of Americans believing health care is a federal responsibility creates a baseline of 37 percent probability that a senator will likely support universal health care. The outcome of a senator who voted “against” shows that with almost half of Americans believing health care is a federal responsibility the senator is not likely to support legislation for universal coverage.

General Solution – 2016 Probability that a senator will support universal health care given national support that health care is the responsibility of the federal government

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P(A|B) = \frac{P(B|A) \times P(A)}{P(B|A) \times P(A) + P(B|\neg A) \times P(\neg A)}
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For: \[P(A|B) = \frac{.52 \times .40}{.52 \times .40 + .48 \times .60} = .42\]

Against: \[P(A|B) = \frac{.52 \times .20}{.52 \times .60 + .48 \times .80} = .21\]

- The percent of Americans who view health care as a federal responsibility increased to 52 percent in 2016, which caused a “for” senator’s probability to support universal coverage to increase to 42 percent. However, an “against” senator’s probability to support universal coverage still did not meet the 37 percent baseline even when more than half of Americans surveyed reported health care coverage should be federal responsibility.

The second application examines the probability a senator might change his/her support for universal health care considering individual incentives. A Democratic senator that voted for the Affordable Care Act from solidly Democratic/liberal state is assigned a previous probability (A) of .60 because his/her vote for the Act suggests a support for universal coverage and his/her constituents are likely to support the senator’s vote. A Republican senator that voted against the Affordable Care Act from a solidly Republican/conservative state is assigned a previous probability (A) of .10 because his/her vote against the Act suggests opposition to universal coverage and his/her constituents are likely to support the senator’s vote. A Democratic senator that voted for the Act from a swing state is assigned a previous probability (A) of .35. There is a .25 decrease from a Democratic senator in a Democratic state to a Democratic senator in a swing state because in a swing state there is a greater possibility of the senator losing support from moderate voters that helped the senator win. A Republican senator from a
swing state is assigned a previous probability (A) of .25. There is a .15 increase for a Republican senator in a swing state because a Republican voting for universal coverage in a swing state could gain additional moderate or leaning Democrat votes. The larger loss of probability for a swing state Democrat verses a swing state Republican is based on the assumption that senators view losing voters as costlier than gaining voters when the senator is an incumbent.

Solution – 2009 Probability that a Democrat senator or Republican senator will support universal health care given national support for health care as a federal responsibility when the senator’s state solidly supports the senator’s respective party

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P (A | B) = \frac{P (B | A) \times P (A)}{P (B | A) \times P (A) + P (B | \neg A) \times P (\neg A)}
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Democrat: \( P (A | B) = \frac{.47 \times .60}{.47 \times .60 + .53 \times .40} = .57 \)

Republican: \( P (A | B) = \frac{.47 \times .10}{.47 \times .10 + .53 \times .90} = .09 \)

Solution – 2016 Probability that a Democrat senator or Republican senator will support universal health care given national support for health care as a federal responsibility when the senator’s state solidly supports the senator’s respective party

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P (A | B) = \frac{P (B | A) \times P (A)}{P (B | A) \times P (A) + P (B | \neg A) \times P (\neg A)}
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When a senator feels his/her state will support his/her vote based on party lines there is a dramatic difference compared to the general senator outcomes. A Democratic senator from a Democratic state has a probability well above the 37 percent baseline, and a Republican senator from a Republican state’s probability is far below the baseline. Therefore, if a majority of the Senate were secure Democrats there is a high probability universal coverage legislation could be passed; however, without a secure Democrat majority and enough secure Republicans it would take an overwhelming percentage of Americans that feel coverage is a federal responsibility to pass universal health care legislation.

Solution – 2009 Probability that a Democrat senator or Republican senator will support universal health care given national support for health care as a federal responsibility when the senator is from a swing state

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P(A|B) = \frac{P(B|A) \times P(A)}{P(B|A) \times P(A) + P(B|\neg A) \times P(\neg A)}
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Democrat: \( P(A|B) = \frac{.47 \times .35}{.47 \times .35 + .53 \times .65} = .32 \)
Republican: $P(A|B) = \frac{.47 \times .25}{.47 \times .25 + .53 \times .75} = .23$

Solution – 2016 Probability that a Democrat senator or Republican senator will support universal health care given national support for health care as a federal responsibility when the senator is from a swing state

$$P(A|B) = \frac{P(B|A) \times P(A)}{P(B|A) \times P(A) + P(B|\neg A) \times P(\neg A)}$$

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Democrat: $P(A|B) = \frac{.52 \times .35}{.52 \times .35 + .48 \times .65} = .37$

Republican: $P(A|B) = \frac{.52 \times .25}{.52 \times .25 + .48 \times .75} = .27$

- Compared to secure party senators, swing state senators’ probability for supporting universal coverage is closer to the 37 percent baseline. A swing state Democrat just reaches the baseline with 52 percent of Americans viewing coverage as a federal responsibility, while a swing state Republican is much closer to the baseline than the secure Republican. Due to these outcomes, the probability of the Senate passing universal coverage legislation is possible with lower polling levels when most senators are from swing states.

Solutions using poll data to determine a senator’s probability of supporting universal health care, like the United Kingdom’s or Sweden’s, suggest an overwhelming percent of Americans would need to support the policy change to sway senators from their political party ties.

Analysis
The United States’ veto-ridden policymaking and public-private health care structure has made reforming health care one of the most complex issues for American legislators. The responsibility for providing health care is divided between the federal government, state governments, employers, and private insurance companies. The percentage of Americans who think the federal government has a responsibility to make sure all Americans have health care coverage has mostly increased since 2009 and reached a point where a majority feel it is the government’s responsibility.\(^6\)

The results from applying Bayes Theorem to United States’ senators helps quantify the probability the Senate might pass legislation creating a health care system with universal coverage. The general application indicates that a senator with a \(P(A|B)\) value greater than or equal to .37 he/she is likely to vote for universal coverage because that is the general “for” value from November before the Senate voted on the Affordable Care Act in December 2009. Using the .37 probability as the starting likelihood a senator will support universal coverage, the results from specific applications indicate a secure Democratic senator will support coverage. Specific applications also imply a secure Republican will oppose legislation unless poll results show 84 percent or more Americans agree providing health care services is the government’s responsibility.

\[
\frac{x(.10)}{x(.10) + (1-x)(.90)} = .37 \\
.10x = .37[.10x + (1-x)(.90)] \\
.10x = .37(.10x + .90 + -.90x) \\
.10x = -.296x + .333 \\
.396x = .333 \\
x = .84
\]

\(^6\) Ibid.

Finally, the application for senators from swing states indicates that a swing state Democrat will support coverage with lower levels of Americans viewing insurance as a federal responsibility, but a swing state Republican will support coverage only with a high percentage of Americans’ support.

**Case Application**

To further investigate the influence political parties and institutional characteristics have in health care system formation, I apply the Bayes Theorem results to brief case studies of two Secure State Democrats, two Secure State Republicans, one Swing State Democrat, and one Swing State Republican that are running for re-election in the 2018 midterm election. The insights from Bayes Theorem create expectations for senators’ support for repealing the ACA and for a more universal-care-oriented system. Republican proposals to repeal or defund the ACA and Bernie Sander’s single payer health care plan voted on during the summer of 2017 provide natural situations to examine the Bayes Theorem findings. Senator’s votes on Republican ACA repeal proposals and Sander’s “Medicare-For-All” plan and whether the senator’s state adopted the Medicaid expansion are dependent upon the senator’s state type (Secure Democrat, Secure Republican, or Swing State Democrat/Republican). I categorize states by examining which presidential candidate historically won in the state and news agencies predictions for which 2018 Senate races will be the most competitive. I expect:

- Secure state Democrats to vote against defunding the ACA and vote for Sander’s plan
- Secure state Republicans to vote for defunding the ACA and vote against Sander’s plan
- Swing state Republican to vote against defunding the ACA and vote against Sander’s plan, especially in a swing state that expanded Medicaid
- Swing state Democrat to vote against defunding the ACA and vote against Sander’s plan

**Secure Democrats**

*Kristen Gillibrand*
Kirsten Gillibrand serves as one of New York’s senators. In the last eight presidential elections, New York voted for the Democratic candidate.63 New York’s historically voting for the Democratic candidate supports the notion that Gillibrand represents a secure Democratic state. Gillibrand was elected to the House of Representatives in 2007, was appointed to the Senate in 2009 to fill Hillary Clinton’s vacancy, and has served in the Senate since her appointment.64 According to Gillibrand’s website, “ensuring that every American has quality, affordable health care coverage is a national priority”, and she credits the ACA as a way to provide health care while containing costs.65 Gillibrand, unsurprisingly, voted against all Republican proposed forms of repealing the ACA during the July 2017 Senate vote. However, she is not against replacing the ACA, if it is with a more universal system. Gillibrand publicly supports Bernie Sander’s single-payer “Medicare-For-All Act 2017,” which includes a provision Gillibrand authored that would eliminate the role of private insurers in basic health care coverage.66 Gillibrand’s vote against Republican repeal efforts and support of Sander’s plan follows the logic of the Bayes Theorem equations. Gillibrand’s position as a secure state Democrat gives her the confidence to adhere to the Democratic party’s pursuit for universal health care without the fear of losing re-election.67

Thomas Carper

Delaware Senator Thomas Carper was elected to the Senate in 2000 and has since held the position. Delaware has gone to the Democratic presidential candidate for the last seven elections, which upholds Delaware’s position as a secure Democratic state. Carper views improving the quality of the health care system, reducing health care costs, and providing affordable and reliable health care coverage to more Americans as a top priority. Carper’s website states

“The Affordable Care Act was developed upon the core principle of transforming our health care system from an inefficient fee-for-service system to a preventative and coordinated care system that keeps patients healthy and, ultimately, leads to better outcomes for less money.”

Carper voted against all Republican ACA repeal proposals. He voted present on Sander’s plan, which means his vote did not count for or against the plan but added to the quorum. Carper has also not publicly directly supported or opposed Sander’s plan. Like Gillibrand, Carper’s electoral security allows him to follow his Democratic ideology because most of his constituency hold the same party stance.

Secure Republicans

John Barrasso

John Barrasso represents Wyoming in the US Senate. Barrasso began his political career as a member of the Wyoming State Senate in 2002, where he served until his election to the US Senate in 2007. Wyoming is considered a Republican stronghold and has voted for the Republican candidate in the last 10 presidential elections. Barrasso is an outspoken opponent of the ACA, stating “For seven years, Americans have suffered under the consequences of [the ACA] decision by [the Senate] body, and

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69 Ibid.
70 The quorum is the minimum number of members required to be present to conduct business
71 “John Barrasso.” Ballotpedia, ballotpedia.org/John_Barrasso.
the former president...The American people know that Obamacare has been a disaster. Its been one broken promise after another.” Barrasso has also publicly criticized Sanders’ plan as a government take over and financial burden on the American people. “It is being sold as a new health system paid for completely by the government, with no restrictions and at no cost to the patient. Of course, such a system would be anything but free for the American taxpayer... As the country engages in a serious debate about how best to reform our health care system, it is imperative that the public understand the cost of Senator Sanders’ Medicare-for-All proposal,” wrote Barrasso in a request for the Congressional Budget Office to produce a full cost estimate of Sanders’ plan. Barrasso voted in support of all repeal options and against Sanders’ plan. As a senator from a state with a long history of solidly Republican support, Barrasso has the freedom to make potentially polarizing statements without diminishing his chance of electoral victory.

Roger Wicker

Mississippi Senator Roger Wicker’s was elected to the US Senate in 2007. Like Wyoming, Mississippi has gone to the Republican presidential candidate in the last 10 elections. Wicker acknowledges the lack of affordable health insurance coverage as one of the greatest concerns for America. Wicker strongly opposes the ACA as an “unpopular health-care law greatly increases the government’s role in our health-care system, fails to lower costs, and raises taxes and premiums,” and ensures his supporters that he is “doing everything in [his] power to delay and repeal [the ACA’s]

massive overhaul of American’s health-care system.” Wicker voted for all repeal options. Wicker’s belief that the health care system can be reformed so Americans who want coverage can get it at an affordable rate without creating a government run system, likely motivated his vote against Sander’s plan. Wicker serving a reliably Republican state means his constituency expects him to oppose expanding the federal government’s role in health care – and he does, which reinforces the Bayes Theorem conclusions.

**Swing State Republican**

Dean Heller has represented Nevada in the US Senate since 2011. Nevada has been considered a battleground state since the early 1990s and voted Republican five times and Democrat five times in the last 10 presidential elections. Unlike his secure state Republican colleagues, Heller’s state of Nevada adopted state Medicaid expansion. Nevada’s Medicaid expansion influenced Heller’s stance on repealing the ACA. Heller announced he was against repeal because it would harm Nevada’s 210,000 citizens receiving coverage under Obamacare’s Medicaid expansion. Heller voted against the repeal and replace proposal and the partial repeal proposal, but he voted for the “skinny” repeal proposal because it would not affect the Medicaid expansion. While Heller voted differently than his secure state counterparts on ACA repeal measures, he did not stray from the Republican Party’s opposition to Sander’s plan. Instead, Heller joined Senators Lindsey Graham, Bill Cassidy, and Ron Johnson in proposing a repeal that

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“would repeal the Affordable Care Act’s mandates and the medical device tax, and eliminate federal funding for the Medicaid expansion population, premium tax credits, and cost-sharing reduction payments. In place of that funding, the federal government would instead give each state a block grant, which states could then choose to spend on things like premium subsidies, high-risk pools, or reinsurance programs, or other forms of health-care spending.”

Heller’s votes for ACA repeal measures and Sander’s plan are in congruence with conclusions drawn from Bayes Theorem. By not supporting all the Republican Party leadership’s proposals, Heller attempted to satisfy the portion of Nevada’s constituency that benefits from and favors a larger government role in health care coverage. Contrastingly, Heller’s vote against Sander’s plan and accompaniment on the Graham-Cassidy-Johnson proposal was likely a move to appeal to his Republican support base. As a swing state Republican, Heller must monitor his constituency’s preferences closer than the secure state Republicans because he is at a greater risk of losing re-election.

**Swing State Democrat**

North Dakota Senator Heidi Heitkamp began her senatorial career in 2013. While North Dakota is regarded as a secure Republican state for presidential elections (selecting the Republican candidate in the last 10 elections), US senatorial races have varied party results. Since North Dakota has been represented in the US Senate, 10 senators have come from the Democrat Party and 14 from the Republican Party. North Dakota’s 2018 midterm race has been ranked in the top 10 races to watch by Politico, the top 12 key states for Senate party control by USA Today, and one of the 10 Senate seats

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most likely to flip by CNN.\textsuperscript{85} Heitkamp has stated, “The health care reform law (ACA) isn’t perfect. No law ever is. I have long said there are some good pieces of the law and some pieces that need to be fixed.”\textsuperscript{86} According to Heitkamp’s website, she is “committed to correcting the parts of the health care reform law that do not make sense, improve on others, and implement new ideas that can further control health care costs and improve quality.”\textsuperscript{87} Despite being open to reforming the ACA, Heitkamp voted against all Republican repeal proposals. Following July’s procedural vote on the Republican Heath Care bill, Heitkamp stated

“Today was a vote that will go down in history. Republicans in the U.S. Senate knowingly voted to strip away health care for 23 million Americans, including children with disabilities, seniors in nursing homes, those in rural communities who live far from hospitals or doctors, and individuals seeking treatment for opioid abuse. We absolutely need to improve the current health care system – but this bill isn’t the way to do it. Pushing through a bill without even talking with those on the other side of the aisle isn’t the way to do it. And advancing a bill that is opposed by hundreds of organizations including AARP, the North Dakota Medical Association, and the North Dakota Hospital Association isn’t the way to do it. As the Senate now considers this bill, I hope those who supported it closely consider what the impact of this bill would mean

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for families, children, and seniors in their states. I can’t support this bill because I care too much about North Dakotans. I want to make sure they are able to get health care for their loved ones, and not have it ripped away when it’s needed most. As I’ve long been calling for, Congress needs to work together across party lines to seek real, honest, transparent, bipartisan reforms to our health care system so it works better for families. I want to have that conversation and I hope Republicans will join me. Congress needs to talk about solving problems – not who to blame.”

Heitkamp also voted against Sander’s plan. Heitkamp’s vote against Sander’s plan is more noteworthy than her vote against Republican proposals because she was one of only four Democrat senators who voted against Sander’s plan instead of voting “present”. Heitkamp stated she would rather make Obamacare work better than support Sander’s plan. Representing a competitive swing state and facing an upcoming re-election campaign against the challenger she beat by one percentage point in 2012, Heitkamp’s policy decisions carry greater risk than her secure state counterparts. Given the Bayes Theorem solutions found for swing state senators, Heitkamp’s votes against Republican proposals and Sander’s plan were expected. By not supporting Republican repeal proposals, Heitkamp remained true to her Democrat constituents, and, by voting against Sander’s plan, she avoided alienating moderate, independent, and leaning voters.

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89 Huey-Burns, Caitlin, and James Arkin. Democrats Split on Sanders’ Medicare for All Plan. September 12, 2017. Accessed February 11, 2018. https://realclearpolitics.com/articles/2017/09/12/democrats_split_on_sanders_medicare_for_all_plan.html. The three other Democrat senators that voted no are from Indiana, West Virginia, and Montana, which are all considered swing states and 2018 Senate races to watch by Politico.

90 Ibid.

### Case Summary Table

<table>
<thead>
<tr>
<th>Senator</th>
<th>Vote to Defund the ACA(^{92})</th>
<th>State Medicaid Expansion(^{93})</th>
<th>Vote on Sanders’ Single-Payer “Medicare-For-All Act 2017”(^{94})</th>
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</thead>
<tbody>
<tr>
<td>Kirsten Gillibrand (D)</td>
<td>Against All Options</td>
<td>Adopted</td>
<td>Present</td>
</tr>
<tr>
<td>Thomas Carper (D)</td>
<td>Against All Options</td>
<td>Adopted</td>
<td>Present</td>
</tr>
<tr>
<td>John Barrasso (R)</td>
<td>For All Options</td>
<td>Not Adopted</td>
<td>Against</td>
</tr>
<tr>
<td>Roger Wicker (R)</td>
<td>For All Options</td>
<td>Not Adopted</td>
<td>Against</td>
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<tr>
<td>Dean Heller (SR)</td>
<td>Against “Repeal and Replace”</td>
<td>Adopted</td>
<td>Against</td>
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<td></td>
<td>Against “Partial Repeal”</td>
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<td>For “Health Care Freedom Act”</td>
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<tr>
<td>Heidi Heitkamp (SD)</td>
<td>Against All Options</td>
<td>Adopted</td>
<td>Against</td>
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</tbody>
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\(^{93}\) "Status of State Action on the Medicaid Expansion Decision." Kaiser Family Foundation. January 16, 2018. [https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/?currentTimeframe=0&selectedRows=%7B%22states%22:%7B%22delaware%22:%7B%7D,%22mississippi%22:%7B%7D,%22nebraska%22:%7B%7D,%22new-york%22:%7B%7D,%22north-dakota%22:%7B%7D,%22montana%22:%7B%7D,%22wyoming%22:%7B%7D%7D&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22desc%22%7D](https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/?currentTimeframe=0&selectedRows=%7B%22states%22:%7B%22delaware%22:%7B%7D,%22mississippi%22:%7B%7D,%22nebraska%22:%7B%7D,%22new-york%22:%7B%7D,%22north-dakota%22:%7B%7D,%22montana%22:%7B%7D,%22wyoming%22:%7B%7D%7D&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D#).

The “Case Summary Table” illustrates the expected outcomes from applying the hypothetical Bayes Theorem’s findings to real world cases made of two Secure State Democrats, two Secure State Republicans, one Swing State Republican, and one Swing State Democrat. The Secure State Democrats opposed all Republican appeal proposals and either supported Sander’s plan or did not openly oppose it. The Secure State Republicans supported all attempts to repeal the ACA and opposed Sander’s plan. The Swing State Republican supported only one Republican proposal because it would not impact the state’s Medicaid expansion and opposed Sander’s plan. The Swing State Democrat voted against all ACA repeal proposals and against Sander’s plan.

Conclusion

The paper’s transition from health care systems in the United Kingdom and Sweden to exploring senators’ voting propensities in the United States attempts to answer: How do governmental structures, institutions, and societal factors affect the type of health care system that a country forms? Past literature highlights institutional characteristics, such as veto-points, and other literature utilizes case study approaches to explain the formation of specific countries’ systems.

Institutions, historical factors, and political cultures in the United Kingdom that helped create the National Health Services revolve around the country’s largely veto-free, centralized, and homogenous political party dominance in the executive, prime minister, power and the parliamentary power in 1948. Recent reforms have passed in the United Kingdom because of party majority status and shared views about the government’s role in health care.

Sweden’s history of valuing strong regional and local governments fostered the creation of Sweden’s decentralized approach to health care administration and financing. County and regional councils along with local municipalities are primarily responsible for health care’s delivery. Sweden implemented its health care system and passes reforms maintaining the system’s universal coverage
because of the Social Democrats’ majority status. The Social Democrats held majority status in 1946 when the initial legislation for Sweden’s current system passed, and the universal system has remained throughout reforms due to the party holding majority status for most of the time since the Social Democrats took office in 1932.

The United States’ health care system is the result of a multitude of official and unofficial veto-points. Official points include the shared power between Congress and the president to move policy from legislation to law. Unofficial points include special interest groups, lobbyists, and a multiplicity of actors from private-insurance and professional medical associations. Results from applying Bayes Theorem, to find the probability senators will embrace a system with universal coverage based on the percent of Americans who view coverage as the government’s responsibility, suggest universal coverage legislation has the potential to pass if an overwhelming amount of Americans support increased federal responsibility in providing health care. Overwhelming support is required because of the make-up of states’ party lines and political party allegiance. The division of secure states makes it unlikely the Senate will have enough Secure State Democrats that are more likely to pass universal coverage legislation at lower levels of American support.

Understanding the influential factors in forming health care systems is important because it enables scholars and policymakers to predict the type of reforms with higher passage probability, given a country’s government structure, political climate, and historical influences. In the case of the United States, Bayes Theorem suggests a system with universal coverage is only likely with a significant percentage of Americans supporting legislation. Examinations of the United Kingdom and Sweden provide insight into two different universal coverage delivery systems; of which, Sweden’s decentralized method could inspire new policies in the United States because of the United States value for strong states. Health care is an essential component of life, and establishing a functional health care system is an essential governmental task. Further research should be done to develop a richer picture of
institutional actors’ probability of enacting health care policies based on various polling data and the influences of interest groups, professional associations, and lobbyists.
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