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The Role of Experts in Policymaking

An Assessment of Witness Educational Backgrounds in Congressional Testimony

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Science, Technology, and Public Policy MS Thesis

Department of Public Policy, CLA

Rochester Institute of Technology 2022

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I. Introduction

A common goal of most academic institutions -- both through teaching and research -- is to influence how society functions (Liddle and Addidle, 2022; Cook, 1998). An essential pathway through which this can occur is through the transference of knowledge from the university system to policy makers (Perna et al., 2018). However, very little systematic evidence is available on the extent to which academic knowledge is channeled into policy making (Scheufele, 2014; National Academy of Sciences, 2017) nor how contemporary party politics may have affected this process.

This thesis provides a first-of-its kind benchmark on the extent to which academically-trained professionals in the United States are availed of opportunities to directly deliver evidence to the United States Congress, as well as how contemporary party politics shapes this system. Recent research suggests that, notwithstanding political polarization, policy makers may be responsive to academic research (Lee, 2021) as well as in-kind support from academically-trained volunteers (Zelizer, 2018). Others have shown that specific academic professions, like economics, enjoy a great deal of direct influence on policy makers (Meher et al., 2020). However, no study to date has systematically examined the overall extent to which a policymaking institution draws on the knowledge of academically-trained professionals.

To do so, we randomly sample and manually code the educational backgrounds of 2,147 witnesses from 32 Congressional Committee Hearings that occurred between 2001 and 2020. We then estimate the percentage of witnesses with advanced degrees who testify before Congress, as well as how this varies by party control of the committee and topic. Committee hearings are the principle form through which Members of Congress learn the background information necessary for both drafting legislation and voting on it (Oleszek, 1989; Leyden 1995; Deering and Smith, 1997, McGrath 2013). Furthermore,

previous studies have shown how both legislation and voting behavior is directly affected by committee hearings (Burstein, 1999, Baumgartner and Jones, 1993).

This study reveals three key findings. The first is that academically-trained professionals have extensive access to the halls of Congress. Though only 1 of every 10 Americans have an advanced degree (i.e., a post-collegiate degree), 6 of every 10 witnesses who testify have one (Figure 3). The second is that all types of degrees have at least some representation amongst witness calls (Figure 4). The third is that the above patterns are the same regardless of which party is in charge (Figure 4), and relatively similar even across topics (Figure 5).

II. Theory

Members of Congress cannot themselves be experts in the full range of policies for which they must make decisions. To leverage outside expertise to make informed decisions, Congress turns to a wide array of subject matter experts who testify before them in Congressional committee hearings. These committee hearings are the principle form through which Members of Congress learn the background information necessary for both drafting legislation and voting on it (Oleszek, 1989; Leyden 1995; Deering and Smith, 1997, McGrath 2013).¹ Furthermore, previous studies have shown how both legislation and voting behavior is directly affected by committee hearings (Burstein, 1999; Baumgartner and Jones, 1993).

Choosing witnesses, as it were, is an essential pathway by which Members of Congress learn prior to legislative decisions. What drives this selection process? In this study, we consider two major factors: (i) party control, (ii) topic selection. With regard to party control, it is plausible the witness selection occurs in a way that is primarily about acquiring a diversity of opinions from individuals with established expertise and not about supporting a particular partisan agenda. This might hold if, for example, policy makers believe that voters will hold them accountable for the consequences of their decisions (Fiorina, 1981). Alternatively, the policymaking process itself may promote the norm of careful, fact-finding deliberation (Quirk et al., 2018). It is also possible that policy makers themselves may intrinsically feel a sense of civic duty to carefully consider all of the facts (Mullinix, 2018).

¹ Committee hearings are also used for other purposes such as the oversight of executive agencies, investigation of important events, and evaluation of Presidential nominations (Heitshusen 2017).

On the other hand, policy makers may wish to strategically select individuals that will support their partisan agendas. A tendency to select witnesses to comport with their political predilections may be driven by the range of biases that include protecting one's self concept or identity or managing others' impression of one's self (Kunda 2001, Druckman 2012). Another possibility is that a generalized hostility toward "intellectuals" may affect witness selection (Hofstader and Walton, 2012; Motta, 2018; Merkley, 2020; Rekker, 2021). Some have suggested that Republicans or political conservatives, in particular, may be predisposed to dislike individuals who may be perceived as intellectuals (Barker et al., 2022; Mooney, 2007).

A separate factor that may influence the type of witnesses that are invited to Congress is the topic to which the committee chooses to give its attention. For example, some topics may lend themselves more to "formal" expertise which individuals can acquire through advanced degrees.

There may be systematic variation in the types of experts associated with different issues. As a result, the question of witness background may depend on what issues Congress is most caught up with that legislative session. And yet—even here—party control may indirectly influence witness selection. This is because a large literature in political science suggests that particular issues tend to be "owned" (prioritized) by one party or the other (Fagan, 2021). Consequently, the topics that are deliberated on in Congress will tend to be influenced by which party holds power (Baumgartner and Jones, 2005; Baumgartner, Jones, and Wilkerson, 201; Egan, 2013). In turn, even if witness selection is primarily driven by topic, party may influence the ultimate composition of witnesses if there are systematic differences in the types of witnesses associated with the topics that are "owned" by one party vs. the other.

With respect to how party control in Congress might bias the acquisition of expert testimony, the limited existing evidence suggests party control is important. A recent study has shown that Congressional committees tend to be less likely to call on experts from within their executive agencies when the party in the executive branch is different from the majority party in that Congressional chamber (Ban et al., 2022). Another body of literature has focused specifically on climate change, and found that Republicans are biased in their selection of scientists (McCright and Dunlap 2003; Fisher et al., 2013; Farrell, 2015; Liu et al., 2015).

Outside the Congressional context, the picture is less clear. One recent study has shown that policy makers are responsive to established research, even when it challenges their prior opinions (Lee, 2021). Another study conducted in Brazil has shown that many policy makers are even willing to pay for such research (Hjort et al., 2021). However, other studies point to partisan bias in how policymakers process expert information (Jerit et al., 2006; Nyhan, 2010; Bolsen et al., 2015; Baekgaard et al., 2019; Vivalt and Coville, 2020).

With respect to the relationship between topic and the type of witnesses called to testify, existing evidence is even more limited. However, Ban et al. (2022) does demonstrate that the topic is associated with institutional affiliation, such as the likelihood of being associated with a university. However, no study this author is aware of investigates how educational attainment of witnesses varies by topic.

III. Research Design

Congressional Committee Hearing Data

In this study, we leverage digitized transcripts of Congressional committee hearings from the Government Publishing Office (GPO). In addition to the transcription of the hearing, each record contains the metadata of witnesses' names, titles, and affiliations. While it is not a complete list of every hearing, it is the official publishing site for congressional data ("Congressional Hearings"). Perhaps more importantly, it is the only database with easily accessible witness information.

While GPO contains data from the 1990's through present day, we chose to only consider hearings from 2001 to 2020. The 1990's and early 2000's showed signs of digitization – far fewer entries as well as corrupted and incomplete data. By picking 2001, any hearing used in our sample was sure to be complete. However, there were still comparatively very few to sample from. By consequence, some of the smaller committees in the sample do not have as many witnesses in the early years because there were no more to sample from. On the other hand, 2020 was the last full year of hearing data available at the time of collection and thus made a good cut off point. By using these two bounds, we were able to view 20 years of congressional witness trends.

Stratified Sampling

Since exhaustive analysis was impossible with so many witnesses, we chose to generate a targeted random sample. Of the 42 committees represented in GPO, we chose to narrow the list to the top 32 due to a dramatic drop off in hearings held as shown in figure 1. To maximize the number of committees about which we could generate statistically valid conclusions, we employed a stratified

random sampling technique in which we pursued an approximate balance of 75 witnesses per committee (an average of 13 hearings). This resulted in a total of 2,147 witness testimonies as shown in table 1. Because the number of hearings is not randomly distributed, this means that committees with fewer hearings were intentionally oversampled. Consequently, we generated sample weights for use in the main analyses. We examine the sensitivity of the findings to the exclusion of weights in the Appendix.

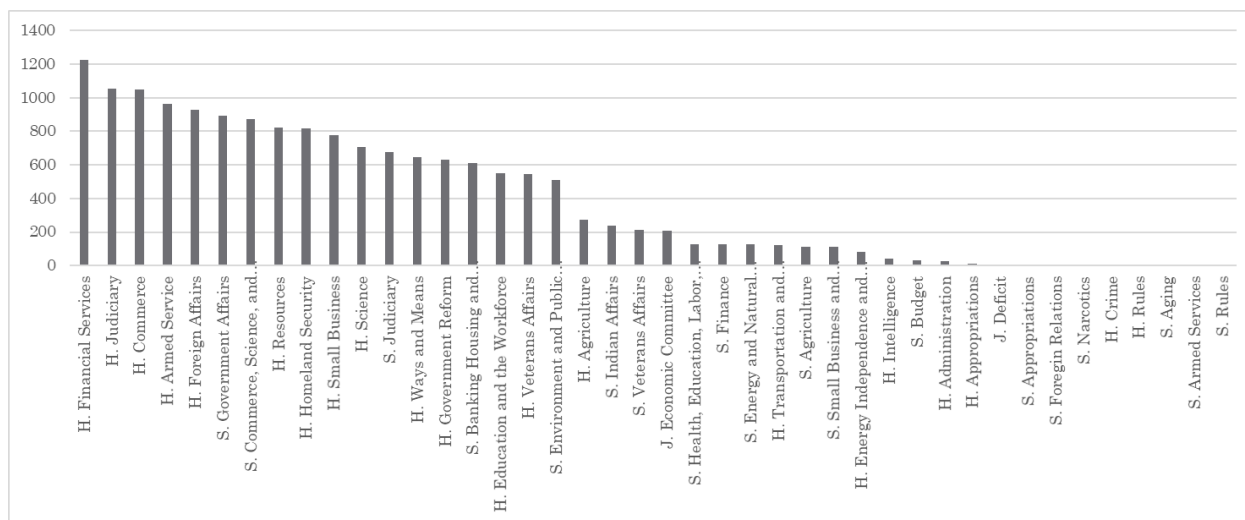


Figure 1. Number of non-appointment hearings held by each committee 2001-2020

Table 1. Summary of non-appointment hearing and witness counts between the sampling frame and sample 2001-2020

		Sampling Frame (GPO)	Stratified Random Sample
Number of Hearings	Total	16,152	427
	Democrat	6,618	168
	Republican	9,479	240
Number of Witnesses	Total	81,200 (est)	2,147
	Democrat	36,200 (est)	919
	Republican	45,800 (est)	1,160

Coding of Witness Educational Backgrounds

Due to its long history as a signaling tool for expertise (Belanger and Meguid, 2008; Walgrave et al., 2009) advanced degrees not only identify academics, but are likely a significant decision factor for congressional Members. Just as important for this research though is their publishability. Since a degree is an easy shorthand for ‘expert’, one’s educational history is commonly published alongside any biographical information about a person. This easily accessible means of finding advanced degrees is the foundation of the coding mechanism used in this research.

A total of 11 education codes were identified -- 8 successful options and 3 failure options. For the successes, a witness could be coded as PhD, JD, MD, MBA, Masters, Bachelor, High School, or Other. When the highest degree was more difficult to identify, there were three options. No Degree Found meant the coder was able to find biographical information but no educational background. No Information Found however was for witnesses who did not have any easily accessible biographical information. Lastly, Unspecified meant that a witness had some higher education, but their degree was either unclear or not listed.

Specifically for those with PhDs, a degree domain was also coded. The Higher Education Statistics Agency (HESA) subject coding scheme was used for this (“HESA Subject Codes”). Though the majority of degrees fell within just one of the 19 groups, up to two were allowed to be coded for particularly niche specialties.

A primary and secondary coder were used for manual witness coding using a shared codebook (see appendix). To maximize intercoder reliability, a calibration test was conducted and reviewed between

coders. Furthermore, coders' time was spread throughout various sub-groups in order to minimize the number of committees worked on by a single person.

Coders were tasked with identifying witnesses' highest known degree. Unless their degree was specifically listed in the metadata, this was done by searching the internet for their name and declared affiliation from the witness text (ex. "Mr. Jeffrey Joerres Bureau of Labor Statistics"). Within the first page of results, coders would look for biographical information for that individual containing their educational background. When successful, coders would mark the witness' highest degree (and topic domain for PhDs). If unable to find this information, the entry would be given one of the failure codes. Below is an example decision tree of the coders' system.

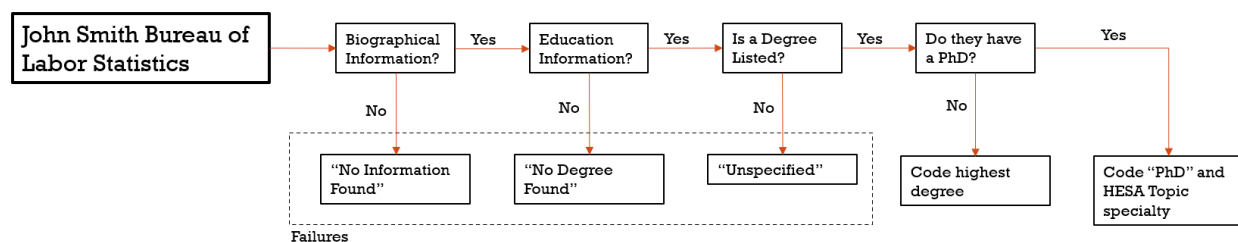


Figure 2. Example of the decision system used by manual coders to determine congressional witnesses' highest academic degree using internet search results.

Once all the witnesses were coded, two checks were performed. First, a random number of degree sources were verified for each committee. The noted article was re-read to confirm that the coded degree matched with the website's content. This was done by a different person from the original pass as much as possible.

Second, the 'failure' witnesses were re-coded up through the second page of results. This included the No Degree Found, No Information Found, and Unspecified options. While good for

potentially more data points, this doubled as a way to confirm results and investigate the impact of any corrections. As expected, these updates did not significantly affect the final results.

Table 2. Number of witnesses in the sample by degree coding category

	Witnesses
Total	2147
Successes	1645
Unspecified	101
No Degree Found	159
No Information Found	242

Independent Variables/Controls

A variety of independent variables were considered to help explain variations in witness expertise. Perhaps the first to come to mind for most is party control. This variable was determined by mapping a given hearing's year and chamber to historical legislative election results. Similarly, chamber was also considered in case of varying priorities between the House and Senate.

The other major grouping of independent variables surrounds topic domains. Specialized committees such as House Sciences are probably more likely to call PhDs. However, since committees have their own internal politics and do not always map to a single domain, topic was also used as an independent variable. This was done by matching the sample hearings to the Comparative Agendas Project's database of topic-coded hearings. CAP was specifically chosen due to their internationally

recognized topic-coding system (“About CAP”). Crosswalking these allows us to isolate any potential differences between witness choices determined by topic versus committee politics.

Analytical Framework

To benchmark the extent to which academically-trained professionals present evidence in Congress, we first graphically compare the percentage of witnesses with an advanced degree with the percentage of Americans with an advanced degree, distinguishing by different types of degrees (Figure 3). Next, we assess the representation of academic disciplines represented in Congress through witness testimony, by comparing the distribution of PhDs among witnesses to the distribution of PhDs among the American public. Third, we examine the extent to which the prevalence of advanced degrees varies by party control (Figure 4) and topic (Figure 5). All analyses use sample weights, but sensitivity to exclusion of weights is provided in the Appendix (Table A1). In the Appendix, we further examine variation in advanced degree prevalence by chamber and time, as well as formally test the main results through the use of linear regression.

IV. Results

Benchmarking Witness Background to the American Public

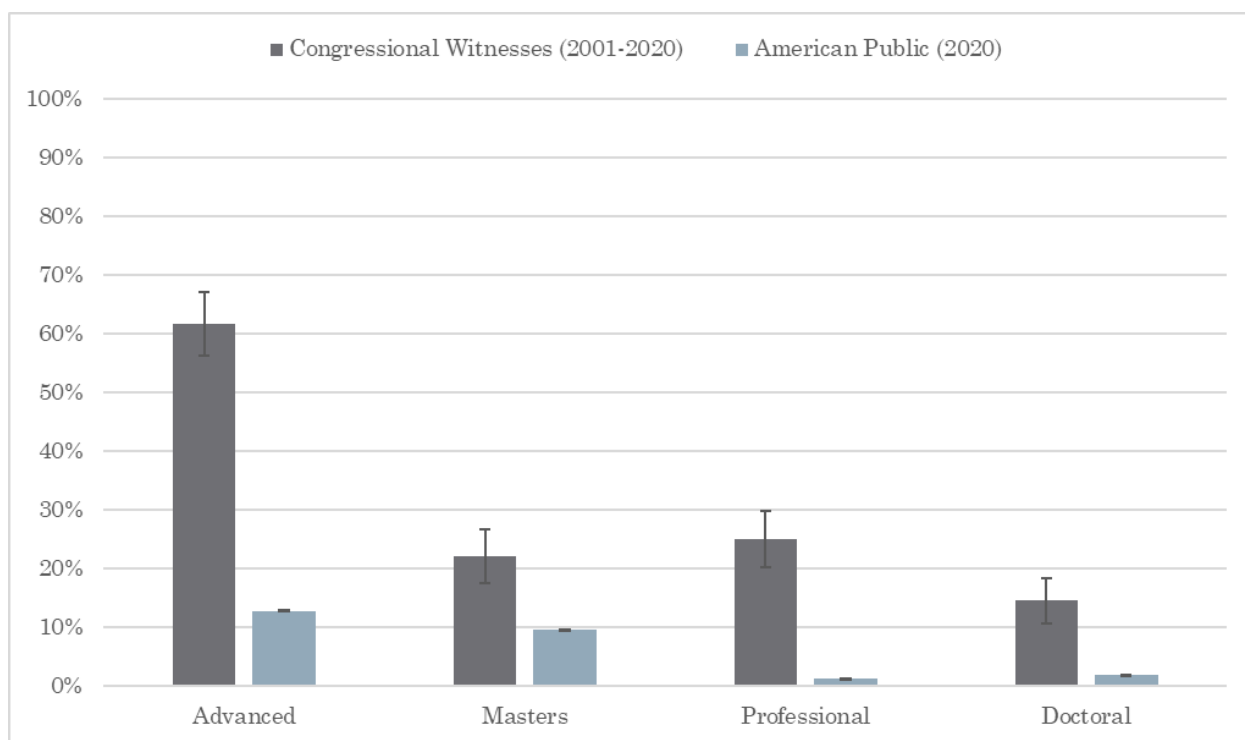


Figure 3. Educational Attainment of Congressional Witnesses vs. American Public. The relative prevalence of post-collegiate degrees between congressional witnesses and the American public. Sampled witnesses were re-weighted based on GPO committee ratios.

As shown in figure 3, Congress clearly favors calling witnesses that hold high level academic degrees. According to the 2020 US census, only 10% of Americans hold a masters degree, 2% have a doctorate, and 1% have professional degrees (“Educational Attainment”). However, witnesses called to Congress are at least twice as likely to have one of these degrees be their highest. Interestingly, this is the most pronounced with professional degrees. Despite being the least popular type within the population, they are the most favored by Congress. This is primarily dominated by JDs as their legal backgrounds are

both useful and widely applicable throughout congressional domains. While MDs do lag behind in comparison, they are still overrepresented at 5% of all witnesses. Like a Judis Doctorate, medical professionals have very useful expertise - just not as broadly. In short, these large differences not only show that Congress is using degrees as a signaling tool for their expert choices, but that the 13% of people with advanced degrees are 4 times as likely to be a congressional witness than the 'average' person.

However, it should be noted that that average person still gets called to testify. Those who only have a bachelor's degree or no college education at all were still in the sample -- just significantly less likely. This is perhaps attributable to that signaling mechanism. Without a degree to reference to, it is more difficult to establish oneself as an expert in their field. It was a noticeable trend while coding that witnesses in lower barriers to entry jobs -- such as farmers or career bureaucrats -- were more prone to non-advanced degrees or not publishing their education in the first place. These are fields that do not filter for academics and thus use alternate mechanisms for signaling expertise ("Education by Occupation"). Yet as that is the expectation rather than the norm, academics are still heavily preferred amongst witness candidates.

Table 3. Relative likelihood of an advanced degree between the American public (2020) and congressional hearing witnesses (2001-2020)

	Percentage of Americans with PhDs	Percent of Witnesses with PhD (unweighted)	Percent of Witnesses with PhD (weighted)
All PhDs	1.9%	15.7%	14.6%
Social Science	0.3%	7.2%	9.1%
Science and Engineering	0.8%	4.0%	2.1%
Law	0.0%	0.1%	0.0%
Humanities	0.2%	1.1%	0.8%
Health	0.3%	1.2%	0.6%
Education	0.3%	1.1%	0.9%
Business	0.1%	0.5%	0.6%
Other	0.0%	0.6%	0.2%
Total N	70,230		339

Comparing Witness Background by Majority Party Control

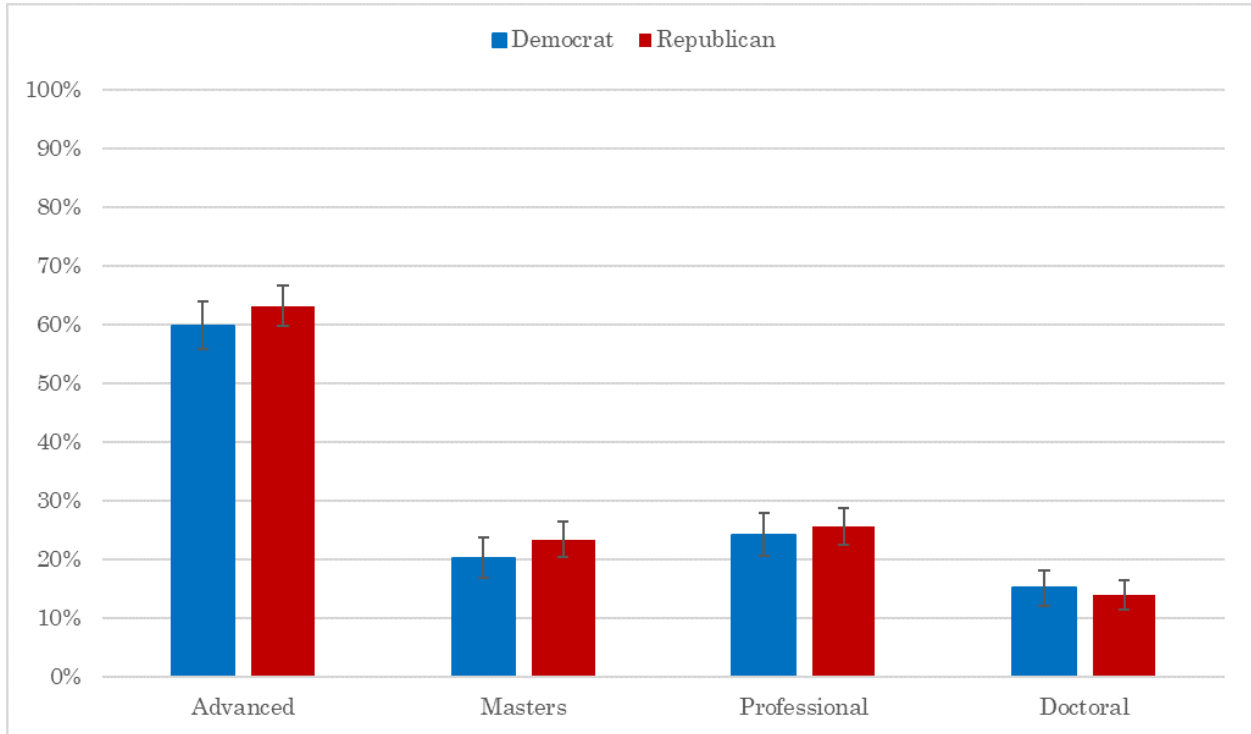


Figure 4. Educational Attainment of Congressional Witnesses by Party Control. The relative prevalence of post-collegiate degrees between congressional witnesses called by democrats versus republicans. Sampled witnesses were re-weighted based on GPO committee ratios.

While the overall prevalence of high level degrees in congressional witnesses is strong, it is important to investigate the potential influence of party control. As discussed above, the growing asymmetrical anti-intellectual mentality of the American public and congressional membership (Barker et al., 2022; Mooney, 2007) has the potential to skew witness breakdowns.

Thus, if the reputation of Republicans hating science applied in this instance, one would expect to see significant differences between parties regarding the likelihood of advanced degrees being called -- particularly with STEM PhDs. However, figure 4 does not support that story. Republicans are just as likely to call any advanced degree as democrats over the last 20 years. In fact, many of the common ways

one might expect this generalized view to be hiding partisan choices only continue to reinforce figure 2. For example, there might be differences between the House and Senate. But while there is some evidence that the House calls for slightly more advanced degrees overall, it makes little to no difference on degree choices between parties. This is not unexpected as the political spectrum makeup of the chambers are historically similar (DeSilver, 2022).

Even when parsing for results between the two most recent decades (2001-2010 and 2011-2020) for potential impacts as a result of recent political polarization (Dimock and Wike, 2021) those same trends persist (see appendix for decade and chamber figures). This is arguably the most surprising result in this research. Case studies of partisan witnesses have been well researched and documented (McCright and Dunlap, 2003; Murphy, 2001) Yet we show that those trends are not visible when looking specifically at witnesses' educational backgrounds. Assuming both are true, this implies a more nuanced and complicated relationship between partisanship and witness choices.

Witness Educational Backgrounds by Topic

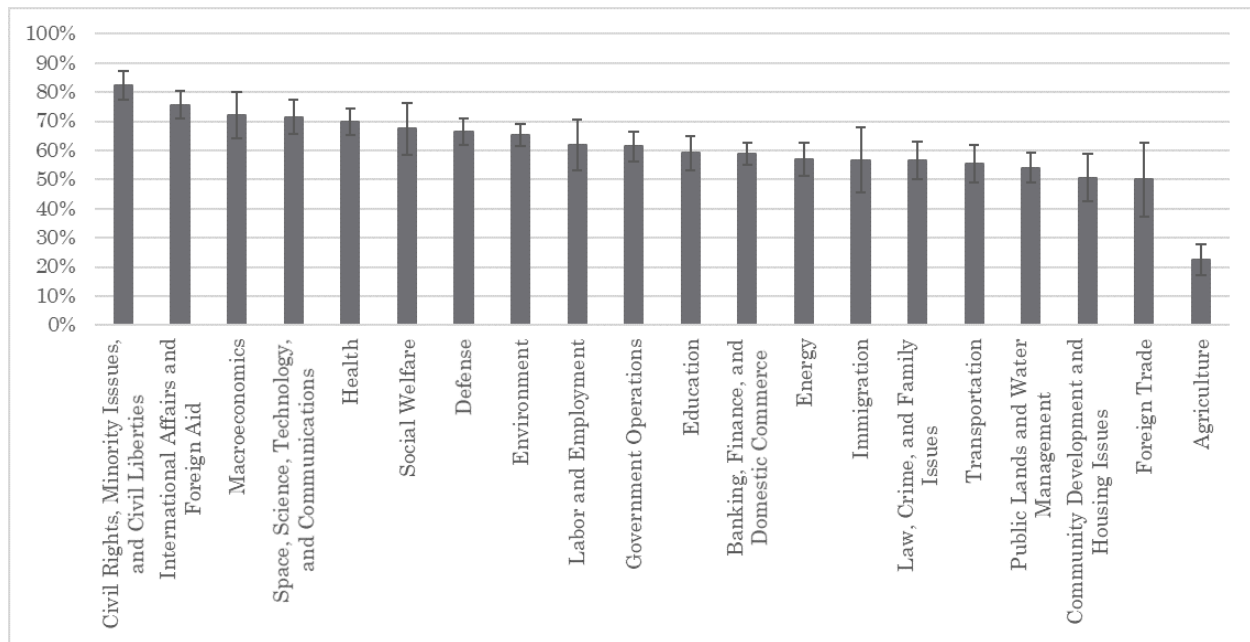


Figure 5. Educational Attainment of Congressional Witnesses by Topic. The likelihood of a witness having an advanced degree depending on the topic of a hearing. Sampled witnesses were re-weighted based on GPO committee ratios.

Lastly, we wanted to test the theory that topic might be a driving force in witness degree variations. Rather than strategic partisan choices, Members might merely be looking for the best experts on a given topic. Given that different fields mandate different educational backgrounds amongst their participants, witnesses would then naturally vary with hearing topics.

This test was done by using the CAP crosswalked hearing database and topic codebook. Once every hearing was connected to a standard code, the average likelihood of a witness having an advanced degree based on the topic of the hearing they are called for was plotted in figure 5. Once sorted in order of likelihood, there is a noticeable difference between topics. AD prevalence varies from 20-80% with civil rights being the most likely and agriculture notably the least. Agriculture being the outlier actually

strongly corresponds with the population as advanced level degrees in the field are practically non-existent (“Degrees - 2017”). Yet even temporarily ignoring this point still results in a 30% range of post-collegiate degree likelihoods.

Within that range, it is clear that Congress calls advanced degrees for far more than just STEM topics. Space and Science, Health, Environment, Energy, and Transportation are all in the middle of the pack. Instead, the social sciences have the most ADs with Macroeconomics in third place. These variations show that Congress slightly adapts its witness calls depending on the topic at hand, but will nonetheless always value advanced degrees. With the exception of agriculture, at least half of congressional witnesses regardless of topic are educated experts.

That trend continues to hold true even when controlling for partisanship. Though there are some notable exceptions -- such as democrats heavily favoring ADs in Law, Crime and Family Issues and republicans for Government Operations -- there are generally insignificant differences. Accounting for partisan issue ownership in calling for certain hearing topics in the first place again showed no trend (see appendix). In short, while there is slightly more topic influence than partisanship, neither have significant impacts on the stability of experts called to Congress.

V. Discussion

Expertise is Normalized

While our results show some variation within topic, it is likely not to the level that most people would expect. As the same is true when looking across parties, we can say there is some normalizing factor at play that is resulting in a fairly standardized breakdown of advanced degrees within witnesses. There are many possible reasons for this that may or may not be working together. Members may simply be choosing from a list of possible experts that already highly favors academic credentials. Or perhaps Members are favoring their own backgrounds as about 70% hold an advanced degree themselves (CRS, 2022). Degrees could also be a mental shortcut for Congress to filter who the ‘true’ experts are.

These are only a few ideas of the mechanics behind congressional witness choices - it is in no way exhaustive. As this is a field that is still being investigated today, we do not have any concrete answers. However, this research continues to show that congressional witnesses are a complex system and dynamic that we do not entirely understand yet.

Academic Expertise

If there is one result this research can conclusively say, it is that people with advanced degrees have significant influence in congressional hearings. This is not only true in general, but actually quite uncommon to see an exception to. Whether broken up by party, chamber, decade, or topic, Congress has established an unofficial rule of AD majority for itself.

More so, academic expertise is not limited to specific fields or degree types. While JDs might be more popular than an MBA, the full spectrum of advanced degrees not only have representation within witness calls, but are in fact specifically targeted in comparison to the overall population. A similar story holds true when examining PhDs. Those with a social science or humanities speciality are called almost twice as often as a STEM doctorate. This makes sense due to the generally more social science nature of legislative issues. However, both are still overrepresented in comparison to the general population. Along that same trend, while some SSH topics do have the most ADs overall, the STEM topics are in no way wanting for post-collegiates. In short, Congress prioritizes the presence of all types of advanced degrees from varied disciplines.

Expertise is not as politicized as you think

It is easy to get caught up in stories of polarization and anti-intellectualism and miss the forest for the trees. While these are true factors to consider, Congress will always have a job to do. Experts are a trusted resource for Members to gain the information they need for effective policymaking (Oleszek, 1989; Leyden 1995; Deering and Smith, 1997, McGrath 2013). Academic experts fulfill this role even more so due to their perceived ability to give objective opinions (Johnson, 2019). When understood in this context, it is no surprise that hearings rarely ever violate the unspoken rule of the AD majority.

Within these bounds, polarization has little wiggle room. Broadly speaking, democrats and republicans call advanced degrees at the same rate. This includes publicly polarized subjects such as Environment, Energy, and Civil Rights (“Sharp Divides”). Even the rapid changes over the last two decades do not appear to have made a difference regarding expert credentials. Our sample is not broad enough to say that there have been no time-based changes to the witness landscape, but our 20-year timeframe does suggest a level of stability throughout the last few decades.

It should be noted though that these results do not mean that party is irrelevant - merely that its impacts are more subtle. Partisan witness choices have been well documented ranging from favoring climate experts that go against scientific consensus (Lee, 2021; McCright and Dunlap, 2003), to corporate-funded doctors during the nicotine hearings (Murphy, 2001). That does not even begin to touch on the nuances of each witness' arguments or their dynamics with the committee itself (Perna et al., 2018). In short - the choice of congressional witnesses is a complex system. While it is comforting to know that congress continues to rely on experts, there is still a lot more to this dynamic that we have yet to understand.

VI. Policy Impacts and Further Research

Polarization

While this research has concluded that political polarization has not had a significant influence on witnesses' educational credentials, that does not mean that partisanship is irrelevant. Our results merely indicate that witnesses are just as technically qualified between parties and across the 21st century. However, a lot more goes into witness testimony than academic credentials. To begin with, there have been several case studies on credentialed contrarian witnesses during the Kyoto and nicotine hearings (McCright and Dunlap, 2003; Murphy, 2001). These were instances of congressional members intentionally picking more experts with conflicts of interest or notably disagreed with scientific consensus. However, no research has been done today that investigates this phenomenon on a large scale. Are these special cases or a new normal? Given Congress' prolific reliance on post-collegiate witnesses, any potential trends toward biased experts could have significant influence on future legislation.

Furthermore, we do not account for a witness' dynamic with the committee itself. While we hypothesize that Members are using degrees to pick witnesses, there is reason to believe that Members do not treat all witnesses the same -- particularly when it comes to party alignment (Barker et al., 2022; Mooney, 2007; Devins, 2004; Sams, 2017). What does this mean in terms of post-collegiates? Do cross party witnesses with ADs have any ability to overcome partisanship? And finally, what role do those unknown 'normalizing factors' play with all of this?

Academic Knowledge

This research has made it clear that academic knowledge plays a large role within congressional expert witness hearings. On average, 60% of witnesses can attribute at least some of their expertise to high level academic education. That far outpaces the number directly affiliated with academia as recent research suggests 10% of witnesses are actively employed by a university (Ban et al., 2022). Between these two, formalized academic knowledge is being very well represented within the halls of Congress.

In all likelihood, this is somewhat accidental. As far as this author knows, no university currently seeks out witness testimony as an institutional goal. Instead, this is a side effect of a university's role in society. As high-level educators, it is no surprise that their alumni are often favored during hearings that are designed to obtain information for policymakers. While it is difficult to speak to the desires of colleges as a whole, having congressional witnesses on their alumni rosters certainly adds some prestige. This work may prompt universities to take a look at their indirect connections to committee hearings. What would it mean for colleges to play a more active role in witness selection?

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VIII. Appendix

Additional Results

Relationship Between Party and Topic

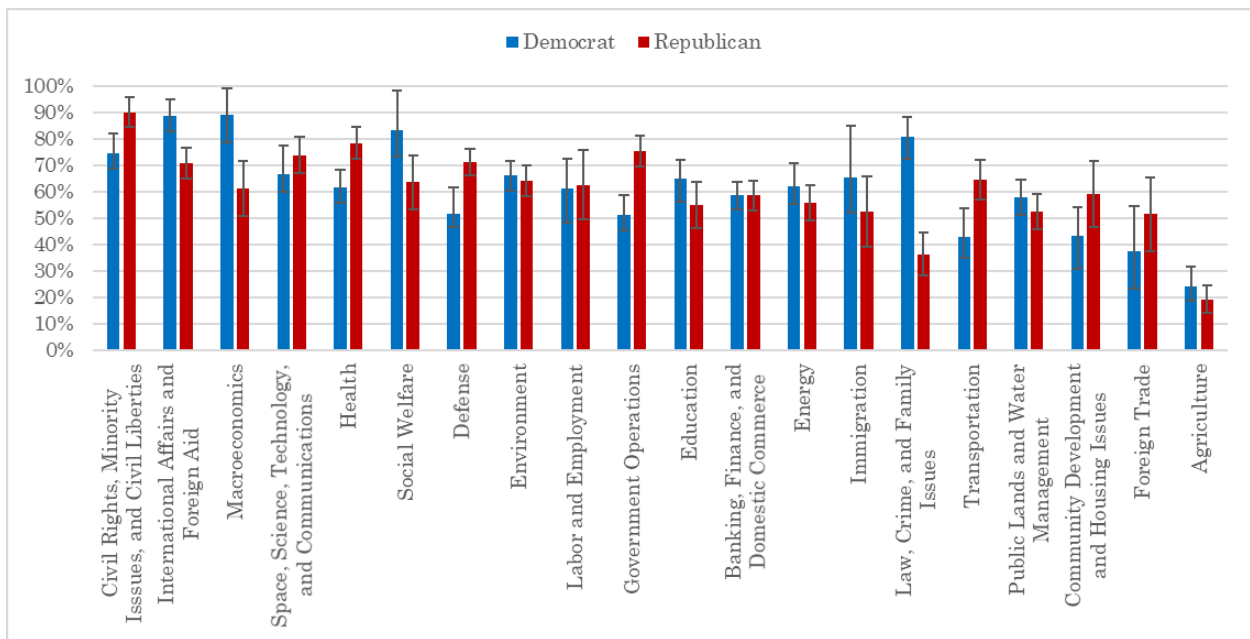


Figure A1. Educational Attainment of Congressional Witnesses by Topic by Party. The likelihood of a witness having an advanced degree depending on the topic of a hearing and the majority party of the committee. Sampled witnesses were re-weighted based on GPO committee ratios.

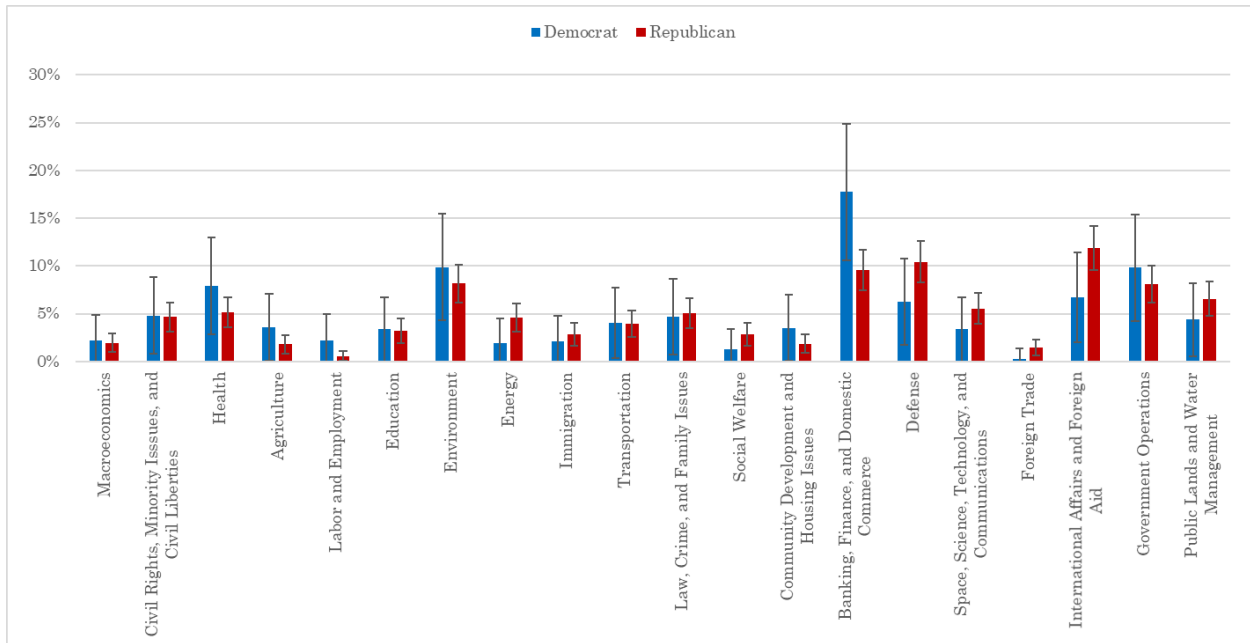


Figure A2. Likelihood of Congressional Hearing by Topic by Party. Relative likelihood of each party holding a hearing in a given topic domain. Sampled hearings were re-weighted based on GPO committee ratios.

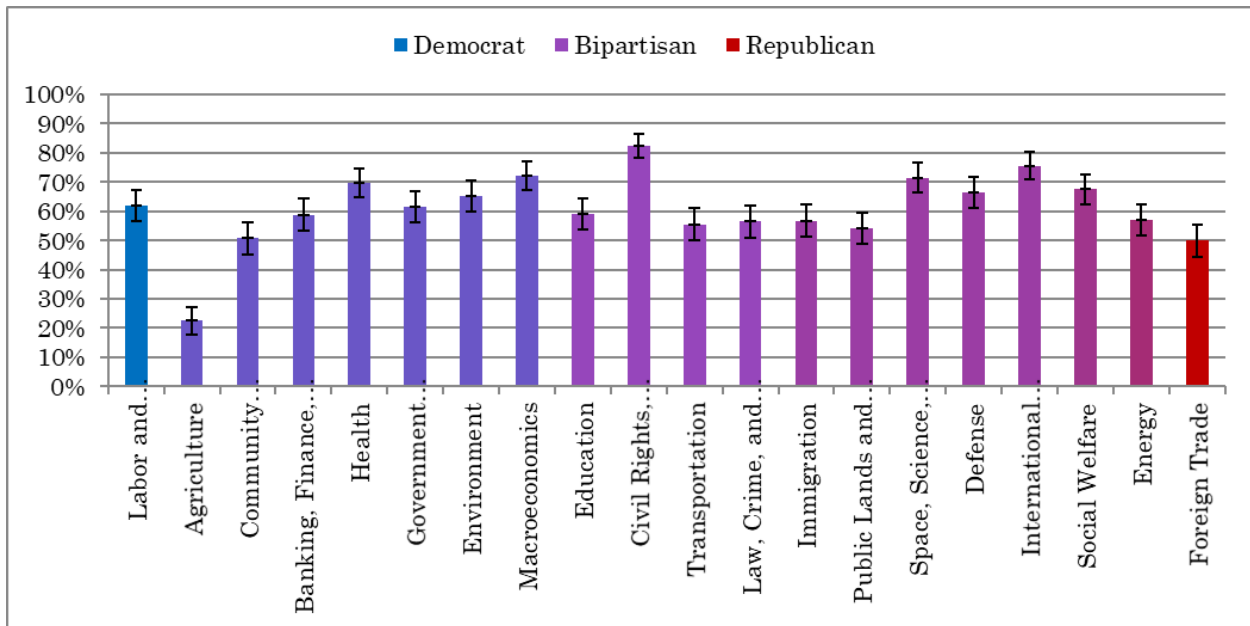


Figure A3. Advanced Degrees by Topic by Partisan Issue Ownership. The likelihood of a witness having an advanced degree depending on the topic of a hearing ranging from the most democrat favored topics (left) to most republican favored hearings (right). Sampled witnesses were re-weighted based on GPO committee ratios.

Chambers

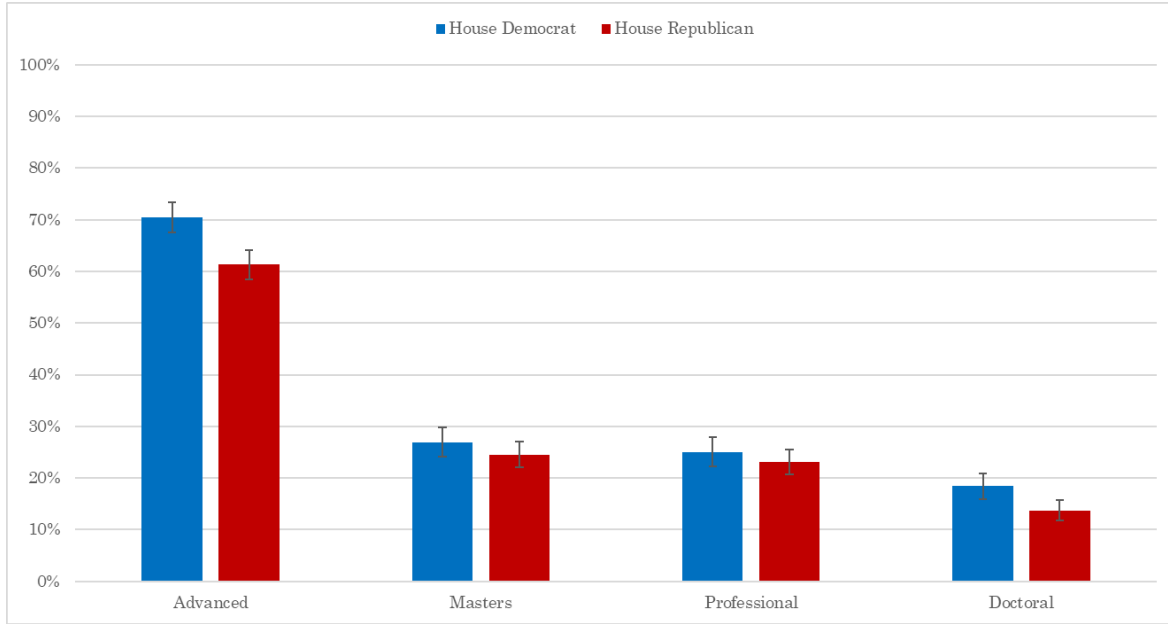


Figure A4. Educational Attainment of House Congressional Witnesses by Party Control. The relative prevalence of post-collegiate degrees between congressional witnesses called by democrats versus republicans within the House of Representatives. Sampled witnesses were re-weighted based on GPO committee ratios.

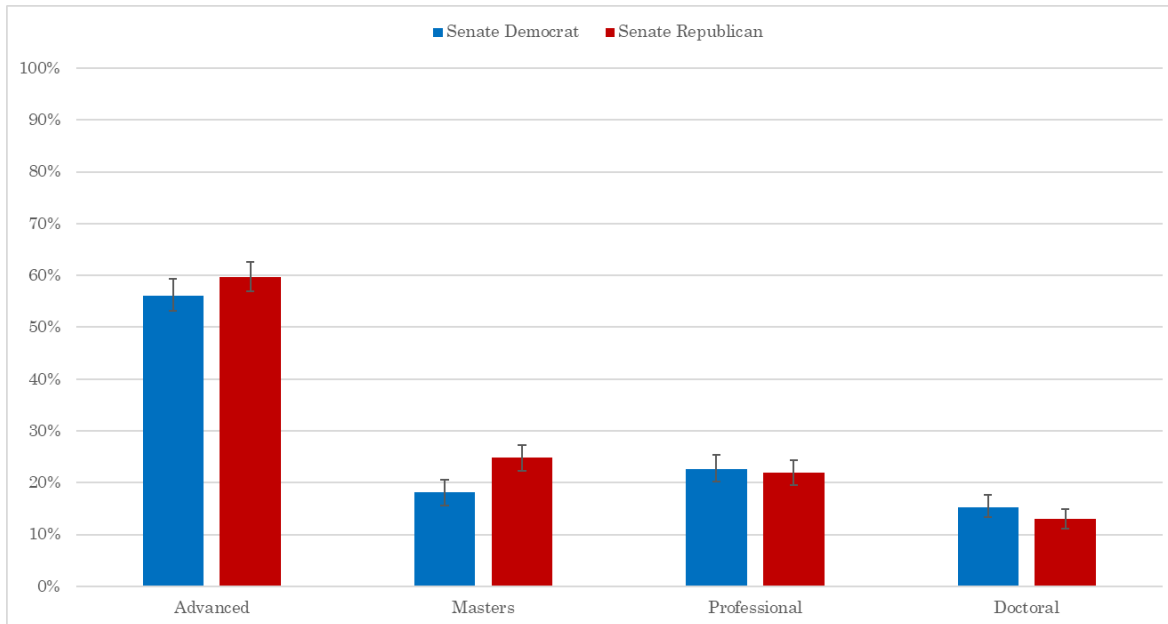


Figure A5. Educational Attainment of Senate Congressional Witnesses by Party Control. The relative prevalence of post-collegiate degrees between congressional witnesses called by democrats versus republicans within the Senate. Sampled witnesses were re-weighted based on GPO committee ratios.

Time period

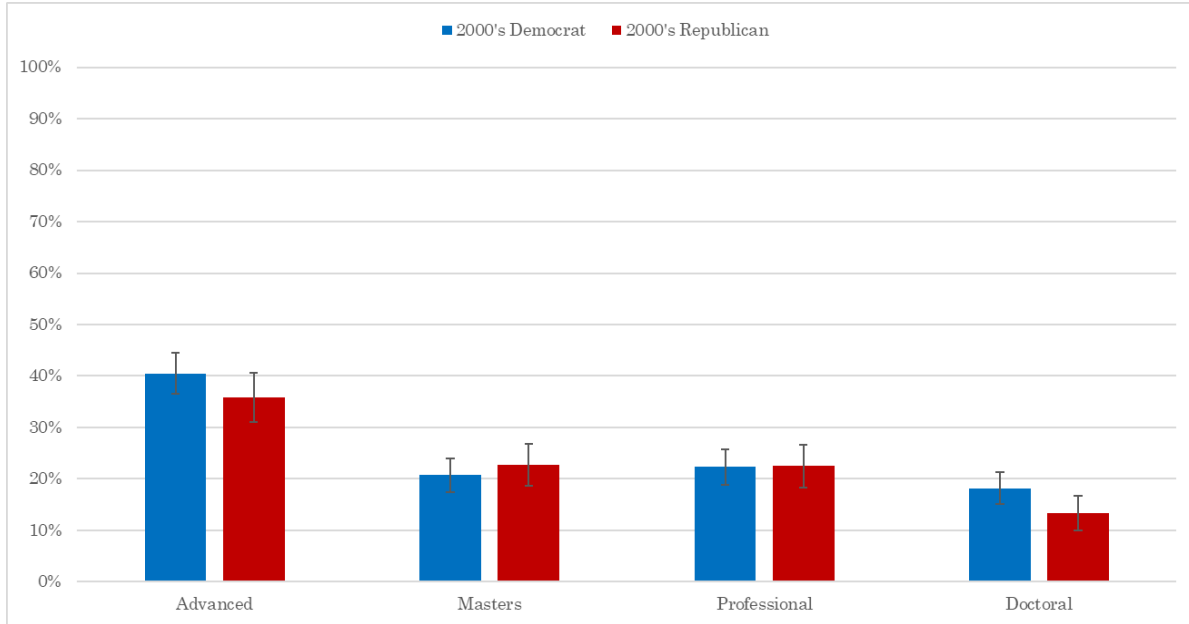


Figure A6. Educational Attainment of Congressional Witnesses by Party Control 2001-2010. The relative prevalence of post-collegiate degrees between congressional witnesses called by democrats versus republicans within the House of Representatives. Sampled witnesses were re-weighted based on GPO committee ratios.

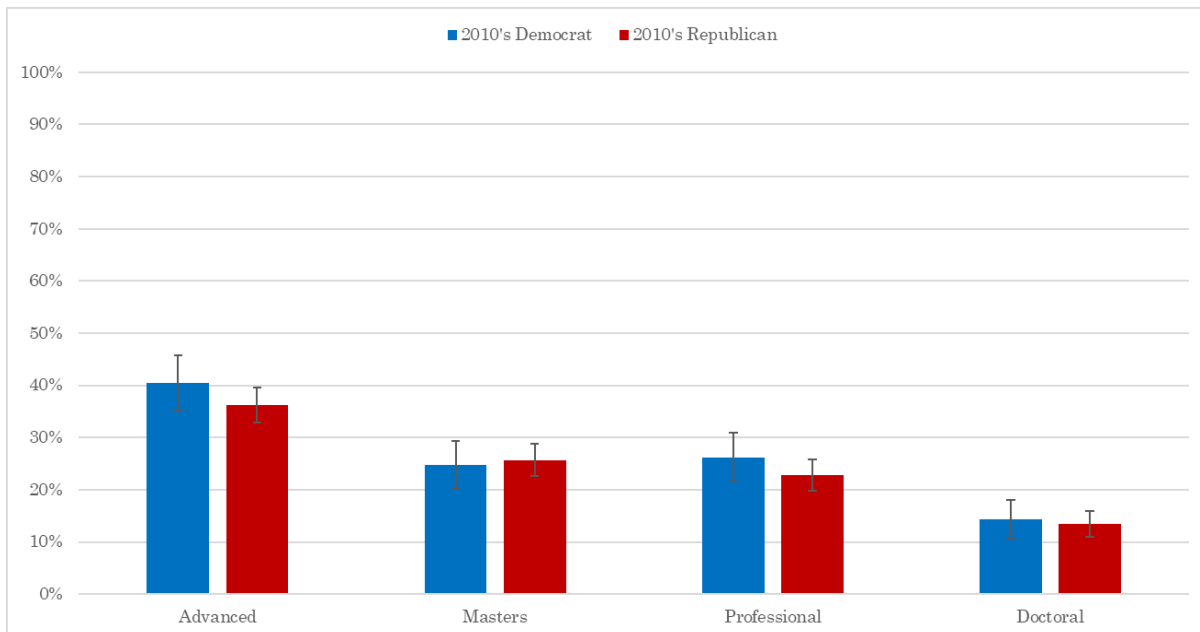


Figure A7. Educational Attainment of Congressional Witnesses by Party Control 2011-2020. The relative prevalence of post-collegiate degrees between congressional witnesses called by democrats versus republicans within the House of Representatives. Sampled witnesses were re-weighted based on GPO committee ratios.

Other Degree Types

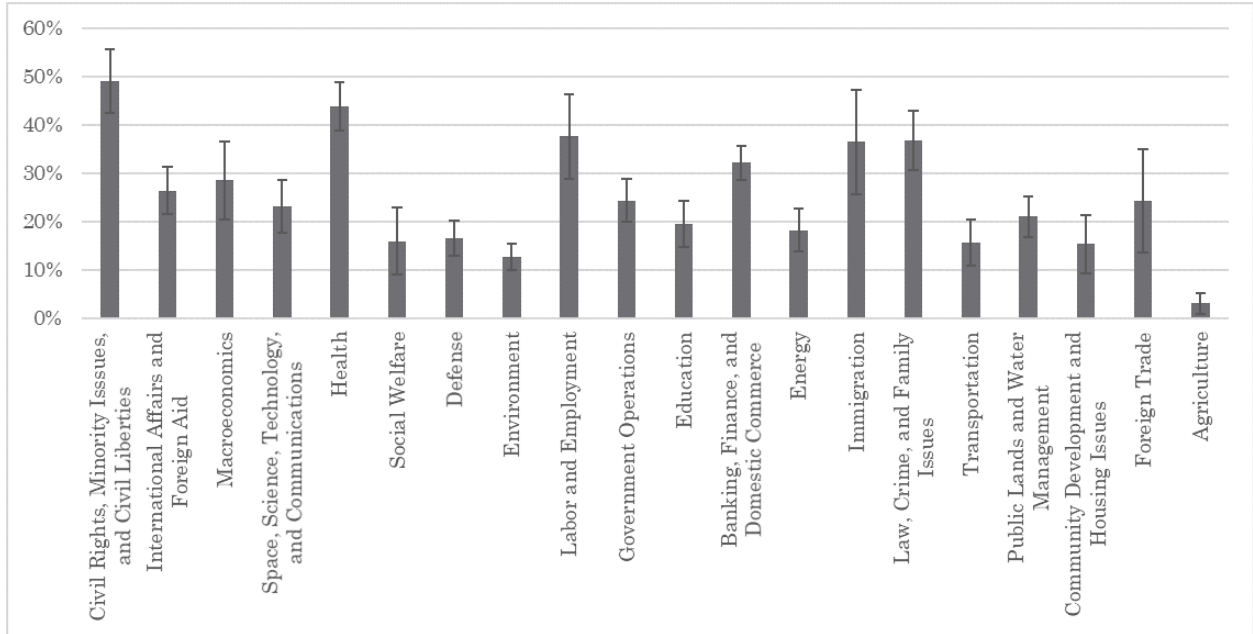


Figure A8. Educational Attainment of Congressional Witnesses by Topic. The likelihood of a witness having a professional degree depending on the topic of a hearing. Sampled witnesses were re-weighted based on GPO committee ratios.

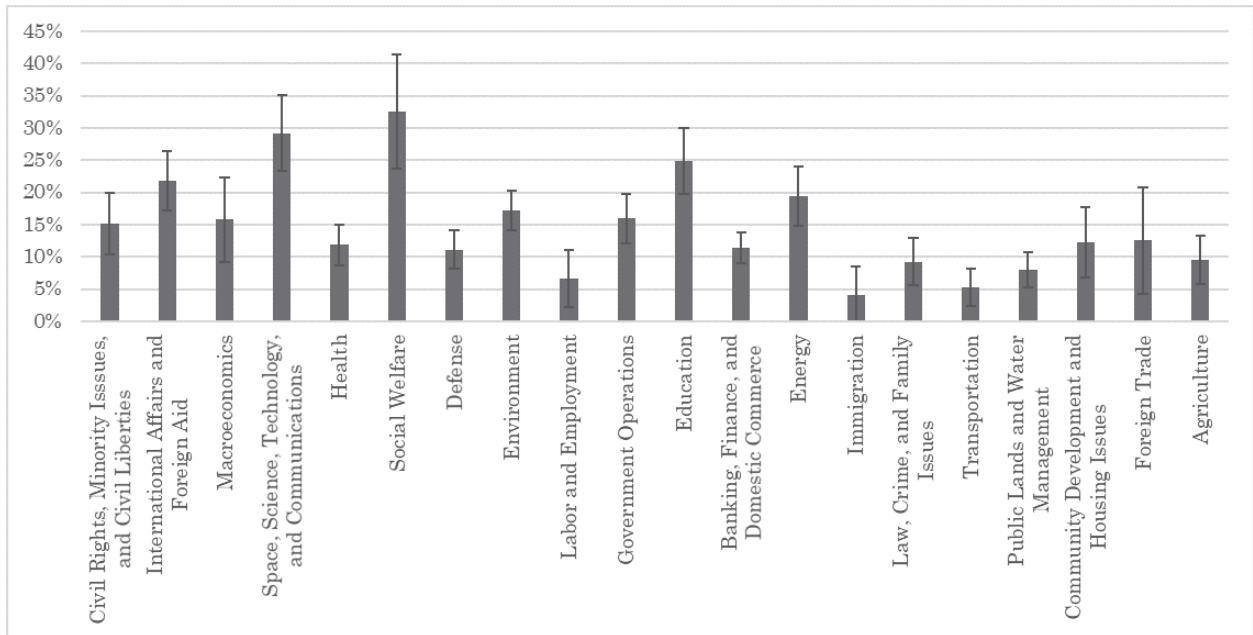


Figure A9. Educational Attainment of Congressional Witnesses by Topic. The likelihood of a witness having a doctoral degree depending on the topic of a hearing. Sampled witnesses were re-weighted based on GPO committee ratios.

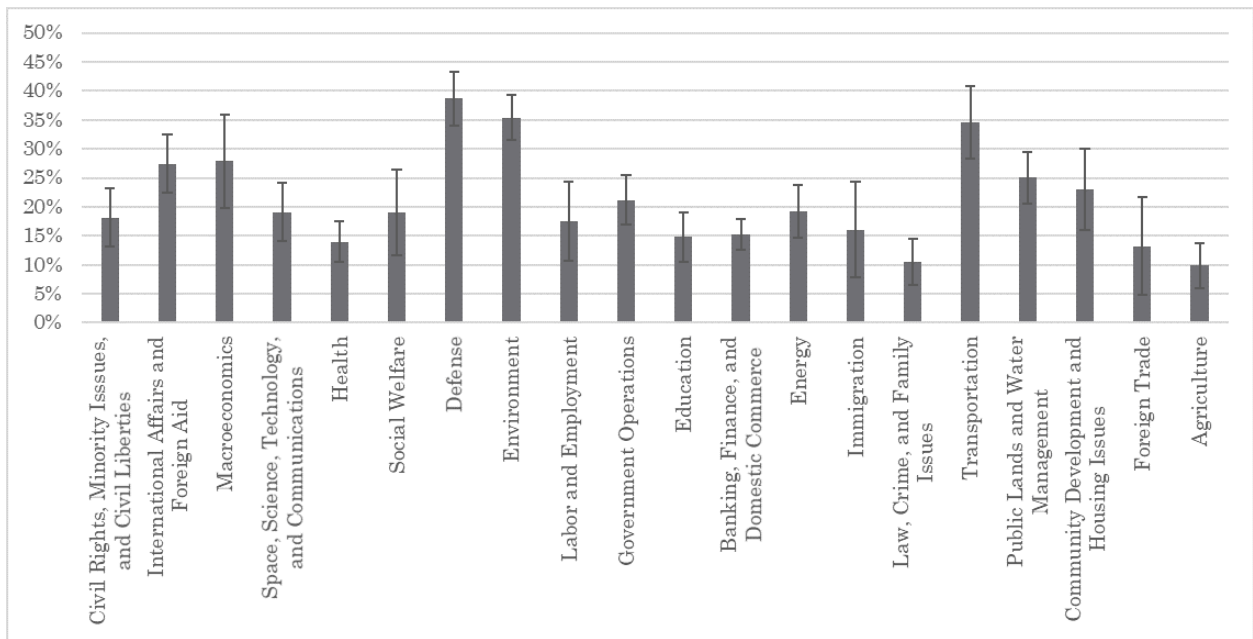


Figure A10. Educational Attainment of Congressional Witnesses by Topic. The likelihood of a witness having a masters degree depending on the topic of a hearing. Sampled witnesses were re-weighted based on GPO committee ratios.

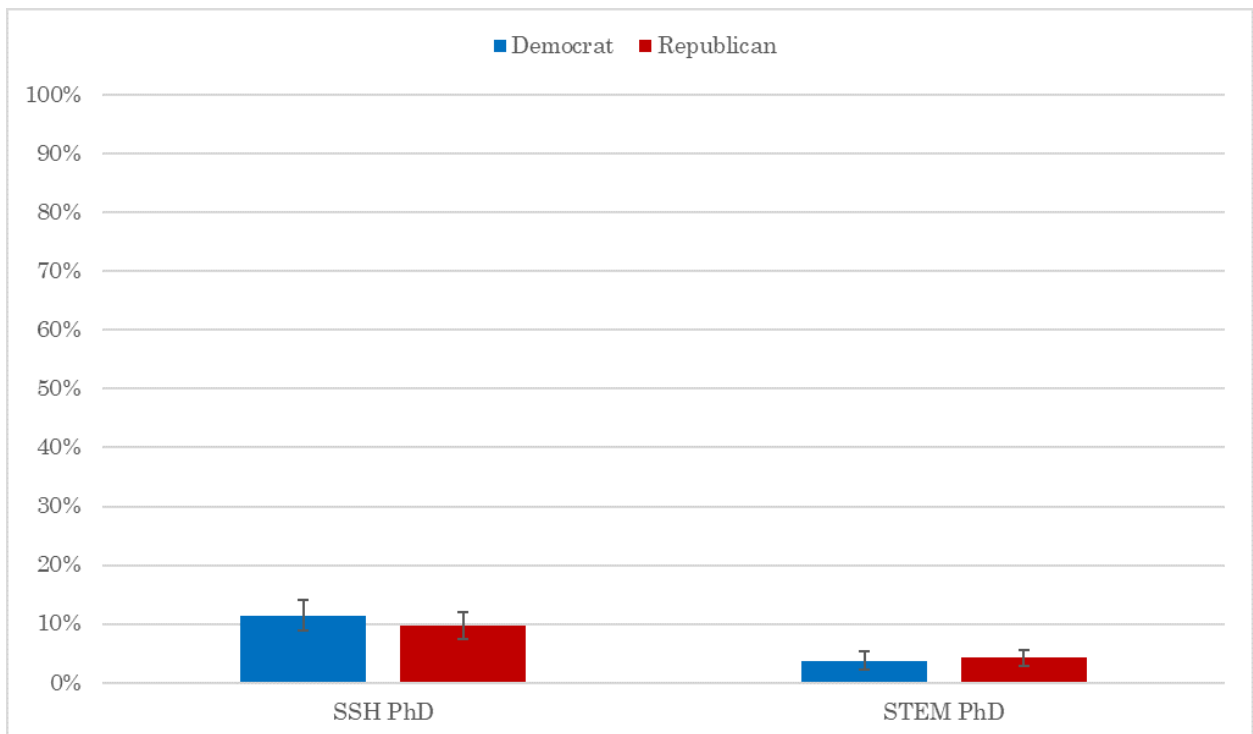


Figure A11. Educational Attainment of Congressional Witnesses by Party Control. The relative prevalence of SSH (social science and humanities) and STEM (science, technology, engineering and mathematics) PhDs between congressional witnesses called by democrats versus republicans. Sampled witnesses were re-weighted based on GPO committee ratios

Regressions

Table A1. Regression Analysis of Party Control. Impact of party control on witness degrees when varying between weighting witnesses and considering topic effects.

Dependent Variable	Likelihood of Witness Holding an Advanced Degree				Likelihood of Witness Holding a PhD			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Model								
Party: Republican	-0.04**	-0.03	-0.03	-0.04	0.05*	0.03	0.03	0.04
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Constant	0.83***	0.83***	0.29***	0.30***	0.22***	0.21***	0.09***	0.08***
	(0.01)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Weights?	No	Yes	No	Yes	No	Yes	No	Yes
Committee Fixed Effects?	No	No	Yes	Yes	No	No	Yes	Yes
Observations	1,587	1,587	1,587	1,587	1,587	1,587	1,587	1,587

Extended Methodology

Stratified Sampling Technique

Since sampling was going to occur on a per-committee basis, it was required that every GPO entry be assigned to at least one committee. Though the GPO database contained committee titles, these were not consistent. A title might vary subtly between transcribers (ex. “The Senate Resources Committee” versus “Senate Resources”) or more significantly due to phased out committees and names. The Comparative Agendas Project’s congressional codebook was used as the means to parse these differences. Their resource maps modern and historical committees to a numerical system based on name changes and legislative topic transitions as various committees were created and decommissioned (“Committees Data Codebook”). Once small grammatical and spelling differences were manually identified, every hearing was successfully mapped to its committee codes.

Several factors were then used to further narrow the scope of hearings to sample from. First, nomination and appointment hearings were not considered. The focus of this research is on the expert witnesses that congress invites to speak on important topics. While vetting federal appointments is a crucial part of congress’ responsibilities, the witnesses in those hearings serve a different role. These entries were filtered out using keywords and then double checked upon manual review of the sample.

Second, some hearings had multiple committees assigned to it. For example, hearings on veterans affairs were often joint hearings between the House and Senate. Because of this, the first two committees listed for any hearing were considered in the sampling process -- i.e. a joint hearing would be listed under both its committees. Though joint hearings with more than two committees present do exist, there were

only five in the 2001-2020 dataset. Protections were added to make sure that no joint hearings were randomly selected multiple times.

Lastly, every committee had to have enough data to make any conclusions. Over the course of the 20-year timeframe, any committee was required to have at least 25 hearings. Figure 1 illustrates that there is a noticeable group of committees with very few hearings. As we wanted to understand trends of Congress as a whole, these made very little sense to sample from. While this choice did reduce the number of committees from 42 to 32, it only eliminated 0.02% of the total hearings. Furthermore, while the Joint Economic Committee was sampled from, witnesses were later negated from results as party control could not be determined given its cross-chamber nature.

After the filtering, there were still more than 16,000 hearings. In order to best code this data, a targeted random sample was generated using VBA subroutines. This was done first by making a list of every committee and every unique hearing ID associated with that committee. A sample could then be made for each valid committee. A random number generator would pick one of the hearing IDs. It would then be looked up in the database and compared against both the previously explained filters as well as a column that ensured no hearing would be sampled twice. This allowed joint hearings to have equal likelihood of being picked for both of its committees without double dipping.

Another column estimated the number of witnesses in a given hearing by counting semicolons in the copied witness text. This number was then added to a running tally. Hearings were continuously added until every committee had an estimated number of witnesses of at least 75 or until the hearing list was exhausted. That sampled list was then put into a database and broken up into separate witness entries.

At this point, a manual review was necessary. It served to both check that the automated hearing filters were successful and to adjust the witness separation as necessary. The semicolons were a good first pass, but there were often corrections. Once this was done, the entire process was repeated with the updated witness counts until there were at least 75 vetted witness entries per committee. This resulted in a grand total of 2,147 testimonies.

Sample Summary

Table A2. Sampled Hearing and Witness Summary. Counts of hearings and witnesses in stratified sample by committee and party control.

Committee Name	Number of Hearings			Number of Witnesses		
	Total	D	R	Total	D	R
House Agriculture	3	1	2	52	4	48
House Armed Service	21	8	13	72	25	47
House Financial Services	10	4	6	71	35	36
House Education and the Workforce	13	7	6	69	41	28
House Commerce	10	2	8	56	15	41
House Foreign Affairs	16	4	12	57	12	45
House Government Reform	16	2	14	60	14	46
House Administration	9	9	0	50	50	0
House Resources	14	3	11	72	19	53
House Judiciary	17	6	11	72	28	44
House Transportation and Infrastructure	13	5	8	54	20	34
House Science	16	5	11	71	26	45
House Small Business	13	3	10	73	21	52
House Veterans Affairs	12	1	11	70	7	63
House Ways and Means	13	3	10	74	17	57
House Homeland Security	19	5	14	71	19	52
House Energy Independence and Global Warming	14	14	0	54	54	0
House Intelligence	19	4	15	70	16	54
Senate Agriculture	15	5	10	78	23	55

Senate Banking Housing and Urban Affairs	18	12	6	70	50	20
Senate Budget	6	2	4	91	39	52
Senate Commerce, Science, and Transportation	11	6	5	68	43	25
Senate Energy and Natural Resources	11	0	11	63	0	63
Senate Environment and Public Works	11	6	5	72	44	28
Senate Finance	13	7	6	53	29	24
Senate Government Affairs	14	8	6	69	45	24
Senate Judiciary	14	12	2	70	59	11
Senate Health, Education, Labor, and Pensions	14	9	5	66	44	22
Senate Small Business and Entrepreneurship	15	3	12	77	35	42
Senate Veterans Affairs	8	4	4	72	38	34
Senate Indian Affairs	10	8	2	62	47	15
Joint Economic Committee	19	N/A	N/A	68	N/A	N/A

Witness Expertise Codebook

Column E: Affiliation

- This should be copy-pasted directly from the Witness Text (column C). Do not type it out.
- If no organizational affiliation is listed, leave this column blank.
- If multiple affiliations are listed, only list one. Government should be prioritized over Academia over Other. If the affiliations are of the same priority, choose the one listed first.
 - Add a “1” to Multi Coded (column H) to indicate that the witness has multiple affiliations.
- If a former government position is specifically cited in the witness text (i.e. “Army Ret.” or “Former Senator”)
 - Add a “1” to Noted Former Government (column G)
- If multiple levels of the same institution are listed (i.e. History department, NYU), the highest level is sufficient for the affiliation (i.e. NYU).

Column F: Affiliation Type

- Identify the string affiliation as one of the following categories:
 - **Federal Agency** (Anything on the federal level that isn’t Congress. The EPA, DOJ, Secretaries, etc.)
 - **Congress** (Senators and Representatives)
 - **State Gov** (Any state-run organization or position. State legislature, Governors, state water authorities, etc.)
 - **Local Gov** (City, town, and municipal affiliations. Mayors, county officials, etc.)
 - **Academia** (Associated with a post-secondary educational institution)

- **Other** (Anything else)
- **Unaffiliated** (The witness text does not have an organization listed.)

Column I: Highest Degree

- Internet search the witness' name and affiliation.
- If their higher educational background is easily accessible (within the first 3-4 results), enter their highest degree [**PhD, JD, MD, MBA, Masters, Bachelor, High School, Other, No Degree Found, No Information Found, Unspecified**].
 - If "Other", specify in the notes (column M)
 - No Information Found for no biographical information
 - No Degree Found for biographical information without educational information
 - Unspecified for biographical information with educational information with an unclear post-secondary degree.
 - Some are discernable, such as graduating from a law school (JD) or medical school (MD).
 - If there is any ambiguity, mark as unspecified for now.

Column L: Degree Domain

- For those with a PhD, code the domain of their degree field using the HESA subject group codes.
 - <https://www.hesa.ac.uk/support/documentation/jacs/hesa-codes>
- If a witness has multiple PhDs or one PhD that clearly falls into more than one domain, use the second Degree Domain cell (column L)
 - Ex: A PhD in Public Policy and Religious Studies
 - Make a note in the notes column (M)
- The Has JD column (J) should contain the following equation

- =IF(I2<>"",IF(I2="JD",1,0),"")
- On the rare case in which a witness has both a PhD and JD, list PhD in the highest degree field (column I) and overwrite Has JD (column J) with a “1”.

Column N/O: Degree Source

- Provide the URL used for Highest Degree and/or Degree Domain
- Fill in Degree Source 2 (column O) if a second URL was used
- If the witness text was the only source of information, write “Witness Text” instead of a URL
 - Ex. “John Doe, MBA, Consulting Inc.”