

A Technology of Distance: Circulation of Statistics in U.S. Public Texts

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Submitted to the Graduate Faculty of the
Dietrich School of Arts & Sciences in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

University of Pittsburgh

2020

UNIVERSITY OF PITTSBURGH
DIETRICH SCHOOL OF ARTS AND SCIENCES

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University of Pittsburgh, 2020

This dissertation explores the circulation of statistics in U.S. public texts to consider the rhetorical nature of statistics. I track statistics through the concept of the “statistical frame,” a way of reading and writing statistics as entangled in the rhetoric that surrounds and composes statistical material that helps to direct the social relevance of that statistical material. Throughout the case studies that I examine, I look to how the choices a rhetor has in composing a statistic are reliant on the context in which the statistic appears and how that context frames a number to signal to audiences how to interpret statistical information—to include the results themselves, what is being measured, how it is being measured, and who is doing the measuring. In the final two chapters, I move toward pedagogy and conclusions about strategies in ethical composing of statistics in public discourse.

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Preface

Writing is difficult and this dissertation has been no exception to that truth. I have had help:

First, I want to thank my committee. Cory Holding has been infinitely supportive of me since I started at Pitt. Because she had known Matt Newcomb (my advisor at SUNY New Paltz for my thesis on a similar topic as this dissertation—and a person I also owe gratitude for help with this dissertation through that thesis work!) it was nice to have someone I felt comfortable with indirectly, just because she was a colleague of Matt's. However, from that starting point, I was so very fortunate to receive so much close attention to my writing, my ideas, and thoughts for how to move this lumbering project forward during our countless phone conversations and meetings (at Commonplace or the Squirrel Hill Library, childcare permitting for both of us). I strive to be the listener and thinker that she is. Likewise, I strive to be such a wonderful and thoughtful composer of feedback like Steve Carr. He strikes such a compassionate balance between direct (and much needed) feedback, while doing it in a very generous and caring way. I loved how Annette Vee made sure I did not close off possibilities too soon in this project and helped me imagine many directions this work could take. She is so great at collaboratively generating ideas, and like the rest, a thoughtful commenter on writing. Finally, I was so happy when Joanna Wolfe agreed to be on my committee because she is such a careful and smart thinker on the rhetoric and teaching of quantification. She is also a very good and kind commenter on work, as well (e.g., she made me a wonderful, smart, and kind screencast of my final chapter).

There were other people who had a direct hand in giving me feedback on this dissertation and helping me set good habits. First and foremost is Treviene Harris: I would not have made the progress I had made without her. Having a writing partner is wonderful, I highly recommend it.

Having an *excellent* writing partner that keeps you on task, checks in regularly, thinks through ideas with you, and gives you a space to vent is such a fortunate thing to find. I also owe a lot to people who gave feedback during works-in-progress presentations, writing groups and workshops, and in 1-on-1 meetings (I know I'm going to forget someone, but I think this is close to everyone!): Jonathan Arac, Jennifer Boum Make, LeTriece Calhoun, Peter Campbell, Jean Ferguson Carr, Sagnika Chanda, Sam Corfman, Kelsey Cummings, Jessica FitzPatrick, Cheryl Geisler, Nancy Glazener, Jean Grace, Laurie Gries, Johanna Hartelius, Jordan Hayes, Katherine Kidd, Moriah Kirdy, Brittney Knotts, Matt Lavin, Yali Li, Sonia Luper, Alex Malanych, Ali McIntosh, Ben Miller, Peter Moe, Avey Nelson, John Oddo, Matt Overstreet, Andrea Paolini, Khirsten Scott, Ellen Smith, Mary Stuckey, Noel Tague, John Taylor, Andrew Thurman, and Melissa Yang.

Material resources were also crucial. I worked throughout high school and college and then I landed a full-time job after college for four years (very luckily, as this was in the aftermath of the 2008 financial crisis) to help build up some savings to lean on through graduate school. Because of federal grants, scholarships, and support from my job to help pay for my MA, I also had little student debt, unlike a lot my peers who have been and continue to be crushed by that debt. Furthermore, my wife, Colleen, was able to land a full-time job a few months into our move to Pittsburgh and that has helped immensely since we have had two kids. Finally, I was fortunate to secure funding through all six years at Pitt.

My sister, Tara Lennox, as the first in our family to go to college, helped me figure out how to navigate education after high school. She has supported me my entire life and I am lucky to have such a supportive big sister. Her husband, Andrew Lennox, and children, Aidan and Owen Lennox, have also been wonderfully supportive. My mother-in-law Kate Freund, my father-in-law Dave Freund, my sister-in-law Erin Antioquia, her husband Mike Antioquia, and my brother-in-

law Jack Freund, have also been very supportive and helpful. Kate and Jack, especially, have been immensely generous with childcare—as has Brooke Barry, Heather Roesinger, and the great teachers and staff at the Cyert Center on Penn Avenue.

My mom, Dottie Libertz, sat at the kitchen table with me every day as a kid helping me with homework. Even though she has no idea what a dissertation is (and forgets how to pronounce that word in a really charming way, producing variants like “diss-en-tation” and “diss-ahrn-tation”), she helped me set habits on how to learn. My dad, Tom Paone, was a very hard worker and was an inspiration, through his humor, for my love of language. I loved the scenarios we would riff on at the kitchen table or on the couch, when, for instance, he would bump into an oscillating fan (e.g., an ongoing dispute between rivals) or when a blank, blue screen would be on the TV (e.g., a very detailed monologue about how and why this was his favorite show). His creativity, weirdness, and humor showed me at an early age how fascinating language can be. His work ethic was also a model I have followed throughout my life.

I have two kids, Ruby and Otto Libertz. They are sweet, fun, and smart, and I can’t wait to spend more time with them once this dissertation is done. Before getting this thing done, one reason I could take most of a weekend to write (or somehow manage writing at various times while having the kids 24/7 during a pandemic) was because I have a very supportive partner. Colleen has the energy, patience, and compassion of an army of preschool teachers and therapists. I am really looking forward to spending more time with her, too. Dwayne “The Rock” Johnson, of course, used to say “Know Your Role.” We try do that, playing multiple roles when called upon, and lately, Colleen has been playing more of them. Balance will be restored right after submitting this dissertation. It is a recurring theme in this acknowledgment section that I am very lucky. Nothing proves that more than Colleen.

1.0 Statistics, Rhetoric, Circulation, and Statistical Frames

In this dissertation, I explore how one rhetorical maneuver—the deployment of a statistic within a text—might be treated more critically as a rhetorical art by isolating and examining the rhetoric in and around a statistic as it travels to new texts. In ordinary language, statistics are often cited as texts themselves; for instance, the headline from an article in *The Boston Globe* reads, “This statistic is giving people a glimmer of hope about the Massachusetts coronavirus pandemic.” A statistic reads as solid, as a thing, almost something you can hold on your hands. In ordinary usage, a statistic is something like a book or a song—something with finite boundaries that can go from a bookshelf to a coffee table or played on the radio or on your phone. Statistics, though, like books and songs, are not as solid or as full of boundaries as we immediately think. They are enmeshed in language, they depend on the context in which they are read or heard, and they can be remixed in a multitude of ways (e.g., translation, sampling in another song, taken into fragments to be repurposed in new texts as quotation or paraphrase or parody). Statistics are malleable like any rhetorical artifact, but their size and numerical content bring about different characteristics that make them unique.

Statistics are varied in their type and in the ways they are used. It would be difficult to say anything absolutely definitive about them as rhetorical objects—they are a very flexible genre of writing. However, in this dissertation, I study the circulation of three statistics to follow the journey they make and how they change as a way to learn more about how statistics live in language and rhetoric, and, from a critical perspective, better and worse ways to use them. Two elements of statistics that I find foundational to this analysis are the idea that quantification is a “technology of distance” and, as such, statistics (in public texts especially) require the rhetor to explicitly or

implicitly evaluate a number in the wider ecology of meanings made in the larger text that the statistic is embedded in. The term I use for this evaluation process is the “statistical frame,” which I define as a way of reading statistics as entangled in the rhetoric that surrounds and composes statistical material that helps to direct the social relevance of that statistical material. Throughout the case studies that I examine, the choices a rhetor has in composing a statistic are reliant on the context in which the statistic appears and how that context frames a number to signal to audiences how to interpret statistical information—to include the results themselves, what is being measured, how it is being measured, and who is doing the measuring. In the case studies I examine but also while teaching my class, I have found how much statistics rely not only on the numbers but how they extend their tendrils outward into the texts in all sorts of ways. Statistics are complex, messy forms of writing—it is a fascinating contradiction that they travel so well as fragments of text yet become so different as they enter new contexts.

In this chapter, I look to science and technology studies (STS) to theorize a statistic’s nature as a “technology of distance,” explore how this status has a relation to rhetoric and expertise, explore how interdisciplinary uses of the concept of “framing” are helpful in building out my concept of the statistical frame, map out my application of the appraisal framework in my method of analysis of statistical frames, briefly sum up the outline of the dissertation, and then provide some information on my position as a researcher for this dissertation.

1.1 Technology of Distance

A statistic is a technology of distance in two ways: 1) it comes in a mobile package that reduces a lot of information into a small amount of text, and thus can travel far, and 2) they are

presumed to be distant from human interference, become trustworthy, but, counterintuitively, they then require interpretation via a reintroduction of said human interference¹. Numbers end up not speaking for themselves, no matter how much we want them to do so, as I explore on the sections on rhetoric, framing, and appraisal. Before getting to those topics in the later sections in this chapter, though, I want to expand on these two qualities of a statistic as a “technology of distance.”

In chapter 5 of *Science in Action*, Bruno Latour (1987) explores what he calls “centres of calculation,” which are institutions that attempt to universalize knowledge by generating “immutable and combinable mobiles” (e.g., specimens, maps, diagrams, logs, questionnaires, forms) to extend the network of the centre’s influence reducing the distance of its grasp toward other nodes in its network and thus increase its power. However, so many inscriptions are produced in the practice of centres of calculation, that the humans attempting to use them become overwhelmed. Latour uses the example of the director of the census: what is this person supposed to do with millions upon millions of questionnaires? Latour (234) writes, “One solution is to do to the questionnaires what the questionnaires did to the people, that is, to extract from them some elements and to place them on another more mobile, more combinable paper form.” But this is a partial solution. The people can’t be brought to the census office, but questionnaires can be brought. You cannot display all of the questionnaires, but you can create a form that display tallies on a smaller amount of paperwork that represent responses to the questionnaires. But the tallies,

¹ This second definition is truer to Theodore Porter’s (1995, ix) original use of the phrase “technology of distance,” but, as I explain later, Porter also, like Latour (1987) and others, sees quantification’s appeal as partially related to its ability to travel to others. I only make this point more explicitly in my adaptation of Porter’s terminology since I am more invested in the ability of statistics to circulate.

too, are overwhelming and difficult to work with. Here is where quantification finally comes into play:

A third degree paper form is now necessary to record not the marks any more, but the *totals* at the bottom of each row and column. *Numbers* are one of the many ways to sum up, to summarise, to totalize—as the name ‘total’ indicates—to bring together elements which are, nevertheless, not there. The phrase ‘1,456,239 babies’ is no more made of crying babies than the word ‘dog’ is a barking dog. Nevertheless, once tallied in the census, the phrase establishes *some* relations between the demographer’s office and the crying babies of the land. (Latour, 234)

Even this becomes overwhelming, and a fourth degree is utilized: percentages, visualizations, etc. Fifth, sixth, and *nth* degrees produce more and more inscriptions as the census bureau continues to exist, the overall population grows, new computer programs are created, the field of demography continues to exist and develop, etc. Statistics, writes Latour (237), help to try to realize the ideal of calculating: to “retain as many elements as possible and still be able to manage them.” Calculating the mean may be meaningful but combining that with the variance may be even more meaningful—to do so allows the analyst to consider different ways to interpret the mean depending on how large or small the spread is for the population or sample. More and more calculations can be done to take a different perspective on the data generated by those original questionnaires, combining inscriptions with other inscriptions, and, allowing these new inscriptions to stand in for a large amount of information, making them easy to travel. They can combine and travel, and, ideally remain manageable among experts while they do so.

Like Latour, Theodore Porter also comments on the distance a number accrues from material sources, but Porter’s distance is about trust in the system of quantifying—it is a distance

from human judgment. Porter (1995, ix) writes that quantification is a strategy of communication, a “technology of distance” that “minimizes the need for intimate knowledge and personal trust.” This distance might be created because a statistic, for instance, is so far into the cascade that Latour describes, and thus, far away from the phenomenon it measures, that it is dispassionate, it is clinical, it is removed from the material and concrete world that can only create more obscure and particularized knowledge. A system is built by a community of experts that makes standards and that can be trusted to measure phenomenon without those experts getting their hands dirty and biasing the results. This is the perception that sustains a trust in statistics, but it is also what technology does—it is with but also apart from the humans (and nonhuman animals) that use it. It is something we work with, so we of course manipulate it, but technology, as an instrument, brings its own power and influence to the phenomenon it engages with.

Porter (ix) also notes, along these lines, that quantification is a “highly structured and rule-bound” strategy of communication and that quantification helps science become “a global network rather than merely a collection of local research communities.” As a device of communication, they can be efficient ways to communicate no matter the context that experts use it for. Statistics can be meaningful in many languages, discourse communities, and genres because we tend to trust and have a shared understanding of what they can mean, at least in a general sense.

Jon Agar (2019) argues that technologies are ultimately about scale: a line of code running on one computer can make an impact on millions of other computers, an automobile can transport a group of people across a continent, a microscope can allow its user to see at a large amount of depth in a sample of tissue, and so on. Technology intervenes to see things we can’t see without that technology. From Agar’s perspective, all technology is a technology of distance, but Latour and Porter show us how statistics are technologies of distance not just in terms of scale (they are

that—they allow us to see something about phenomenon that we couldn't see other wise) but that they are a technology of distance in terms of communication. In the amount of information they can capture that make them easy to share with others and in the systems of calculating they originate in them that generate trust for their users—that they are perceived to be machinic, automatic, objective in ways that ostensibly do not rely on human judgment that other ways of knowing require. In terms of rhetoric, the ethical appeal is the statistic itself. However, ironically, the distance that creates trust (whether true or not) can also be undermined by the nature of communication—interpretation must occur, the numbers have to be evaluated, we have to express or think about what they mean in both direct and indirect ways.

This becomes even more true in writing for non-experts. Statistics in technical discourse may be more subdued in how the writers evaluate numbers (e.g., there may be unstated shared knowledge for what a given confidence interval might mean to readers of a psychology journal, making it less necessary for the writer to signal an interpretation in a very explicit way). In public texts, there is a need not just for explanation but for a “so what,” for a “why does this matter to me?” Newspaper articles, blog posts, tweets, and other genres of public writing do not necessarily have the same sort of interest in creating knowledge in the same way as scientific discourse (or, accumulate power, in the way that Latour explores in *Science in Action*)—which is not the same thing as saying they have *no* interest in the creation of knowledge (or the dynamics of power), but that what's interesting or applicable/relevant to action (in a more deliberative mode) and feelings (in an epideictic mode) can be more of a priority.

Jeanne Fahnestock (1986, 277-279) explains that a big difference between information circulating in academic work and information circulating in the popular press is how it is “accommodated” for a public audience. Fahnestock claims that in public texts, there is more of an

epideictic rhetoric of celebration and blame rather than a forensic rhetoric of reviewing the “facts” generated from analyzing physical evidence (though, all three classical genres are present in both types of discourses—Fahnestock’s claim is more that the proportions differ). The public rhetor’s goal with a statistic can often be, then, things like: telling a story about what is worth knowing, the sorts of interpretations to be signaled that correspond to relevant social issues, what is captivating, what is worrisome, calling forth ideological scripts that confirm biases, etc. However, the social currency of facticity remains even if distance becomes more of a problem than an asset for the public rhetor composing and re-composing a statistic as it travels to new contexts. How do you “warm” the cold statistic? How does it “fit” in a new context—how does the proximity of the statistic to other text change meanings?²

There is a tension between trusting in a distance but also being suspicious of it, especially as a statistic becomes accommodated by the ways writers evaluate them for their audience. Now, there is a more explicit human intermediary that complicates things. Necessarily, for the genres the statistic finds itself in, this happens. But, the ways in which statistics are used, also rely on those inherent ethical appeals related to distance. Statistics are “facts” but they are also “lies,” and so on. In the next section, I explore this tension along with its relation to rhetoric. As a technology of distance, as something that is (perceptually, not actually) untouched by humans, public rhetors

² My claim here is that this “warming” of statistics can exacerbate distrust of statistics in public texts because audiences may not be familiar with the methods for making statistics. This is not to say that signaled evaluations do not occur in more technical discourse for expert audiences. Nor is it to say that these expert audiences do not view statistics with distrust. This happens also. But, I think it happens in different ways compared to public writing and do not have the space in this dissertation to fully explore those differences. Instead, I focus on statistics written for public and non-expert audiences.

and audiences, ironically, want to shrink that distance in some way through an explanation, explicit evaluation, vouching via experts' endorsements, or an expressed mistrust when these conditions are not met.

1.2 Truth, Lies, Rhetoric, and Numbers: In/Artistic Statistics

In the last section, I engaged Latour, Porter, and others in how statistics are a technology of distance in terms of their suitedness for travel and how their systematic and standardized nature helps them build trust with those who use statistics. This trust, in rhetorical terms, brings with it a built-in ethical appeal. Oddly, though, there is a tension with this ethical appeal because the reverse can also be true: people tend to mistrust statistics sometimes *because* of their distance—in a more classic sense of trust, statistics can be seen as the unknown person. And, sometimes, the known is more trustworthy, which, in turn, means that rhetors may go to lengths to more explicitly build their *ethos* to show that the statistic should be trusted. In this section, I explore both sides of this tension, how rhetoric figures into the mix, and what that means for studying the circulation of statistics.

In rhetorical practice, a statistic promises to rectify human fallibility, that its production is distant from human interference. Rather than a personal trust, for statistics, there is an institutional trust in that there are mechanisms in place to produce knowledge that is delivered to us. As an object that can make vast information compact, a statistic can travel easily as a fragment of text; as a technology of distance, the way it can move and become accessible gives a statistic its quality of stability. This perception of trustworthiness and stability presents statistics as inartistic proof, as something used that exists *prior* to rhetoric. But, this is not true. Statistics are reliant on artistic

proof, they are invented. In what follows, I go through some examples of this before revisiting associations between statistics and expertise.

Joanna Wolfe (2010) notes that this association of trust and numbers is apparent in how many rhetoric and composition textbooks treat statistics as inartistic rather than artistic proof—material that exists prior to rhetoric vs. material that is generated by rhetoric. Wolfe, however, goes through a series of examples that display how quantitative rhetoric is reliant on artistic proof. Mathematically, two equal statements can have vastly different rhetorical effects. For instance, Wolfe observes how a ratio and a percentage can have different rhetorical effects—if you heard that there is a 1 in 50 chance that you have a disease or that there is a 98% chance you do not have a disease, what would you prefer? In the case of the ratio, you likely know 50 people, and thus the concreteness of that awareness may make the disease feel closer in probability (thus, making a pathetic appeal) than a percentage that is so close to 100%, in all its glorious abstraction. Wolfe also details several other instances of the rhetorical character of statistics: definitions (e.g., what counts as “spending”), selection of what Perelman and Olbrechts-Tyteca call “interpretative level” (i.e., foregrounding certain interpretations by categorization and arrangement of information on a spectrum from the narrowest context to the highest level of symbolic abstraction), and visual rhetoric.

Syntax and word choice also play a large role in the rhetorical flexibility of statistics, and, thus, their reliance on artistic proof. Itzhak Roeh and Saul Feldman (1984) examine headlines of a daily newspaper and find that statistical headlines often played out little “melodramas” in which pathetic appeals were made syntactically. Roeh and Feldman note the tension in expectation for syntax to symmetrically resolve, and this tension can affect the meaning. For instance, the syntax of “600 Israelis visit Egypt, 60 Egyptians visit Israel” invites repetition of the number 600.

However, the similarity of 60 to 600 against the syntactic repetition creates a sense of irony, helping to tell a story of uneven relations between Egyptians and Israelis.

Word choice can also do much to create different rhetorical effects in rather subtle ways. Jonathan Potter, Margaret Wetherell, and Andrew Chitty (1991), in their research on the production of a documentary on cancer research and its financial cost, write of the importance of non-numerical quantifiers like “small” or “rare”. These moves create a “mutually constitutive” reflexive relationship between the non-numerical quantifier and the (implicit or explicit) numerical quantifier, ascribing meaning and sense to one another (Potter, Wetherell, and Chitty, 1991, 356). These words can also be conceived as rhetorically *more* precise because they assign an evaluation. Word choice can also be utilized in statistics in service of specific rhetorical devices. In her chapter on amplification, Jeanne Fahnestock (2011, 393) uses two statistics as an example of what she calls “topping”—topping occurs in the use of the phrases that modify the number (e.g., “more than”) to heighten an already large number. Because statistics are often numbers that exist in language, syntax and word choice can do much to compose and re-compose statistics with different rhetorical effects.

This rhetoricity of numbers held against their reputation as “objective” likely contributes to the odd tension between truth and lying that many of us encounter with statistics. Wolfe (2010, 453) writes that “there is a paradox in that on one hand our culture tends to represent statistical evidence as a type of ‘fact’ and therefore immune to the arts of rhetoric, but on the other hand we are deeply aware and suspicious of the ability of statistics to be ‘cooked,’ ‘massaged,’ ‘spun,’ or otherwise manipulated.” Perhaps it is the statistic that is rhetorical, and the data are pure? But even here there are problems. Lisa Gitelman (2013) edited a collection titled *Raw Data is an Oxymoron* for this very reason. Gitelman and Virginia Jackson (2013, 2-3) observe that “data produce and

are produced by the operations of knowledge production”; as Lev Manovich (2001, 224) writes, “data does not just exist—it has to be generated.” Humans construct and organize data for purposes. It does not come out of the void. Criteria for collecting and categorizing data involves rhetoric, as well.

So if data are generated rather than preexistent and if statistics are invented as artistic proofs, are statistics ever inartistic? According to Aristotle, inartistic proofs “preexist” a rhetorical situation and he lists witnesses, testimony from torture, and contracts as examples of such preexisting material that can be used by a rhetor; inartistic proofs are *used* while artistic proofs are *invented* (1356a). For witnesses, there are both ancient witnesses (e.g., poets, proverbs) and modern witnesses (e.g., a person at scene of an event in question) (Aristotle, 1375b-1376a). Of the examples noted, witnesses come closest to statistics since, like statistics, witnesses describe something, either an event or expert testimony about relevant subject matter.

Oddly enough, the oft-repeated aphorism about statistics and lying (i.e., “there are three kinds of lies: lies, damned lies, and statistics”) variously attributed to Mark Twain and Benjamin Disraeli is derivative of an earlier aphorism about expert witness testimony (e.g., “there are three kinds of liars: liars, damned liars, and expert witnesses”). Statistician Peter Lee refers to several iterations of this aphorism in the context of the courtroom in the nineteenth century. One notable example (Giffen, 1892, 209) acknowledges this shift:

An old jest runs to the effect that there are three kinds of comparison among liars. There are liars, there are outrageous liars, and there are scientific experts. This has lately been adapted to throw dirt upon statistics. There are three degrees of comparisons, it is said, in lying. There are lies, there are outrageous lies, and there are statistics.

Statisticians are not liars, but statistics are lies. A subtle shift, but it shows that agency of the expert (i.e., the statistician) is diminished and the focus belongs now on the statistic, the “technology of distance.” A statistic performs its inartistic nature, and this is artistic work.

Much as the expert is replaced by the statistic in the aphorism, a statistic *marks* the rhetor as expert as an ethical appeal. It helps contribute to the performance of expertise to (ideally) put trust in the expert. In *The Rhetoric of Expertise*, E. Johanna Hartelius (2011, 4-6) distinguishes between autonomous expertise and attributional expertise. Autonomous expertise is about what a person knows (e.g., if an Astrophysicist has knowledge about astrophysics, then they are an expert) and attributional expertise “exists entirely in the signs and symbols of a person’s relationship to a given environment and audience...[where] one’s performance is evaluated irrespective of so-called ‘real knowledge’” (Hartelius, 2011, 4). Statistics seen as a valuable, expert-sanctioned mode of communication means that anyone who uses them may be attributed as an expert, regardless of their knowledge. A rhetoric of expertise requires performing like an expert (Hartelius, 2011, 9-11) and though a rhetor may invent a statistic with both accuracy and rhetorical deftness, the very *use* of a statistic can mark one’s expertise, moving the argument forward—potentially without much lingering on what the number means beyond what the rhetor signposts for their audience.

If a statistic can attribute expertise, part of its value can be this attribution effect. However, too much reliance on this effect may, counterintuitively, degrade the trust of a more resistant audience if they are suspicious of the rhetor or their position on a topic. The theoretical comfort, in a vacuum, of the statistic’s “distance” from biased, human activity always risks a *misuse* of the statistic-as-inartistic-proof in a context like that of political argument—this potential for misuse can bring mistrust. This potential for mistrust might explain the lengths that rhetors citing statistics go toward making ethical appeals to advocate for trust in a statistic. In my case study on the

smoking/lung cancer correlation as well as the *FiveThirtyEight* election probability, many texts engaged in these ethical appeals in ways to both increase trust and decrease trust.

But, of course, how any one person might interpret a statistic depends on many variables. It depends on the person's ideology or schema they use to see the world or how what they encounter might bring a particular terministic screen that it might not bring for another person. It depends *not only* on, as described above, whether an appeal to expertise exists or how words immediately next to a number might shift meaning through different word choice or syntax or visual aids. It also depends on the sort of story a rhetor is telling that might impact one's interpretation of a number. All statistics both tell a story and are part of larger stories in the texts they are embedded in. A relationship to evaluation of a statistic and its built-in trust-value (or mistrust) can be enhanced or diminished depending on the choices a rhetor makes in signaling to their audience how to interpret the material. In terms of a statistical frame, this means focusing on "who" is measuring in addition to the results, what is measured, and how it is measured. In the next section, I further explore the concept of the statistical frame to pay closer attention to how such evaluations are built up, followed by a section on the appraisal system as a way to analyze statistical frames.

1.3 Statistical Frames

It can sometimes be easy to think of statistics as something other than language, but they are dependent upon it. Language and other modes of meaning-making are messy phenomena—things can get tangled up into its web in ways that can frustrate the most scrupulous analyst. Thus, thinking about how numbers get weaved into webs of meaning can be helpful when think about

how rhetors can try to signal to their audiences what interpretations to take up for a given number. This is why I believe the concept of a statistical “frame” can be helpful. Thinking about not what a “statistic” says, but how its tendrils reach out to other parts of the text, reciprocally, to say something about what the results are, what is measured, how it is measured, and who is measuring it can accumulate into several meanings relevant to trying to understand what interpretations of a number are available (and what interpretation the rhetor is signaling to their audience to take on)—what to believe about the statistic, how to feel about it, what actions to take up based on the statistic’s message, etc.

In his textbook *Statistics as Principled Argument*, Robert P. Abelson (1995, xii-xiii) notes that the purpose of statistics is not to calculate in itself, but that it is a social activity that involves rhetoric and narrative (pp. xii-xiii). Interpretation of numbers becomes a potential conflict: “critics may quarrel with the interpretation of your results, and you had better be prepared with convincing counterarguments” (Abelson, xii). But beyond a strictly agonistic or classically dialectic view of two scholars sparring over arguments about statistical results, interpretation has a more quotidian function. Abelson calls this “interestingness”—there must be something that draws a reader or listener into the text, to spark curiosity in what a given statistic might mean and the consequences of that meaning. Abelson writes that for statistics to be interesting, they should “chang[e] the audience’s beliefs about important relationships, often by articulating circumstances in which obvious explanations of things break down” (xii). Abelson asks his students to look at their research and ask themselves what the newspaper headline would be for it in order to get them to think about how their claims based on data are interesting. Reading and listening always involve making meaning, and we necessarily, as writers, attempt to cue our readers on how they should interpret what we have to say.

From Abelson's perspective of a psychologist grounded in a quantitative tradition, statistics that challenge common sense beliefs are interesting. However, especially in terms of public texts that circulate, the confirmation of a belief rather than its challenge might be just as interesting and engaging. People do things with numbers, and often in political discourse, they do things that justify one ideology against another. With Abelson's dual grounding of interpretation and interestingness in mind, I want to examine how statistics are aligned with interpretations and are made "interesting" for a range of purposes and audiences. A number is never only a number once it is surrounded by language and other semiotic modes within a rhetorical situation.

The idea that a number is mediated by rhetorical work that influences interpretation drew me to the concept of framing. Framing has many definitions depending on the object and scope of analysis (e.g., messages or events within news articles or non-profit materials, or for studies of human decision-making). Framing not only is used in many disciplines in both social science and humanities traditions (e.g., communication, rhetoric, psychology, sociology, linguistics, leadership studies, social movement studies), but has been labeled as a "fractured paradigm" due to inconsistent usage even within specific disciplines or objects of study (Entman, 1993).

Definitions of framing in communication range from broad to narrow, typically focused on mass media (Entman, Matthes, and Pellicano, 2009, 175). For instance, William A. Gamson and Andre Modigliani (1987) defined framing as the "central organizing idea or story line that provides meaning to an unfolding strip of events," which leaves open space for various images, anecdotes, metaphors, etc. to help guide an audience toward making meaning of information. For a narrower definition, Robert N. Entman (1993) explains that frames select certain aspects of a perceived reality to help define problems, diagnose causes, make moral judgments, and/or suggest remedies. For example, Entman names a "cold war" frame for an article about a foreign civil war (**bold** for

each of Entman's framing criteria): there is a **problem** of communism **caused** by communist rebels **who are atheists aggressors** that should be **remedied** by U.S. intervention. Framing, for my purposes with statistics, is useful as a concept to think with because of its value in comparative analyses to help think about questions like: how is the presentation of this statistic organized around other ideas and meanings in the text and with other cultural associations? How is the number associated with other viewpoints? What emotive associations are at play in this organization? And so on. Framing helps to think about ways to make information sticky—to make it easy to grab onto, to make something accessible.

Rhetorician Jim A. Kuypers (2010, 302-304) notes that a rhetorical study of frames can help differentiate between *themes* and *frames*. In other words, not only what content is selected and where it occurs but how that content is manifested in different ways (e.g., content analysis is a common method in framing analyses). For instance, Kuypers uses an example of a framing content analysis cataloging how often “good” and “evil” occur in speeches by George W. Bush and in media coverage. Kuypers argues that this is not enough evidence for whether the news media “framed” the War on Terror as a contest between “good and evil” in a monolithic way. A fuller, more contextualized approach to supplement or replace content analysis would be warranted, to make sure that themes (i.e., good and evil) are not mixed up with frames (i.e., how themes are rhetorically expressed). In his framing research on coverage of Bush after 9/11, Kuypers found that, while the media did carry forward many themes of the administration, it began to frame it more critically than they are typically given credit for in communication and rhetoric research. In other words, while “good and evil” was a prevalent theme, the way it was presented (e.g., a critical perspective vs. an uncritical perspective) spoke to different kinds of frames. Thus, these framings encouraged different interpretations despite being about the “same” themes.

Framing can be especially useful for analyzing rhetoric of the press by comparative analysis (Kuypers, 2009, 198) because press accounts often offer privileged knowledge to a broad audience, making matters of accessibility important. To frame helps to map out, quickly, why something is important and what the take-aways are. Statistics within public texts function like microcosms of the news story: like news information, privileged or expert knowledge must contend with issues of accessibility for a number's meaning.

Framing in other disciplines has had an interesting, albeit indirect, relationship to statistical rhetoric. For instance, one of Entman's examples to demonstrate the power of framing is from Daniel Kahneman and Amos Tversky's (1984) study of decision making. Kahneman, Tversky, and other psychologists and economists have done a lot of work on framing and similar concepts where people are given similar information presented in different ways to measure their different reactions. In this study, Kahneman and Tversky asked two groups of people to make a decision on programs to combat a disease, supplying statistics for two programs (both programs framed differently in the respective groups)—one statistic offered a definite number and the other statistic for the other program offered a probability. In other words, the statistics across groups were mathematically equivalent but framed differently. One group was offered a policy option vignette framed in terms of lives saved and the other group was offered a version of this policy option vignette framed in terms of lives lost. When framed in terms of lives saved, people tended to choose the definite number. When framed in terms of lives lost, people tended to choose the probability.

Framing has a similarity to how we can think of statistics as artistic proof: mathematical operations, definitions, and word choice of what was counted were influential in persuasion. But they can also have nothing to do with the text of the statistic itself. In a study about crime,

Thibodeau and Boroditsky (2011) found that two different metaphorical frames in sentences preceding the numerical elements (i.e., crime as committed by “beasts” and crime itself as a “virus”) prefacing the same statistics (i.e., worded in the same exact way) produced two different reactions. The “beast” group reacted with solutions to crime that involved capturing, enforcing laws, or punishing (e.g., calling in National Guard); the “virus” group reacted with solutions to crime that involved diagnosing, treating, or inoculating (e.g., improving education, getting to the “root cause”). In both cases, participants used the statistic to justify these policy solutions. Thus, the statistical information itself did not really matter—all that mattered was that it (whatever it was) was “there” to justify very different reactions based on what metaphor ultimately framed them.

As noted in the opening paragraph, I define the statistical frame as the rhetoric that surrounds and composes statistical material that helps to direct the social relevance of that statistical material. More specifically, I look for rhetoric that uses word choice, syntax, images and other semiotic resources to position numerical content in strategic ways to evaluate that number. This includes the rhetorical expression of the immediate statistical material but also comments on what is measured by the statistic, how the statistic measures it, and who is doing the measuring—and even the material context for where the statistic appears (e.g., the specific newspaper it appears in, the semiotic mode). The roots of meaning that help grow the meaning potential of the statistic can be deep and far away in the text—this is especially apparent in chapter 2 on the statistic of correlation between lung cancer and smoking from the 1964 Surgeon General report but also in the other two case studies (e.g., the “counterstories” of Ida B. Wells in chapter 4, explorations of changing the terms of interpreting probabilistic models in chapter 3).

Because statistics are often such small pieces of text, though, having a set of analytical tools equipped for such micro-rhetorical analysis can be helpful. Discourse analysis is one place to turn for such a tool. For instance, John Oddo (2013; 2014) and Trine Dahl (2015) have utilized discourse analysis, and systemic-functional linguistics (SFL) in particular, to help consider how the level of the word, clause, and sentence rather than global interpretations of a text can have a great impact on analyzing frames. In the next section, I explain how discourse analysis and the appraisal framework are helpful for analyzing statistical frames.

1.4 Appraisal and Statistical Frames

In his analysis of the circulation of Colin Powell's infamous speech to the UN about Iraq's weapons capabilities, Oddo (2014, 16-17) argues that a "micro-discursive" approach to framing can allow a more granular analysis that can more precisely and validly construct how journalists assisted the public in interpreting Powell's speech, a speech rarely witnessed by Americans without a heavy mediation from journalists. Oddo uses a combination of discourse analytic and multimodal analytic techniques to consider framing within and between texts in newspapers and broadcast news, where he especially draws from SFL. His method is better understood in an article for *Written Communication* than in his book project because the article is written for an audience more concerned with methodology (and rhetoricians specifically), so I am drawing mostly from there.

Oddo (2013) notes that discourse analysis is often critiqued by some rhetorical scholars as being too quasi-scientific, overly systematic, or too focused on formal features of text. His counter is that while discourse analysis is systematic and grounded in empirical observation of texts, this

in no way requires over-adherence to a goal of replicability or an ignorance of context in service of a hyper-focus on formal textual features. Discourse analysts of all types should consider context during analyses and their methods, ideally, serve a more heuristic application to texts rather than an uncritical application of formulae. SFL is built on the assumption that language is a social semiotic system “that can be drawn upon to make meaning in specific situations and for specific rhetorical purposes” by close attention to grammar and word choice (Oddo, 2013, 241). Compared to other schools of linguistics, SFL is much more focused on what language can *do* in a given context, rather than what it “is,” which makes it a good partner for rhetoric because of rhetoric’s preoccupation with effects, action, and so on.

In SFL, three types of meaning are said to occur simultaneously in any utterance: ideational, interpersonal, and textual. Ideational meaning concerns experience, what is going on in and around us; textual meaning is how a message is packaged to reveal what is new, given, and what the starting point is for the message; and interpersonal meaning concerns the writer and the reader’s relationship related to social roles and attitudes (Halliday, 1978). Martin and White’s (2005) appraisal framework is a method for examining the evaluative properties of semiotics for interpersonal meaning by way of signaling attitude, dialogical positions, and amplification of a given attitude or dialogical position. These three elements are labeled by Martin and White (2005) as attitude, engagement, and graduation. Appraisal helps to figure out where the subjectivity might exist in language insofar as how the rhetor might be evaluating phenomenon.

Statistics, as something “distant” (i.e., something expert, something from a different context, assembled for something new it might not fit into perfectly), often rely on evaluation for a public audience. The reason I was interested in using the appraisal framework for analyzing micro-rhetorical moves of statistical writing was because it provides a compact but systematic

method for categorizing how rhetors embed interpretations of information in their texts—that is, how they fit a voice that evaluates the subjects they speak about in ways big and subtle. The rest of this section will explore in more detail how attitude, engagement, and graduation function within the appraisal framework and this is relevant to studying statistical frames.

In attitude, a writer uses certain words or phrases in a clause to distinguish affect (someone who is emoting), judgment (an evaluation of human behavior), or appreciation (an evaluation of an object). So, for instance, if I say “I am **sad**” or “He was incredibly **angry**” then the bolded words signal an emotion that should be associated with a given subject. For judgment, if I say “The manager was **corrupt** in his oversight of the surplus,” I am signaling a judgment of propriety whereas if I say “The manager was very **efficient** in her construction of the database” I am signaling a judgment of capacity. Finally, if I say that “The gala was a smashing **success**” then I am signaling an appreciation of valuation by the bolded word success. Judgments and appreciations can be, at times, difficult to separate but the key is to pay attention to how the grammar is constructed to see if it is written in such a way as to signal a word or phrase as an object (conceptual or otherwise) or as an actor of some kind. There are further sub-categorizations of affect, judgment, and appreciation, some already mentioned:

Table 1. The Three Components of Attitude: Affect, Judgment, Appreciation.

Affect	<ul style="list-style-type: none"> -Happiness (e.g., joyous, depressed) -Security (e.g., anxious, afraid) -Satisfaction (e.g., absorbed, frustrated) -Inclination (e.g., desires: want, hope)
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Judgment	<ul style="list-style-type: none"> -Normality (e.g., consistent, unusual) -Tenacity (e.g., resolute, doesn't give up) -Capacity (e.g., expert, incompetent) -Propriety (e.g., moral, corrupt) -Veracity (e.g., honest, deceitful)
Appreciation	<ul style="list-style-type: none"> -Reaction (did it impact me? Did I like it?) -Composition (was it balanced? Was it hard to follow?) -Valuation (was it worthwhile? Is it of social value?)

Engagement consists of several notions of whether a text is monoglossic or heteroglossic, based on Bakhtin's notion of the dialogic nature of texts. A monoglossic utterance makes no room for other voices (e.g., a bare assertion). If heteroglossic, then the rhetor is either attempting to expand possible viewpoints or trying to contract possible viewpoints. To contract views, they may deny (e.g., This **cannot** continue), counter (e.g., **Yet** this is a ridiculous assertion), pronounce (**Indeed**, she is a competent attorney), or endorse (e.g., The report **shows** this to be true). To expand possible views, a rhetor can entertain (e.g., **It seems that** this was not the best option), acknowledge (e.g., **Many Australians believe** that ...), or distance (e.g., The author **claimed** to have proven...).

Each of these moves either attempts to sway the audience toward dismissing alternate viewpoints or consider the possibility for alternate viewpoints, and these moves can have important rhetorical effects for building ethos, weakening warrants, etc. For quantitative discourse, resources

of engagement can be rhetorically utilized to signal to an audience a truth-value of the number (e.g., monoglossic statements, heteroglossic statements that contract views rather than expand). Heteroglossic statements that expand viewpoints might be seen as hedges that take on a scientific ethos of epistemic conservatism; while this effect is available, Martin and White (pp. 104-108) note that this epistemic effect may also be present alongside other rhetorical effects (e.g., place doubt on a view, build ethos of author). Like attitude, there are further subcategories (see p. 134 in Martin and White).

Finally, graduation deals mostly with amplification in the classical rhetorical sense. Martin and White distinguish between graduation by focus and force. Focus is used less often and deals with prototypicality—what is more “true” or “normal” and what is less so. For instance: “A **real** gentleman” or “This is **kind of** an apology” (see Hood and Martin, 2007 for more on focus). Force refers to intensification and quantification. Intensification and quantification mainly differ in amplification or diminishment that accompanies degree of intensity of a quality (e.g., **very** corrupt) or process (e.g., **vigorously** washed their hands) as compared to the amount, size, or extent of an entity (e.g., **vast** landscape; **many** antelope). For more on intensification and quantification subcategories, see pages 151 and 154 in Martin and White. For statistical discourse, subtle shifts in graduation can signal how an author is attempting to show a putative audience how to interpret a number and what to think about what is measured, which can have particular importance for invoked attitude rather than inscribed attitude. The more or less graduated something is can be a clue for how the writer wants the reader to interpret that statistical information, even if there is not an especially clear attitude to be signaled or viewpoint to be expanded/contracted.

One aspect of attitude that is important to note is how the inherent slipperiness of language by way of figurative language and co-text influences possible meanings that can be construed. To

help deal with that reality within an appraisal analysis, Martin and White make a distinction between inscribed attitude and invoked attitude. Inscribed attitude is the sort of language that is addressed above—where we are directly told the sorts of affects, judgments, and appreciations to hold. However, there is plenty of writing that can create attitude without using attitudinal lexis, something akin to connotations of words or phrases within specific contexts. For instance, none of the following examples explicitly broadcasts an attitude, but they do suggest an attitude (the following examples are taken from Martin and White, 2005, 67):

- We fenced them in like sheep.
- We smashed their way of life.
- We brought the diseases.

In each of these cases, attitude is invoked rather than inscribed. The simile about sheep invokes either (or both, depending on context) affect: insecurity and judgment: propriety, as both “them” can be inferred as a feeling of insecurity dictated by the simile and “We” can be seen as engaged in unethical behavior. The word “smashed” does not inscribe an attitude, but the violence associated with the word and its function as an infused intensifier (i.e., it intensifies an ideational meaning of something like “we disrupted their way of life”) can invoke an attitude (again, depending on the co-text) of immoral behavior. Likewise, the third example, in its entirety, suggests a possible ethical complication (e.g., a violent effect of colonialism), but this is done through purely ideational meaning with no elements of graduation. Martin and White call invoked attitude by figurative language “provoked” attitude, invoked attitude by graduation “flagged” attitude, and invoked attitude by ideational meaning alone as “afforded” attitude.

Susan Hood and J.R. Martin (2007) explore how invoking attitude by graduation (i.e., “flagging”) plays a significant role in academic discourse, namely because this form of evaluation

can be deployed indirectly in order to maintain a tone of objectivity in ways that could not be done with more instances of inscribed attitude. Because statistical language, broadly speaking, often either is academic in nature or has an antecedent that was academic, it too will frequently have moments of gradation that help indirectly evaluate, and thus frame for readers how to interpret or feel about a given number.

Invoked attitude is very common in statistical language, especially as elements of a text are amplified or diminished rhetorically. For example, in an 1890 U.S. census bulletin (Wines 1891, 6) on the demographics of prisoners, the following is written: “the foreign population of this country contributes, directly or indirectly, in the persons of the foreign born or of their immediate descendants, considerably more for our state prisons and penitentiaries than the entire native population.” Invoked here is the judgment that immigrants are dangerous, and this is flagged by the gradation that occurs by “considerably” (i.e., gradation by quantification). This word helps tell us not only is there a difference, but it is a significant difference, it is “considerable,” it is something we should take note of. Without telling the reader explicitly *why*, the reader is left to infer that on their own, but the instinct to make an inference is helped guided by the flagged invoked attitude, especially in the cultural context of the 1890s in the U.S., as prejudice against immigrants was on the upswing.

Invoked attitude is also relevant to instances that are double-coded. For example, the following contains an instance of inscribed appreciation and invoked judgment: “Last night’s performance by LeBron James was **spectacular**.” This is inscribed appreciation because the performance is what is evaluated as spectacular. However, invoked here is an evaluation of James, as someone who is very capable (i.e., judgment: capacity). Some discourse analysts who use appraisal are divided on how to talk about invoked attitude. The more quantitative minded tend to

discount invoked attitude all together in their analysis (see Fuoli, 2015). However, because of the often muted evaluative language that makes up statistical frames, I find invoked attitude a crucial part of analyzing the rhetoric of statistics, and, slippery as it may be, use it throughout my analysis.

Through these three categories of linguistic analysis, Martin and White aimed to create a system of language analysis that can help delineate “how writers/speakers approve and disapprove, enthuse and abhor, applaud and criticize, and with how they position their readers/listeners to do likewise” (p.1). Because my interest in statistics relates to how rhetors signal to audiences how to interpret and evaluate quantitative information, appraisal is a useful resource for determining how statistics are subtly and rhetorically positioned for different contexts.

Fuoli (2015) explains several issues with coding appraisal reliably. Invoked attitude is notoriously difficult to pin down directly and can create a lot of difficulty with agreement between second coders. Unitizing what is coded (i.e., beginning and ending where the code occurs) can also be a difficult, too, as one or more words can capture any component of the appraisal framework (e.g., for a judgment of capacity: “he was thorough and efficient” vs. “thorough” and “efficient” as two separate codings). These and other issues are things I decided to live with because the nature of the discourse I am analyzing builds meaning in very flexible ways, which makes me prioritize flexibility in analysis over reliability. To best deal with this, I have done at least two rounds of coding to increase the likelihood I am being consistent and have written out rationales for cases that are less clear. With more time and more resources, I would enlist a second coder to look at a sample of my coding or even all of it.

Finally, I want to note two more items on how I analyzed texts in this dissertation. First, all three case studies (and the student writing I look at in my final chapter) use images and data visualizations that I code for appraisal. In the next chapter on the smoking/lung cancer correlation

statistic from 1964, I explain in more detail how I approach coding for appraisal for visual rhetoric. In short, I lean on other scholars who have applied the appraisal framework to images. I decided to not as systematically apply coding of images as I did for language because images can be so much more ambiguous, but general intuitive principles like facial expressions showing attitudes, eye contact showing engagement, the amount and hue of a color showing gradation, and so on were borrowed from other scholars' applications as needed. Secondly, to supplement appraisal, you'll notice that I use classical rhetorical notions of amplification. I am drawing mostly from Quintilian's five methods of amplification that he explores in book 8, chapter 4 in *Institutio Oratoria*: by term, by augmentation, by comparison, by reasoning, and by accumulating. Most of these methods fit into the gradation paradigm fairly easily: terms can be stronger or weaker in order to intensify, a series construction can reach higher and higher (i.e., augmentation) to intensify or graduate by quantification, the difference in a comparison can intensify or graduate by quantification the phenomenon that is being written about, and accumulation can intensify to stay on a topic or to overwhelm by adding more and more without necessarily heightening to graduate by quantification.

However, sometimes these distinctions are not always clear, especially in accumulation, and sometimes in comparison, which is why I will lean on this language a lot more. Accumulation, or *copia*, which is the term I use throughout this dissertation, is what I lean on especially when talking about amplification. In this method of amplification, similar sentences or clauses are "heaped up," and by this accumulation the point is amplified. Fahnestock (2011, p. 395)—drawing from Erasmus—uses the term *copia* for "any method of staying on a topic by finding relevant material." Using Perelman and Olbrechts-Tyteca's concept of presence, Fahnestock (395) explains that what distinguishes the heightening methods (i.e., Quintilian's first four methods) from the

methods of *copia* is how methods of *copia* work not from salience but from filling a space with an important item to the exclusion of everything else. With salience, there is a dependence on relationality whereas with presence, nothing else is there for comparison as the whole field of vision is filled.

1.5 Example Analysis of Statistical Frame

I want to provide a brief analysis of a statistical frame using the appraisal framework to give a sense of what it looks like. Below are two excerpts of two articles covering the December 2017 jobs report—one from CNN and one from Yahoo. By using the appraisal framework, we can see subtle differences between similar material.

Table 2. CNN and Yahoo Coverage of December 2017 Jobs Report.

CNN	<p>The U.S. economy added 2 million jobs in 2017, another solid year of gains.</p> <p>In December, the economy added 148,000 jobs, according to Labor Department figures released Friday. That was below what economists expected, but still the 87th straight month of gains -- the longest streak on record.</p> <p>"The 2017 job market was really great," said Cathy Barrera, chief economist at ZipRecruiter, a jobs website.</p> <p>Unemployment remained at 4.1%, matching the lowest level in 17 years. (Gillespie)</p>
Yahoo	<p>The labor market ended 2017 with a slight disappointment.</p>

	<p>The December jobs report from the Bureau of Labor Statistics showed nonfarm payrolls grew by 148,000 while the unemployment rate stayed steady at 4.1%, slightly missing expectations.</p> <p>Economists expected nonfarm payrolls grew by 190,000 in December while the unemployment rate was expected to remain at 4.1%. The unemployment rate is currently at the lowest level since December 2000.</p>
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It's the same statistical information but different statistical frames. I won't comment on all elements of appraisal in these two passages, but I want to highlight a few that show how both authors signal different interpretations for their readers to take on (or, at least, encourage them to do so). The opening for the CNN article graduates by quantification-number with the "2 million jobs" figure before evaluating that figure further by suggesting "another solid year of gains." The word "another" also graduates by quantification-number as it tells us this is one more year in a line of several years of job gains. The word "solid" inscribes a positive appreciation of reaction-quality (e.g., "I like this, it is solid"). Like the CNN article, the Yahoo article has another monoglossic assertion, albeit punchier, that declares that the year was a "slight disappointment." The word "slight" downscales the intensification of the inscribed negative appreciation reaction-quality. These two sentences set the tone of the statistical frame in different directions for how to interpret the job numbers in December 2017.

CNN heteroglossically expands viewpoints by acknowledging that economist expectations for the month were for more than 148,000 jobs but then contracts this viewpoint with the word "but" to bring in the figure of this being the 87th straight month of gains. The number 87 and "the longest streak on record" help to graduate by quantification through number and extent,

respectively (and also heightens the 87th number via augmentation, in Quintilian’s terms). Yahoo, however, qualifies the 148,000 number with “while the unemployment rate stayed steady at 4.1%, slightly missing expectations,” landing the sentence on the negative again with the intensification of “slightly” flagging an invoked negative appreciation reaction-quality again. Finally, both make appeals to expertise. Yahoo includes the expert forecast of 190k to compare to the 148k average, which downscales via graduation-quantification (in Quintilian’s terms, a diminishment by comparison). CNN, instead, focuses on a quote from an economist who is framing the issue not on the month but on the year, with the economist saying that the year was “really great.”

These subtle uses of appraisal resources reveal two very different stories about this job report statistics despite being, ostensibly, the “same” information. For CNN, the story is that the jobs report was good news—in terms of the whole year, it is a sign of continued growth. For Yahoo, the story is that the jobs report is bad news—it did not meet the expectations of economic predictions. The appraisal resources used in these two statistical frames help to create different statistical frames around the same numerical content. But, neither is necessarily “deceptive.” Both stories here are valid interpretations, and with the different framing choices, these interpretations are signaled for audiences to take on.

1.6 Outline of Dissertation

The criteria I chose for case studies was that they were statistics that captured a large portion of attention about a significant political issue, that they showed a diversity in political topics, and that they represented a diversity in the types of statistics. As these statistics circulated, I wanted to capture the different ways frames of these statistics shifted in both subtle and not-so-

subtle ways to think about the range of ways statistics can exist in texts as part of a larger ecology of meanings. Looking at three cases has the advantage of learning something different about statistics in each analysis, but one disadvantage is that confining each analysis to one chapter limits how exhaustive of an analysis I could do—given more time, resources, and energy, there is so, so much more I could research (e.g., expanding timeframes of analysis from a couple days to a full year or from two years to 5 years). Focusing on a single statistic over three or more chapters would have provided much more space to provide a much deeper analysis, both in terms of the texts analyzed and the wider contexts in which these texts were composed. While not promising any analysis that definitively explains the rhetorical nature of statistics as they circulate (a near impossible task), this analysis does provide a window into three different instances that provide insights into how statistics are taken up for public audiences that may not have a full understanding of what they mean, and, thus, are accommodated in different ways.

I examine the following case studies: in chapter 2, the circulation of a correlation between lung cancer and smoking cigarettes cited from the 1964 Surgeon General report on January 11-13, 1964; in chapter 3, a percent probability of Hillary Clinton and Donald Trump winning the 2016 U.S. presidential election from *FiveThirtyEight* on November 7-8, 2016 up until voting results were reported; and chapter 4, a frequency statistic of lynchings of African Americans in May 1892 to early 1893. What is shared in these analyses is that, at some level, statistics are framed to evaluate the results themselves, what is measured, how it is measured, and who is doing that measuring. But there are also many differences: semiotic modes (e.g., photographs, charts, tables, layout, film), intertextuality (in the sense of separate texts working together to influence meaning), how attribution and other voices are used (in the sense of getting comments from a variety of people interpreting the statistic, rhetorical appeal of consensus vs. dissensus), the use of narrative

to make salient what the statistic concretely measures, making a dialogic invitation to an audience vs. more directly telling an audience what a statistic means. Some of these differences relate to the nature of the statistic. As more complex statistics, the first two cases (i.e., correlation, probability) devoted more appraisal resources toward ethical appeals that either built up or diminished the person who was measuring (i.e., the Surgeon General's committee, *FiveThirtyEight*) and how that measuring was done. In the case of the statistic of frequency, fewer resources were devoted to building up or diminishing an ethical appeal compared to these two other cases.

Across these case studies, the arrangement and perspectives of different voices was very prevalent in, sometimes, powerful ways across all three case studies. In the next chapter, the smoking/lung cancer correlation was represented in relation to other voices in several ways: the committee that composed and evaluated the correlation as causal, a variety of different scientific experts, government officials, etc. The arrangement and expression of these voices helped to strengthen and weaken a sense of certainty in terms of what the statistic meant in terms of smoking's relationship to lung cancer and health more broadly. In the chapter on the *FiveThirtyEight* probability of the winner of the 2016 U.S. presidential election, voices are also arranged and expressed in many ways in relation to the probability to both strengthen, undermine it, or think about it in new ways: experts on how the probability was calculated, the probability in relation to other probabilities in terms of both consensus and dissensus, using different language to reframe the probability from right vs. wrong to better vs. worse. Finally, in the chapter on the statistic of lynching victims, Ida B. Wells uses her investigative reporting to make sure stories of victims are nearly always positioned prominently alongside the statistic to help make sure they are present. Sometimes this was done to undermine a statistic, so as to create doubt about it. However, I found it most powerful when there was genuine engagement with an intellectual project or as a

way to reveal the human quality of a statistic, to actually shrink the distance of statistics. As I note at the end of the concluding chapter, this quality is something I want to continue to research in rhetoric and pedagogy.

The final chapter uses my experience teaching a class called Writing with Data to consider ways that I and my students might grapple with composing statistical frames. In this final chapter, I write about the course design, my pedagogy of *copia*, an exploration of student writing in relation to each major assignment, and some thoughts about what went well and how I might make revisions to the course in the future. I then end with a broader conclusion about the dissertation as a whole, exploring the nature of interpretation and possibilities surrounding statistical writing that taps into and builds from their human rather than distant qualities.

1.7 Statement of Researcher Position

It is obvious that we all have a relationship to the things we write about at some level, but I think it is important to take a few pages just to explicitly acknowledge that reality. I can understand a reader skipping this section if they do not find it valuable to understanding the pages that follow. However, it is important for me to write it. Many scholars in composition and rhetoric and related fields have agreed with this general point for a while, though in different ways and for different purposes. Carol Berkenkotter (1989) writes of the importance of articulating our models of knowing and the assumptions underlying these models as a way to become more legible as a writer among a broader community of researchers. A similar way to put this in more ideological terms is in Donna Haraway's (1988) language: a view from nowhere does not exist. I agree with Berkenkotter and Haraway, and along with this gesture toward confronting my models of

knowing and assumptions about the world, I also agree with A. Abby Knoblauch's (2012, 50) contention that a "strategic use of embodied rhetoric can help disrupt the (faulty) assumption of a universalist discourse and provide concrete strategies for honoring differences and operationalizing a politics of location." Knowledge, after all, is embodied and using an embodied rhetoric as a researcher helps honor and ethically contend with that reality. Sara Ahmed (2015, 171) writes that knowledge is "bound up with what makes us sweat, shudder, tremble, all those feelings that are crucially felt on the bodily surface, the skin surface where we touch and are touched by the world." It is one thing to outline methods and assumptions, but it is another thing to do that while trying to do the much harder work of acknowledging the material reality of my underlying models of knowing.

Transparency is not possible. A better way to put it with an appropriate materializing connotation would be a permeability. So, I want to take brief moment to be a bit permeable, or, rather, acknowledge my own permeability. I'm a first-generation college student who grew up in a working-class suburb of Philadelphia, PA in New Jersey. My relationship to school for most of my life was that it was a place that I had to go. I have some memories of enjoying reading, but by middle school, I began to understand this was not something I was supposed to do or be proud of. From the age of about 8 or 9, I stopped reading until I was about 16 or 17. I was a decent student in math and understood that if I should like something, it should be math because this had ties to economic gain. My dad, a carpenter and woodworker, often told me to "go into computers," which, at the time, I associated with math. Something about difficulties with spatial reasoning, though, dissuaded me from getting too involved with math, which returned me to reading and writing again as I approached college. Simultaneously, as an avid sports fan, I voraciously read sports blogs in the mid-2000s that began to have a more statistically-oriented focus from the rise in popularity of

sabermetrics and analytics. To understand the reading and participate in the comments section, you had to have at least a basic understanding of statistics, and I did start to have that the more I read these blogs and supplementary material (and, to an extent, a college statistics course I took).

Still, I'm not particularly "good" at math or statistics, but I am interested in these subjects. My affinity for writing, likewise, helped get me more interested in rhetorical concerns of statistics. This was enhanced in my first job after college, in which I wrote program evaluation reports in which I would often get feedback on how to write about survey results (e.g., rounding numbers in certain situations, how to format bar graphs). I found myself asking questions like "why make these choices instead of others?" which clashed with my perception that statistics were immutable facts. In all, I've had a bumpy relationship with math and writing that spanned both schooling, personal, and professional contexts. But it is an interesting perspective if only to show that it is always felt like I had to "pick" one or the other to throw my energy toward. I think that is partially why there is not a ton of scholarship on the integration of rhetoric and quantification in the U.S.

Since this dissertation is a project on public writing, I wanted to choose subject matter that had higher political stakes. The fourth chapter, for instance, looks to racialized violence in the 1890s—but this is a topic with continued relevance today. I grew up in a place that was white working-class, and racist discourse or actions I would not have thought twice about when I was younger causes me to wince when I encounter it in the present or reflect back upon it. Some of this racist discourse was well-meaning, some of it not. In the "well-meaning" bucket, a lot of it ended up being what Eduardo Bonilla-Silva (2003) would call color-blind racism, where perpetrators claim to believe that skin color is insignificant in their view of the world, despite evidence to the contrary. Color-blind racism makes racism feel natural—some given phenomenon is "just the way the world is," not because of racial politics. When I started to talk to people who were different

from me through my college experience (e.g., tutoring a bridge program, participating in community housing non-profit work) and read things in various classes on race I took during my undergraduate studies, I became more aware, more interested, and more active. As with everything, I continue to learn.

Since Trayvon Martin's murder and the protests around it in 2012, extra-judicial executions of people of color by police officers and other individuals or groups have become a larger part of my own and the larger public's consciousness. Michael Brown, Eric Gardner, Sandra Bland, Tamir Rice, Walter Scott, Philando Castile, and others have all been tried, convicted, and punished outside of the justice system, the same justice system I would almost certainly be entitled to entering as a white man (with pretty good odds of getting fair treatment, relatively speaking).

It has been surprising, albeit less so as time goes on, how often these murders continue to occur without convictions. In late March 2019, it happened again, through the acquittal of Michael Rosfeld, the former University of Pittsburgh and East Pittsburgh police officer who murdered Antwon Rose II. I saw the acquittal unfold on Twitter on a Friday night, and I felt kind of a sinking feeling that simultaneously recognizes a common occurrence while still confounded that it could happen again. Why does this keep happening? This is a moral question, but it is also a question of rhetoric. Ersula J. Ore (2019) argues in *Lynching: Violence, Rhetoric, and American Identity* that what happened to many of the victims of police shootings are an extension of the legacy of lynchings³ and they serve heavily rhetorical aims about citizenship, about who is and who is not

³ This is not to say that police shootings of people of color are the "same" thing as lynchings. There are certain differences in group dynamics and ritual. However, the discourse that surrounds both practices is remarkably similar. The effects also have some similarity, as a police shooting and a lynching are a symbolic rhetoric that can broadcast to people of color expectations for their place in society.

afforded the privileges of citizenship before the law. Violence can be heavily rhetorical, and particularly so around violence done to Black bodies in the U.S. This is as true now as it was during Jim Crow or during chattel slavery's heyday. It is nearly an impossible question to ask how rhetoric can answer violence, but in this chapter, I offer a small analysis of how quantitative rhetoric that specifically aims to describe violence is one rhetorical tool to do so.

Smoking has been a huge part of my life in several ways. I remember smoking sections at restaurants, I remember a bumper sticker on my sister's mirror in her bedroom that read "Kissing a Smoker is Like Licking an Ashtray"—all the more memorable because my sister smoked from her teenage years into her twenties. My dad smoked cigarettes and eventually switched to cigars, probably because he thought cigars were healthier—something suggested in the 1964 Surgeon General report. My mom never smoked, and perhaps because of research into secondhand smoking, forbid my dad from smoking inside the house. All this is to say, I grew up with a relationship to smoking probably common to many other people in the U.S., particularly those who grew up in the 1990s: it's bad. Still, I ended up smoking Black and Milds in college, cigars on occasion—the last time being during the night before my wedding when I smoked a cigar too quickly and spent a lot of the night vomiting. I come from a place where it felt almost to be common sense that smoking was unhealthy, which was very much not the case (at least to the significant extent it was in the 1990s and onward) in the 1960s. I could be missing something in this analysis—I could be missing unwritten assumptions that would be important to note. But also interesting is that as a product of the 1990s, that 1964 Surgeon General report likely had a heavy influence, albeit indirectly, on how I and many peers in my generation (relative to those previous) viewed and interacted with tobacco.

The third chapter is about the 2016 presidential election, something that had a large effect for lots of people in this country. Some people saw it as a sign of decline of U.S. empire. Others saw it as a great victory for a population of people ignored by the country's elite. Still others probably saw it as the ebb and flow of partisan politics, albeit a little different than elections in the past. Probably the amount of time I wrote about race and my decision to write about lynching reveals how it I felt. I refreshed *FiveThirtyEight* many, many times in the weeks leading up to the election, and it was definitely somewhere to put my anxiety. When the election results were final, I was shocked, but I wasn't necessarily surprised. What I knew about probability, and what I knew about the coin-flip decisions in about four states told me that much of the polling was generally accurate. Many people did not feel this way and I think this shows an interesting relationship to probability and uncertainty, something that drew me to writing about statistical frames of probability surrounding this election in the third chapter. But, then and now, I question the rhetorical, and, thus, political dangers of this polling aggregation and its communication—does it create an aesthetic engagement with politics that suppresses political engagement? While the statistics can be intellectually useful, what purpose do they serve in terms of a public good? Is there another way to communicate them as more of an intellectual puzzle that informs about how elections work rather than relying on them to predict?

Finally, I see teaching as a way of knowing something, which would (at least ostensibly) be something that many in composition and rhetoric also believe. People in our field generally (at least they say this) believe that teaching is not separate from research—that many of our research questions can be worked out in a collaborative effort with our students when we come together to talk and write about writing and rhetoric. Believing this leads me to use my experience teaching about quantitative writing not only to talk about some potential best practices for teaching writing

but to use what I learn with my students to talk about some potential best practices for writing with numbers more broadly. It is messier than the ideal construction of this goal, but it was a fun project to work with students around a lot of these questions that I also work out in the case studies, even if from a different angle and perspective.

2.0 Interpreting Correlation: Smoking, Lung Cancer, and Causality in 1964

In this chapter I explore the circulation of a statistic of correlation in January of 1964: the correlation between lung cancer and smoking cited by a committee of the U.S. Public Health Service. As with each case study, this statistic was framed in terms of the results found (i.e., the strength or weakness of the evaluative rhetoric), what the statistic measured, how it was measured, and who did the measuring. This was a statistic that was presented in texts as reliant on several direct and indirect ways to interpret it. What is notable in this particular case is the range of semiotic modes helping to signal interpretations of the correlation (e.g., photographs, film, charts, layout), which often was used as ways to make an ethical appeal; how surrounding articles and different voices via attribution worked to signal interpretations (e.g., how segments of film were arranged, what sorts of articles were next to each other, who was quoted and where); and, in a few places, how this correlation was represented as the result of a social process of making knowledge.

For this last point, I find this notable because displaying this statistic as more dialogic could potentially build goodwill with an audience (i.e., the “blackbox” is a little more transparent), whereas a common move in this corpus of presenting “both sides” hid this work (presenting the statistic as stable, unchanging, etc.—only as an object to observe by two separate parties with differing opinions). Some texts cracked open that blackbox a little bit (e.g., the CBS news special, Spivak in *The Wall Street Journal* and some fell into the “both sides” rhetoric (e.g., the NBC news special, *The Sun-Telegram*). What this chapter shows is that a statistic can have a statistical frame that can be very wide-reaching within the text it appears and beyond that text into surrounding texts, incorporating many voices to do so.

If not the most common, one of the most commonly heard maxims of statistics is that “correlation does not mean causation.” In other words, coincidence or logical fallacy could be at play. Reports on studies “linking” or “associating” coffee, chocolate, eggs, etc. with some positive or negative health effect has been part of the U.S. (and beyond) news cycle for some time. Reactions are just as predictable. Perhaps snarky reactions identifying such studies as either contradictory (e.g., “one year eggs are good for you, another year they are bad for you—which is it?”) or more pointedly that a correlation can occur due to coincidence or because another underlying cause has been left unexamined.

Along with probabilities (chapter 3) and frequencies (chapter 4), statistics of correlation are one of the more widely circulated types of statistics that are regularly appear in public texts. Like all statistics, communicating with the public while maintaining a technical accuracy creates a crisis of what a statistic *means*. For correlation, the problem is often causality (e.g., does a certain diet *cause* high cholesterol? Do certain *components* in that diet cause high cholesterol? Are there *confounding variables*—people who consistently eat that diet already have high cholesterol—that could explain the relationship between dietary choices and cholesterol? Does the preponderance of evidence about the relationship between those dietary choices and cholesterol overtake a lack of certainty about confounding variables?).

Like any public statistic, especially the more complex ones, audiences will want to know “What does it mean for me?” That means interpretation, and there are many, many factors that can influence a reader’s interpretation of a statistic. As a technology of distance, statistics are bound up with their ability to travel (i.e., to be manageable and mobile) but also to come with it a baked-in ethical appeal of their supposed distance from human interference. However, statistics are enmeshed in a web of language (or other semiotic modes, as seen in this chapter). These layers of

interpretation make questions of proximity and distance all the more important, as there is more room to complicate or calcify simple notions of the interrelationship between phenomenon, which becomes all the more consequential as the stakes get higher. I am interested in all semiotic resources that might influence what correlation might mean to a reader, and in the following exploration of this case study, I am particularly interested in how local and not-so-local rhetorics in film and newspapers create signaled evaluations and ethical appeals that influence views of what is measured, who is measuring, and how it is measured in addition to the barest notion of the results produced. Specifically: the varying strength of evaluative language relating to correlation and causality, the arrangement of text and images in how they undermine or confirm the correlation (e.g., how segments of text are ordered, how engagement resources contract or expand viewpoints), and inclusion of information on how the correlation was calculated and evaluated experts.

In my case study for this chapter, I examine the continuing battle over smoking as the cause of lung cancer between the broad consensus of medical research and the tobacco industry as exemplified in the initial press coverage of the 1964 U.S. report, *Smoking and Health: Report of the Advisory Committee of the Surgeon General of the Public Health Service* (hereafter, *Smoking and Health*) and versions of this interpretation that circulated during the initial press coverage (i.e., January 11-13, 1964) in nine newspapers and two national television broadcasts—these nine newspapers and two television specials consist of texts that had a large reach in their audience (e.g., CBS, NBC, *The New York Times*) and also texts with smaller reach to get a sense of how the statistic was framed in smaller outlets, as well. My aim is to take into consideration anything in the newspaper or broadcast that directly addresses the smoking report that could create compatible or contrasting evaluative meanings surrounding the varied expressions of correlation between

smoking and lung cancer. Additionally, most newspapers and both television broadcasts included quotes by other professionals, experts, government officials, and tobacco industry executives that helped to frame potential interpretations of this correlation, most notably through evaluative commentary of the committee, the analysis conducted, or the report itself. As a matter of *ethos*, evaluative language of capacity, propriety, and veracity can have a large impact on how statistical information can be evaluated (see chapter 1, especially on rhetorics of expertise). The rhetorical canon of arrangement is also useful here. For instance, choices in how some newspapers arranged articles, images, and passages within articles had differing rhetorical consequences, especially in terms of *ethos*. How both the positive and negative evaluation and the arrangement (in terms of syntax and engagement resources but also in terms of organization of text and images) help to create ethical appeals that create confidence or doubt.

Smoking and Health took great pains to consider how statistics of correlation, coupled with other forms of evidence, warranted a judgment that smoking caused lung cancer. The likelihood of this correlation being evidence of causation persuaded the committee to confidently assert that cigarette smoking causes lung cancer. This nexus between consensus of expertise with such visible political stakes and a direct evaluation of specific analysis of correlation makes it a valuable historical case to examine, and one with something to potentially teach us about future public health communication reliant on quantitative rhetoric, like global warming and the ongoing pandemic. In the next section, I briefly examine the circumstances surrounding this conclusion and its communication to the public.

2.1 Epidemiology, Statistics, and Causality: A Rhetorical Problem for the Surgeon General

In epidemiology, it is difficult if not impossible to do robust and/or ethically sound experimental studies (e.g., logistical challenges of randomization, the obvious problems of separating a control and intervention group for treatment of deadly diseases). Therefore, throughout most of the discipline's history, there has been a large reliance on observational studies. The classic template for evaluating causality in epidemiology is Austin Bradford Hill's criteria (1965). As someone in the medical field faced with a concern for both truth *and* the mission of the medical profession, Hill forcefully points out the challenge of semantics and action stemming from a classification of causation in epidemiology. Hill (295) concedes that the determination of *how* a change in environmental feature A will influence frequency of undesirable outcome B calls for a great deal of research. However, Hill drew up his criteria to help guide the interpretation of observational studies reliant on statistics of correlation that could be very strong yet still, however unlikely, be explained away by possible confounding variable(s). The danger of waiting for a precise of explanation of causality for something like deadly diseases that kill millions of people should be obvious, and Hill's criteria have served this problem for many decades. Rather than a checklist, these criteria are meant as a heuristic for interpreting results as reasonably showing causation. Here are the full criteria:

Table 3. Hill's Criteria.

Criterion	Explanation
Strength	How small or large an association is. Hill cites a study by his colleague, Richard Doll (1964), as an example of a strong association: mortality rate of chimney sweeps due to scrotal cancer was about 200 times as

	great as workers not exposed to same materials involved in chimney sweeping.
Consistency	If the correlation was observed by different people in different places, circumstances, and times.
Specificity	An association is limited to specific people, sites, and type of disease. And, there are no other associations between the circumstances and other modes of dying/illness.
Temporality	Is it possible B causes A rather than A causing B? What comes first?
Biological Gradient	Is there a dose-response curve? For example: there is a lot of evidence that the risk of lung cancer rises with the amount of smoking an individual does.
Plausibility	Based on the biologically available information of the day, does the association seem plausible?
Coherence	Conversely, does the association seriously conflict with generally available biological information of the day?
Experiment	Is there any experimental evidence to help support the association? It can be post hoc—for instance, if materials theorized as dangerous that are associated with chimney sweeping are replaced with something else, does the association with scrotal cancer diminish?
Analogy	Does the association appear to mimic similar cause-effect cases? For example, does the effect of a drug on one disease resemble its effect on another disease?

A year earlier from Hill's publication of his criteria, *Smoking and Health* used an abbreviated version of the criteria (strength, consistency, specificity, temporality, and coherence) to justify its language for smoking as a cause of various maladies, with lung cancer perhaps receiving the strongest language in terms of causation. On the word "cause," the authors (21) note that it is a word "in general usage in connection with matters considered in this study, and it is capable of conveying the notion of a single, effectual, relationship between an agent and an associated disorder or disease in the host." Much qualification went into this reasoning throughout this passage (e.g., they don't mean the word absolutely, or claim to make claims about the complicated array of variables that might combine to produce an effect), but eventually the authors (21) land on the following: "Granted that these complexities were recognized, it is to be noted clearly that the Committee's considered decision was to use 'a cause,' or 'a major cause,' or 'a significant cause,' or a 'causal association,' in certain conclusions about smoking and health affirms their conviction."⁴ Both from a scientific standpoint (i.e., how epidemiology was beginning to conceptualize how to evaluate a variable as a marker of causation) and from a public communication standpoint (e.g., cause as a word "in general usage"), the report writers very

⁴ And, later on (31): "It is recognized that no simple cause-and-effect relationship is likely to exist between a complex product like tobacco smoke and a specific disease in the variable human organism. It is also recognized that often the coexistence of several factors is required for the occurrence of a disease, that one of the factors may play a determinant role; that is, without it, the other factors (such as genetic susceptibility) seldom lead to the occurrence of the disease." This is a concession to many critics, foremost among them renowned statistician R.A. Fisher, that there could be a genetic reason for lung cancer. For instance, Fisher argued that, unless proven untrue via further investigation, it could be that pre-cancerous people who will later get lung cancer take up smoking as a relief to mild symptoms before the cancer is symptomatic enough to be diagnosed (see Fisher 1958, 162-63).

carefully chose causal language to convey the meaning they found in statistical relationships in their evaluation of knowledge accumulated about smoking and health through 1964.

Two types of observational studies were consulted for *Smoking and Health*. The first kind, retrospective studies, are conducted by looking at medical/behavioral histories (e.g., smoking histories) of people suffering from a given disease and compared to a control group (e.g., non-smokers) suffering from the same disease. The other type of study is prospective. In prospective studies, participants are asked questions (e.g., if and how much they smoke) and information is gathered later as they age (e.g., death certificates). Prospective studies are generally considered to be preferable because the researcher has more control in the process, which leads to fewer obstacles (e.g., missing data, shifting definitions). For *Smoking and Health*, 29 retrospective studies were consulted and seven prospective studies. The prospective studies, as expected, garnered more evidential weight and attention in the report⁵. These seven studies had a combined sample size of over a million men, which absolutely creates a social and scientific issue in erasure of smoking's effect on women (and the communication of this in the mainstream press)⁶. Supplementing the observational studies were animal experiments where animals were exposed to tobacco in various

⁵ Though, the consistency in the findings in the retrospective studies, despite different methodologies employed, suggested to the authors that this was very good evidence to pair with the results of the prospective studies for smoking's relationship to lung cancer (see page 151).

⁶ Only analyses of the men were included since there were a low number of women participants and/or some of the more then-recent studies did not have results for the women yet analyze. Whatever the results, at the time this report was released and reported on, it had the potential to create issues like the ones that led Nieca Goldberg (2002) to write *Women Are Not Small Men* about research on heart disease being done almost exclusively on men but then those lessons still being applied to women.

forms in order to observe their reactions and clinical/autopsy studies to study cellular changes after years of tobacco use.

In chapter 4 of *Smoking and Health*, the results that the press in my corpus almost exclusively cited, the statistical information was either mortality ratios or excess deaths. For mortality, ratios were provided where the deaths of smokers were put against non-smokers from the sample built from the seven prospective studies (e.g., if smokers died at double the rate of non-smokers, the ratio would be 2.0)⁷. For lung cancer, across the seven prospective studies the mortality ratio of smokers to non-smokers for death from lung cancer was 10.8, the highest of any other disease in the literature examined for the report. A figure for excess deaths was also calculated based on the difference between an estimate of expected deaths and the observed deaths. Here, lung cancer was second only to coronary artery disease for the most excess deaths compared to the estimate for expected deaths (29-30). Duration and amount smoked was also tracked, where possible, and the longer and more one smoked greatly increased the likelihood of having lung cancer (31). These various methods of measuring the association between smoking and lung cancer helped to inform interpretations that were expressed in several ways in the first section of *Smoking and Health*.

As a concession to, at this point in time, more than a decade of critique of relying on statistical methods to evaluate causality, the committee (182) writes the following when introducing its more thorough (compared to the summary in chapter 4) conclusion that cigarette smoking caused lung cancer: “statistical methods cannot establish proof of a causal relationship in

⁷ To help adjust for the assumption that different age groups will produce different probabilities of death, an age-adjustment formula was applied. See *Smoking and Health*, pp. 82-85.

an association. The causal significance of an association is a matter of judgment which goes beyond any statement of statistical probability.” Criteria to help judge are needed, according to the committee, and these are: consistency of association, strength of association, specificity of association, temporal relationship of association, and coherence of association (*Smoking and Health*, 182). These conditions are met and are spelled out in the report. This move, to explain how the committee evaluated the relationship as causal, took the time in the report to explain to readers how scientific decisions are made through a negotiation of expert knowledge of the scientists involved, specific criteria that are spelled out in the report, and the evidence that exists. This allows readers of the report to get a sense of how evaluative decisions were made between statistical analysis and other contextual factors.

This move of explaining an evaluation of causality follows the CUSP model of scientific communication. In *Communicating Popular Science: From Deficit to Democracy*, Sarah Tinker Perreault (2013) makes the distinction between the deficit model of science communication (Public Appreciation of Science and Technology—the PAST model) and a more critical and democratic model of science communication (the Critical Understanding of Science in Public—the CUSP model). Whereas the PAST model assumes a one-way communication method invested in a separate sphere between science and the rest of society, where the goal is to deliver the results to the public and for them to unquestionably accept them (Perreault, 12), the CUSP model pays more respect to its reader and assumes no separation between science and the rest of society. Based on the work of historian Peter Broks, this model has the following characteristics according to Perreault: the social dimension of scientific work is foregrounded, expertise is seen as multiple rather than monolithic or unidirectional, room for criticism or description of limitations is provided, and there is recognition of the various public orientations toward the scientific topic

(e.g., establishing goodwill by not condescending toward audience). By allowing readers to get a sense of how causality was evaluated, this approach helps show the interpretive and social nature of coming to this determination. Statistics are figured as more dynamic negotiations of meaning. The advantage of such a move is that it can build trust with an audience—that they are revealing that statistical analysis has a human element to it and the committee is being open about how they reach decisions without assuming a technical expertise in their audience.

Smoking and Health was created in a context to create political change and not to make scientific knowledge (Proctor 2012, 247-48)—rather than a forensic rhetoric, it was deliberative. By the early to mid-1950s, the scientific consensus on whether cigarette smoking had a relationship to lung cancer was fairly settled. However, that consensus had not strongly broken through to the public yet, which increased the stakes significantly for the rhetorical choices that went into *Smoking and Health*'s composition—thus, language became a contest between public health advocates and the tobacco industry as this report was composed, published, and circulated.

2.2 Appraisal Resources Utilized in *Smoking and Health*

In this contest, it became essential to use language to communicate evaluation of what these statistics meant and what people should do as a result of them, making appraisal a useful lens to use. As a political document engaged in a deliberative rhetoric, there was a range of language used to evaluate the correlations contained in chapter 4 of *Smoking and Health*⁸ and interpretations

⁸ All of the language about the relationship between lung cancer and smoking taken up by the newspapers in my corpus and excerpted from the two television broadcasts comes from chapter 4 (entitled “Summaries and

based on those correlations used throughout the report. These evaluations mainly landed on causality—that there was good reason to believe that smoking caused lung cancer (among other ailments).

As mentioned earlier, the press took up only language from chapter 4 in the first section⁹, which functions like an executive summary or press release for the more technical information to be found in the later chapters and sections. In what follows, I catalog each instance of a description of the relationship between cigarette smoking and lung cancer, how many times a version of it is taken up by the press, and, when necessary, a brief gloss on relevant framing language that takes place around the immediate language that expresses the lung cancer-smoking correlation. Some language is reprinted later in the chapter; when this happened, I double-count in the middle column since I can't know for sure which version was taken up. Below is a table of all expressions in *Smoking and Health*, consisting of the essential sentence or clause that contains an expression of the relationship, a count of how often that language circulated in the nine newspapers in my corpus, and a gloss on its context within the report.

Conclusions”) in section 1 of *Smoking and Health*. Section 1 is essentially the public-facing document whereas section 2 was composed for a more technical audience in mind. However, the language about smoking and lung cancer is usually the same language that appears in the summary or conclusion sections of the section 2 chapters. It is also worth noting that journalists received a copy of the report an hour and a half before the start of the press conference on January 11, so they were very much positioned to focus on the “bare bones” elements of section 1 and chapter 4 to focus on in that limited time period.

⁹ However, it is possible, as mentioned, that the press was more influenced by the press conference about the report, where the language was similar but slightly different at times. In the next section, I analyze television broadcasts that drew from Luther Terry’s press conference about *Smoking and Health*.

Table 4. Language Used in *Smoking and Health*, Chapter 4, on Lung Cancer-Smoking Association.

Language used	# of times taken up by newspapers	Contextual gloss
<p>In previous studies, the use of tobacco, especially cigarette smoking, has been causally linked to several diseases. Such use has been associated with increased deaths from lung cancer and other diseases, notably coronary artery disease, chronic bronchitis, and emphysema. These widely reported findings, which have been the cause of much public concern over the past decade, have been accepted in many countries by official health agencies, medical associations, and voluntary health organizations.</p>	3	<p>First paragraph of “Background and Highlights” section of chapter 4, which functions as intro to chapter 4.</p>
<p>In the combined results from the seven studies, the mortality ratio of cigarette smokers over non-smokers was particularly high for a number of diseases: cancer of the lung (10.8), bronchitis and emphysema (6.1), cancer of the larynx (5.4), oral cancer (4.1), cancer of the esophagus (3.4)', peptic ulcer (2.8), and the group of other circulatory diseases (2.6). For coronary artery disease the mortality ratio was 1.7.</p> <p>Expressed in percentage-form, this is equivalent to a statement that for coronary-artery disease, the leading cause of death in this country, the death rate is 70 percent higher for cigarette smokers. For chronic bronchitis and emphysema, which are among the leading causes of severe disability, the death rate for cigarette smokers is 500 percent higher than for nonsmokers. For lung cancer,</p>	8	<p>In section on prospective studies in ch. 4, right after mortality ratios overall and before table of mortality ratios and excess deaths.</p>

<p>the most frequent site of cancer in men, the death rate is nearly 1,000 percent higher.</p>		
<p>In all seven studies, coronary artery disease is the chief contributor to the excess number of deaths of cigarette smokers over non-smokers, with lung cancer uniformly in second¹ place. For all seven studies combined, coronary artery disease (with a mortality ratio of 1.7) accounts for 45 percent of the excess deaths among cigarette smokers, whereas lung cancer (with a ratio of 10.8) accounts for 16 percent.</p>	<p>5</p>	<p>In second paragraph on excess mortality, precedes paragraph on the diseases that are less frequent than coronary artery disease and lung cancer. This passage is repeated later.</p>
<p>Cigarette smoking is causally related to lung cancer in men: the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, point in the same direction.</p> <p>The risk of developing lung cancer increases with duration of smoking and the number of cigarettes smoked per day, and is diminished by discontinuing smoking. In comparison with non-smokers, average male smokers of cigarettes have approximately a 9- to 10-fold risk of developing lung cancer and heavy smokers almost a 20-fold risk.</p>	<p>18</p>	<p>Begins the subsection “Lung Cancer” in section entitled “The Effects of Smoking: Principal Findings.” This section is more explicitly argumentative, and this passage is repeated later.</p>
<p>In all seven studies, coronary artery disease is the chief contributor to the excess number of deaths of cigarette smokers over non-smokers, with lung cancer uniformly in second place (Chapter 8, p; 108) .</p>	<p>5</p>	<p>In “Mortality by Cause of Death” which is a subsection of the</p>

		<p>subsection “Mortality” in “Comments and Detailed Conclusions: A Guide to Part II of the Report.” This appears to be positioned for an audience that would be more likely to read the more technical chapters of Part II.</p>
<p>Cigarette smoking is causally related to lung cancer in men; the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, point in the same direction.</p> <p>The risk of developing lung cancer increases with duration of smoking and the number of cigarettes smoked per day, and is diminished by discontinuing smoking.</p> <p>The risk of developing cancer of the lung for the combined group of pipe smokers, cigar smokers, and pipe and cigar smokers, is greater than for non-smokers, but much less than for cigarette smokers. The data are insufficient to warrant a conclusion for each group individually (Chapter 9, p. 196). [bolded as in original]</p>	<p>18</p>	<p>In “Lung Cancer,” a subsection of “Cancer by Site,” which is a subsection of “Comments and Detailed Conclusions: A Guide to Part II of the Report.” As stated above, for more technically-inclined audience.</p>

The passage with the predication of “causally related” and “far outweighs” is taken up most frequently, with “far outweighs” occurring more often than “causally related” (9 occurrences to 7). The next most frequent uptake was the mortality ratio paragraph, with the “1,000” percentage used most frequently from this passage. It is notable that there are more resources of appraisal used in the top two passages. For the top-occurring passage containing “causally related” and “far outweighs,” there are systems of graduation at play. It begins with the monoglossic statement establishing causation, then following the colon there is not only the central graduation by quantification-mass (i.e., “outweighs”), but it is intensified by the modifier “far” and the slight addition of graduation by the modifier “all,” as well. In classical rhetorical terms, Quintilian would call this the method of amplification where there is heightening: not only is there a causal relationship, but it *far* outweighs *all other* factors. Furthermore, the information on women, while ultimately diminishing slightly (i.e., less extensive), keeps the reader focused on the idea that there is a pattern about smoking and lung cancer, increasing presence and thus amplifying by *copia* (and, in terms of graduation, this is graduation by quantification-number, as another distinct entity is added).

It’s also important to note that this passage occurs twice in chapter 4 of *Smoking and Health*, so it could be that the sheer repetition increased the probability that it would be picked up compared to the language of passages that were picked up less frequently. However, the other passage that was repeated (i.e., “In all seven studies...”) was not picked up that frequently with an uptake of 5. The second most frequently picked up passage occurs once and also has a good deal of graduation. It is the most numeric of the passages, using a series to graduate by quantification-number in two ways—first by the high mortality ratio of 10.8, then by its comparison to the diminishing list that it ranks first in. The second series graduates again by quantification-number,

but by amplifying rather than diminishing in the other direction. As repetition of the same information only expressed in percentage rather than ratio, this function as *copia*—a restatement to keep the reader’s attention on that same information, increasing presence.

The effort to use the word “cause” and variant forms (e.g., causal) and/or the effort to explain *why* the report writers used this language to explain the role of smoking in the development of lung cancer appears successful based on the texts in my corpus. Of the 52 mentions¹⁰ of the lung cancer and smoking connection from the report, 37 had some version of the word “cause” used—which is the interpretive language of this statistical evidence most endorsed by the report writers. This could be a result of the report, but it is important to note language used in the press conference by the advisory committee that wrote the report and other officials who spoke on the same day the report was issued and then covered by the press. In the press conference¹¹, the following causal language was used that somewhat deviated from language in the report: “prudent...to assume a cause-and-effect relationship,” “major causal factor,” “direct causal relationship,” “very firm conclusion [in response to question asking about cause-effect relationship].” Three experts and officials also spoke in the immediate aftermath of the report. Wendell Scott, president of the American Cancer Society, said there was “At last, the relationship

¹⁰ “Mention” here is defined as any instance in my corpus in which a passage of text within the same topic chain referred to lung cancer and smoking from the perspective of the results of the report. If the topic chain was broken after three sentences, and lung cancer/smoking was mentioned again, this was considered a separate mention. In this calculation, I did not include the full reprinting of the introduction of the report by both *The New York Times* and *The Washington Post*, since there was no substantive changes there.

¹¹ I only had access to press conference video from the CBS and NBC news specials that I analyze later in this chapter. I could not locate a full transcript of the press conference.

between heavy smoking and the increased incidents of lung cancer in men has been established as a fact.” John Cline, former president of the ACS and of the American Medical Association said smoking was a “major factor in causation.” Finally, lung surgeon and researcher Alton Ochsner called smoking the “principal cause” of lung cancer.

In the two news specials and nine newspapers I analyze, causal language used in the report but also by committee members during the press conference and possibly these other experts (Scott, Cline, Ochsner) led to a range of causal language evaluating the statistical correlation from verbatim reprints to things like “definitive causative link” and “chief cause beyond any scientific doubt.” In the sample I have, then, the report’s initial coverage in these texts amplified the message surrounding lung cancer in which the Surgeon General’s advisory committee most endorsed.

However, simply identifying the prevalence of a word without attending to its surrounding context has limitations. For instance, was the word or a variant of the word “cause” quickly qualified by a skeptical interpretation? Or, by contrast, was there surrounding language that more strongly endorsed the connection? Or, was there surrounding text that contradicted these findings (e.g., language that called into question the credibility of members of the committee, tobacco industry representatives quoted as calling for “more research” or the importance of “moderation”)? Other than the nouns, verbs, or modifiers that immediately convey the meaning of the lung cancer/smoking relationship, I also include for my analysis: language or images immediately proximal, language or images elsewhere within the same article or segment that could potentially influence an interpretation of the statistic (e.g., quote from tobacco industry rep questioning the credibility of the committee four paragraphs after the statistic), and different articles or segments that could either influence an interpretation of the statistic or to help supplement analyses of the previous two elements (i.e., if an article or segment seems to have a stance that suggests it leans

toward a supportive or skeptical stance toward the report, then seeing how the newspaper or film was organized or what other content it covered can help supplement that analysis of that article or segment). These groupings of analysis will consist of analysis of patterns of rhetoric involved in reprinting full phrases or sentences as well as language that is not reprinted—sometimes there is a resemblance, sometimes there is no resemblance at all, and sometimes the language is more similar to language from the press conference than to anything in *Smoking and Health*.¹² In what follows, I analyze the two news specials on CBS and NBC, and how they use inscribed and invoked attitude in stronger and more muted ways, engagement resources, and arrangement to have stronger and weaker endorsements of the lung cancer and smoking correlation statistic. This culminates in CBS's stronger endorsement of the report's findings and NBC's subscription to a "false balance" of even coverage that undermines the report's findings.

2.3 January 11, 1964: Background and Analysis of CBS and NBC News Specials

Since *Smoking and Health* was released to reporters 90 minutes prior to the 11:00am press conference on the report, it was television (and, likely, radio) and not print media that was able to get the first word on the report. All three major broadcast networks—ABC, CBS, NBC—had nationally broadcast television specials about the content of the report, coverage of the press conference, and interviews with experts. Both NBC's one-hour broadcast and CBS's 30-minute

¹² The full text of the press conference is not extant. I am working only from what I viewed in the press conference footage from the two news specials.

broadcast are currently (as of July 2019) available on YouTube. ABC's 30-minute broadcast, however, is not available online or at any archive I have been able to find.

When commenting directly on the committee, report, or the lung cancer association, I coded and analyzed relevant elements of the segments. Though there has been some work on applying the appraisal framework to multimodal texts (Caple and Knox, 2012; Chen, 2010; Economou, 2009; Feng, 2017; Feng and O'Halloran, 2013; Feng and Wignell, 2011; Macken-Horarik, 2004; Martin, 2001; Tan, 2009; Unsworth, 2015), because the film texts I look at are so heavily reliant on language, non-linguistic features rarely had a large impact on meaning. Still, when relevant, I do borrow from Anthony Baldry and Paul Thibault's (2006) *Multimodal Transcription and Text Analysis* in addition to the multimodal appraisal studies I mentioned above to consider how non-linguistic elements of the text impacted meaning, such as: facial expressions, gestures, camera position, camera angles, camera movement, interpersonal distance, direction of gaze of participants, participant movements, various elements of sound, and actions/visuals that become symbolic (e.g., rolling up sleeves to represent "getting to work", a fur coat to symbolize wealth).

These two news specials reveal a good contrast that is also at play in the newspaper coverage in my corpus. CBS has strong evaluative language that signals an interpretation of the correlation statistic as genuine, serious, and something to believe as reasonably representing a determination that smoking causes lung cancer. It also arranges segments in a way that makes the statistic and report seem to be on dialogic grounds, but not in such a way that creates "false balance" (i.e., both sides shown as equal despite one side having much more support in terms of evidence and consensus building—see Dearing, 1995). This is done in terms of the composition and expertise of the committee as well as a range of interviews where subjects could be pushed on

their evaluation of the statistic and the report. The NBC special, however, uses a combination of weaker evaluative language, arrangement of segments and imagery, and engagement resource to create a back-and-forth rhythm that creates a false balance and a sense of doubt about the statistic and the report throughout.

2.3.1 Introductions and Conclusions to CBS and NBC News Specials

In the beginning of both documentaries, traditional news documentary techniques were used to transition between segments first summarizing the report's key findings and then devoting a significant portion of time to footage of the press conference earlier that day. Anchored by Harry Reasoner, CBS's special, however, split the press conference footage up into two smaller segments that were about equal to the unbroken segment covering the press conference in the NBC special, anchored by Frank McGee.

The NBC special used a lot more verbatim language from the report to describe the lung cancer and smoking association. The most frequent reprinting from *Smoking and Health* from my corpus was item 4 in Table X, with these two portions in particular:

- “Cigarette smoking is causally related to lung cancer in men: the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, point in the same direction” and
- “In comparison with non-smokers, average male smokers of cigarettes have approximately a 9- to 10-fold risk of developing lung cancer and heavy smokers almost a 20-fold risk.”

The “causally related,” “far outweighed,” and “point in the same directions” portions of the first bullet occurred most frequently in the NBC news special. In the NBC special, versions of this language appeared in both the introduction segment and the conclusion segment. In the

introduction, the first bullet point cited above included without what comes after the colon followed by the full second bullet point, and this occurs right after anchor Frank McGee states that the report says “a great deal more” than its basic conclusion and also “leaves a lot unsaid.” McGee lists off several statements from the report with the word “item” punctuating the beginning of each statement (e.g., “Item: smoking is causally related to lung cancer in men”), with this succession of “items” framed by the invoked attitudes and engagement resources that populate the introduction section to create a stance of paralleled certainty and doubt. The conclusion uses a similar “item” function, only that the information on women replaces the risk ratios.

In the CBS special, Reasoner’s monologue is framed by much more positive evaluative language about the committee and the report and it contains this version of the first bullet point above: “This in summary is what the committee says: Cigarette smoking is a major cause of lung cancer in men and data on women smokers points the same way.” We lose the “less extensive” portion, leaving only the syntax to suggest as much, but, given the positive evaluative language surrounding it, it is also notable that “major cause”¹³ replaces “causally related.” As much stronger language here, with “major” intensifying “cause,” there is an additive effect of the preceding and succeeding positive evaluative language about the report and the committee. The CBS documentary was far more explicitly anti-tobacco in its arrangement of coverage and language, with the use of “major cause” as a strongly graduated expression compared to “causally

¹³ I could not definitively trace where “major cause” is first used in relation to lung cancer. I see the American Cancer Society using this “major” in their statement, cited in the NBC documentary and in the January 12, 1964 *Washington Post* (“Stocks Push Upwards in First 1964 Week,” M12). During the press conference, committee member and head of department of surgery at the University of Utah, Walter Burdette uses “major causal factor,” so it could be it originates there.

related” as one small example. NBC, by contrast, has a much more muted straight tone in coverage that, arguably, left a vacuum of evaluation for pro-tobacco critics to fill.

Throughout both specials, the committee and report itself were described in evaluative language that generally signaled expertise, competence, and rigorousness, but CBS did this much more explicitly than NBC. In the introductory portion of the CBS special, before getting to the findings of the report, Harry Reasoner refers to the committee as a “blue-ribbon committee” that had been studying for “14 months,” that their conclusions were “firm and unanimous” after looking at the “whole smoking situation,” and that the report was a “new turn” since the attacks on smoking began “10 years ago” with the report as a “culminat[ion]” of those lines of study. Judgments of capacity and tenacity are both inscribed (e.g., “blue-ribbon”) and also invoked by the graduation that can signal careful study (e.g., “14 months,” “culminated”). While narrating this intro (with exception of B-roll of cultural images of people smoking in the movies), Reasoner is in a close shot with his gaze fixed in the viewer, conveying an intimate tone:



Figure 1. Reasoner Narrating Introduction.

NBC's special opens the intro with a much more dynamic visual portrayal of its anchor, Frank McGee. This special gets right into the report. The first image is of a woman's hand extended with a cigarette under "Smoking and Health," which then transitions to the below image in Figure 2.

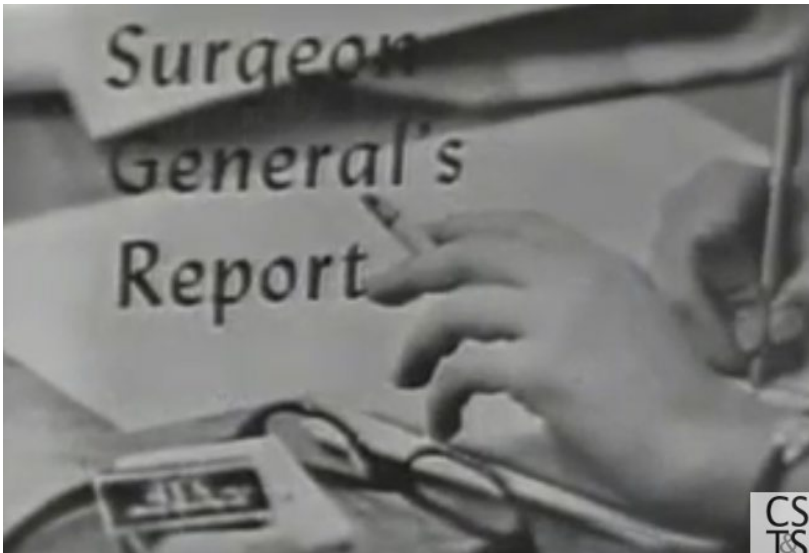


Figure 2. NBC Background Image in Introduction.

One hand with a cigarette, one hand with a pen, and with glasses down and papers sprawled around, we have a figure hard at work, possibly intellectual work. This can be read as NBC's newsroom hard at work analyzing and translating the findings for its audience, or, perhaps, the viewer hard at work analyzing what this report might mean in relation to whether they may or may not continue smoking. Following information about sponsors, we are taken to Frank McGee as seen below in the next figure.



Figure 3. McGee in a Very Long Shot at Beginning of Introduction.

With his legs folded, looking down at his papers rather than at the viewer, this more distanced imagery shows McGee as someone more studious and perhaps more interested in “the facts” as compared with the more traditional intimate shot of Reasoner—a theme leaned on here seems to be knowledge or a critical orientation rather than trust that the closer shot of Reasoner suggests. McGee’s distance from the viewer places emphasis less on his relationship to the us and more on his relationship to his work—in this case, relaying his objective understanding of the report. McGee begins speaking and the camera cuts to the cover of *Smoking and Health* as McGee says, “This book containing three hundred eighty-seven carefully worded pages is a federal government report,” with “carefully worded” as the extent of the positive evaluative language used in the introductory portion—though, “carefully” can also be read here in terms of dishonest or not speaking genuinely. The camera then cuts back to McGee as the camera moves closer and closer as he narrates the key findings of the report, which could be read as a building trust by way of the reading of facts and easing our way into the report’s findings by McGee and NBC News’ scrupulous analysis of the report:



Figure 4. McGee at Closest Point in Introduction.

Both Reasoner and McGee go through a list of key findings, including the lung cancer association, as mentioned above, toward the close of their respective introductions. Reasoner continues using positive evaluative language as discussed above. McGee, on the other hand, frames the key findings this way after a general statement about the report’s “basic conclusion” as stated by a reading of Surgeon General Luther Terry’s opening statement: “The report says a great deal more and it leaves a lot unsaid.” After McGee lists the main findings, he continues “Now the things left unsaid” before mentioning the lack of information on what in tobacco causes lung cancer and the lack of a “proven causal link” between smoking and heart disease. McGee counters this statement with “Nevertheless, the report is an indictment of cigarette smoking and will doubtless have an effect on the tobacco industry and on those persons who now smoke.” The lack of evaluative language, the more “objective” studious imagery/camera-work, and this shifting back and forth—what was said, what was not said, acquiescing that there will be an effect—is more muted than CBS’s introduction and its organization implies an existence of doubt about the report, and thus, any statistic produced.

In the conclusion, McGee stands up in a medium close shot, gazing back and forth between straight at the camera and down at his papers as he summarizes findings of the report (some mentioned earlier, others not mentioned before) before closing the list of findings by saying that “And there are many other facts—some firm, some vague—in the report. It’s expected the report, which can be purchased from the Government Printing Office in Washington for a dollar-twenty-five, will become a bestseller.” The qualifying “some firm, some vague” create a parallelism that can be read as an equal amount credible and not credible in the report with the evaluative language “firm” connoting a positive judgment and “vague” connoting a negative one. This parallelism again occurs later in the conclusion: “In any event, reputable doctors compiled this report and other reputable doctors disagree with it.” The lack of evaluative language and this parallel push-pull of trust and distrust of information, similar to the introduction, can leave the impression of impartiality on the part of NBC, but also can leave the impression that there is as much doubt about this report as there is certainty—which, from a communicative standpoint, gives the tobacco industry more credence than the report it covers. And, further, that any statistic in the report might be on shaky scientific footing.

In a close shot, Reasoner, by contrast, does offer positive evaluative language as he did in the introduction, referring to the report as a “culmination of a great many studies and a great deal of concern,” using resources of graduation to invoke positive judgments of capacity, tenacity, and propriety. Reasoner also credits the report by saying it “is as close as we can come in this country to an official and impartial statement of the facts,” which graduates by focus (“as close as we can get”) to a report that is reflective of people who are capable and unbiased. Reasoner then transitions in a way that softens this ethical appeal with a contracting counter (“But it is also a beginning rather than an end”) to shift to discussing potential government and industry action in response.

Though this contracts the viewpoint about the report as a sort of “final word,” this move does this rather indirectly and in terms of action to take rather than research to be done (which was often a way to promote inaction by tobacco industry PR messaging). Similar patterns emerge elsewhere in both news specials.

2.3.2 *Smoking and Health* Press Conference Footage in Both News Specials

What gets left in and left out makes a big difference in how the press conference was covered in both specials, and how these decisions could impact potential interpretations of the lung cancer/smoking association. In the press conference footage, the lung cancer and smoking association comes up again in both news specials, with telling differences. The lung cancer/smoking association is cited several times, and two of those times both CBS and NBC use similar footage. While the CBS documentary was 30 minutes shorter, considering other rhetorical differences between the two specials, it is notable what gets cut from the NBC footage as compared to what is left in there in the CBS footage.

First, one exchange at the press conference begins with a question from a journalist about how “serious the epidemic” of smoking was. Walter Burdette, the head of the Department of Surgery at the University of Utah and a member of the committee, answered by suggesting that “you can define this in term of numbers,” stating that with lung cancer, “where the mortality ratios are the highest, there are about forty-one thousand deaths,” the committee felt that the “major causal factor” was smoking. The high number in tandem with “highest” mortality ratios helps to amplify lung cancer as a sort of epidemic. After a follow up question confirming if such a “causal relationship is established” since people had not been “satisfied with this before,” Burdette continued to state, on behalf of the whole committee, that there was a “direct causal relationship”

and the committee reached this conclusion on “converging evidence of several types,” to flag a judgment of capacity by graduating “evidence” with “converging” and “several types.” In the NBC documentary, this is where the clip ends. However, in the CBS special, the footage continues with Surgeon General Terry adding that “when [Burdette] speaks of 41,000 deaths by carcinoma of the lung in this country per year that the number of deaths from automobile accidents last year I believe was around 38,000. This is only for some comparative substance.” This addition does not only contextualize this information, though. By extending the viewer’s attention on the original 41,000 figure, the addition amplifies by copia—we get similar information to extend this attention, increasing presence on the idea of this figure of 41,000 being a very large one.

During another portion of the press conference, Assistant Surgeon General James M. Hundley was asked by a reporter if the committee found any report that raised doubt about smoking as a cause of lung cancer. Hundley answered with several lines about how they consulted many types of evidence and while there were some people who do not believe the relationship to be causal, that the committee came to its conclusion despite these objections. The reporter followed up by asking, “In other words, it was a very firm conclusion?” Hundley agrees, concurring, “Indeed, it was a very firm conclusion.” The NBC footage concludes at this point, but the CBS footage continues with the next exchange. A reporter then says that, another committee member, Leonard Schuman, said that it was an “utterly firm judgment” and then asked, “would you say that anyone who regards the point as not being reasonably proved is unreasonable?” Hundley responds with a smile and some laughter, “I think that would be fair to say, yes.” The light-hearted nature, the repetition of “reasonable,” and the similar intensified statement of “utterly firm judgment” all help to amplify the conclusion by copia, keeping presence on the subject, and things are heightened as the repetition creates a humorous element and through the graduation by force of “utterly.” In

both cases, CBS includes more coverage that ultimately amplifies interpretations of causality in ways that are lost in NBC's omissions.

2.3.3 Lung Cancer-Smoking Association in Statements and Interviews with Experts and Officials

Both specials had several statements and interviews by experts, government officials, etc. that also commented on the relationship between smoking and lung cancer. In the NBC special, two pro-tobacco or "skeptical" scientists that cite the lung cancer association were Charles Dunlap, chair of the Department of Pathology at Tulane at the time, and L.H. Garland, radiologist and researcher at the University of California at the time, both of whom appear about midway through the special. Dunlap's statement is preceded by McGee stating that, "Dr. Little [previously giving a statement about gaps in knowledge on health effects of smoking] is not alone in his contention that great gaps of knowledge remain in the correlation of smoking and lung cancer," followed by a listing of reasons for skepticism (e.g., caused by virus, caused by air pollution, possible causal relationship but lack of "solid evidence"). Using some positive evaluative language about the committee, McGee recounts the main findings by the "special blue-ribbon medical panel" included that smoking was a "major cause" of lung cancer. McGee continues that, "Many medical researchers agree with this conclusion, but some raised grave questions as to why this is so." The engagement resource to counter this agreement undercuts the earlier positive evaluation of the report, repeating a similar pattern throughout the NBC special which creates a parallel back and forth through syntactic, arrangement, or engagement resources.

Dunlap starts by conceding points to critiques of tobacco use, before subtly flipping the concession. The camera then cuts to Dunlap in a bright white shirt, seated at, presumably, his desk

with several books around him and many filing cabinets behind him, all invoking a judgment of capacity. Dunlap pronounces that he thinks “it’s fair to say that it’s been established beyond any reasonable question that excessive smoking of cigarettes is related to cancer of the lung.” The strong language “beyond any reasonable question” is undercut by the weaker verb “related” (as compared to “causal” or “major cause,” etc.). This concession is followed by a denial that it has “not resolve[d] the question. It actually has raised the question” about the nature of the relationship. Dunlap says there is “a good deal of evidence” that “it is not a simple direct cause and effect relationship,” and brings up several reasons as to why this is not the case (e.g., “a great majority of people who smoke excessively do not develop lung cancer,” comparisons between city and country rates, an anecdote about malaria as a similar case). After bringing up several items of critique that do not totally seem relevant to the extent of the correlative differences and supporting evidence for causality, Dunlap concedes that “Now, please don’t misunderstand me. At a practical level, even though we don’t know how cigarette smoking is related to cancer of the lung, I think it would be a smart thing for anyone not to smoke.” While this statement supports some industry talking points, it does not completely do so, with the concession at the end. Still, the waffling back and forth mirrors the tactic in the special overall.

Garland comes after Dunlap and in many ways restates the same points, amplifying by copia, but also *heightens* those same points through anaphora, higher scales of graduation in word choice, and by appealing to moderation. After going through some of his own research that showed evidence that tumors in the lungs of smokers appeared in places most medical professionals wouldn’t expect since they often developed in places where inhaled smoke doesn’t concentrate as acutely, he states the following:

Once more, I don't understand this. I do know that large numbers of nonsmokers get lung cancer. I do know that the fundamental cause of lung cancer is not known. And therefore until we have more reliable scientific information, I do not believe we should panic and I do not believe we should unequivocally ascribe the leading cause to cigarettes.

The repetition of "I do know" helps to intensify items that make the case that there should be some doubt as to whether smoking really causes lung cancer. The choice of "fundamental" is also interesting, since one could argue that smoking could be one of many factors but still the main or "major" factor involved—the word "fundamental" negated by "not known," is an attempt to refute that view. A strong repetition of "I do not believe" with "panic" and "unequivocally" help to both inscribe and flag negative appreciation and judgment of reaction and veracity, respectively. Garland concedes that he does not approve of cigarettes and advertising of cigarettes before countering that (with another "I do know," helping to intensify), as a physician, it is his "responsibility to urge young people to be moderate in all things, to be moderate in the use of cholesterol, caffeine, meat, speed, and perhaps even speech, and, of course, cigarette sure included in this," which aligns well with many tobacco industry talking points about moderation, which makes smoking seem less harmful by its normalized consumptive companions in this sentence.

Finally, after saying he "hopes" the real answers will be revealed, he counters that "we should not go overboard and the public should know that for fifteen years there have been thousands of experiments trying to produce lung cancer with cigarette smoke in animals without success." That is a very strong statement, inscribing a negative appreciation of reaction again with "overboard," and then graduating by quantification with the extent of time and amount of experiments to suggest only experimental research can reveal the answer, and, so far, it hasn't

despite many attempts. These stronger wavering moves amplify feelings of doubt regarding the lung cancer/smoking association from the previous segment.

An interview with Edward Annis, president of the American Medical Association provides one more mention of the lung cancer and smoking association in the CBS special that I want to analyze to show a difference between how the CBS and NBC specials used similar footage for different ends. Edward Annis is an interesting case because, at the time, the American Medical Association had received some bad press due to the revelation that it received \$10 million in research funding from the tobacco industry to do research—this, in exchange for the ability to support the “more research” rhetoric of the tobacco industry in exchange for this money and support from tobacco-growing congress representatives to defeat Medicare and Medicaid (Brandt, 2007, 249), something the AMA’s governing body was opposed to. So, Annis was in a rhetorical position in tension with the scientific consensus many of his members subscribed to which supported the findings in *Smoking and Health* and the political complication that constrained him to repackage the “more research” rhetoric of the tobacco industry.

In the CBS interview, after Reasoner introduces the accusation that the AMA was accused of “foot dragging” for issuing health warning on smoking, especially since most other health organizations had issued such warnings already, Annis says in the beginning that “I have been firmly convinced in my own mind for a long time of the close definite cause and effect relationship between inhalation of cigarette smoke and increasing number of lung cancer cases I have seen in my own practice.” It is interesting to note that Annis chooses to use an anecdote—that is, he speaks from his own experience, which enables him to also be in a position to also claim that this association has not been researched enough yet. Annis is then posed a question specifically about the accusation that the AMA was colluding with the tobacco industry in the CBS interview, putting

him on the defensive with only a weak evaluation of the report (i.e., “We are very much in accord with the report”).

While Annis and the national body of the AMA generally supported the report, since the political goal was to prioritize supporting the idea that “more research” was still needed, Annis’ goal was obstructed by either editing or the structure of the interview. By contrast, in the NBC documentary, Annis read a prepared statement that allowed him space to contribute some “more research” rhetoric with lots of source of engagement, especially entertain, that helps establish multiple possible viewpoints on the negative effects of smoking, stating that, “we will pursue vigorously our already established policy wherein we hope to investigate scientifically to find out just what it is that takes place in the tissues of the lung, in the cells when people inhale over a period of time.” Annis continues, asking, “How do the disease, disease get-- get underway, how are they aggravated? What takes place? How does it take place? Why does it take place? If we know these answers, perhaps then-- perhaps then we will have a reasonable solution to the problem.” While CBS had several interviews that provided an opportunity to question some pro-tobacco standpoints, the NBC documentary’s pro-tobacco sources or skeptics of the report read from prepared statements with one exception (a past interview with surgeon Alton Ochsner). For NBC, this often gave the “more research” rhetoric proportionally more airtime without critique, calling into question the statistical association between lung cancer and smoking a bit more compared to the CBS special (i.e., perhaps the evaluation of the correlation is misguided).

2.3.4 Ethical Appeals Through Arrangement and Evaluation in Segments Beyond

Introduction and Conclusion

In the remaining part of this section, I want to note some important moments where evaluative language is used or influential arrangement of segments are used that could make ethical appeals influential on interpretations of statistical information within each news special. Both specials devote about eight minutes to journalists asking questions at the press conference, both have three to four minutes of introductory material, both have about two minutes of a conclusion, and both have a series of experts and officials reacting to the report or the subject of smoking and health more generally.

However, there are slight differences. Despite being only 30 minutes long compared to the 60 minute NBC special, the CBS special commits nearly five minutes to background on how the committee was formed and information on each committee member while the NBC special commits no time to such a background. Reasoner mentions, again, the word “culmination” to describe the committee as a response to a “long series of attacks” on the tobacco industry. The repetition of “culmination” throughout the documentary signals a sense that this has been a long time coming, as something that can help figure out what smoking is doing to people. When giving information on the committee, interviews from 1962 of both Surgeon General Terry and tobacco industry spokesman George V. Allen about the goals of the committee are played. While Allen is given an opportunity here to slip in some comments to ensure future moments to muddy the waters of the findings (e.g., committee members should have a “broad enough perspective” to consider “all the factors, not only smoking”), both segments have a lot of evaluative language that signal an interpretation that committee members will be very capable, knowledgeable, and thorough people. Following these clips, this is reinforced by a camera cutting from committee member to

committee member gathered at a table, noting their credentials—noting, too, the ones who smoke and the ones who do not smoke.

Interviews and statements also provided background for ethical appeals surrounding the committee and report, which could influence interpretation of the correlation. In the NBC documentary, Senator Thruston B. Morton, a senator from Kentucky who opposed legislation on regulating tobacco advertising, is interviewed by an NBC correspondent. Twice, Morton qualifies statements by saying he doesn't "question the clinical content" of the report but that he *does* question the "statistical content" or "some of the statistical background." This speech act engages the audience by conceding a point before countering—Morton is a reasonable fellow who just thinks that while some of the experimental research is solid, some of the research the report is relying on is overstated (i.e., observational research relying on correlation). Morton is trying to present himself as a figure to help represent economic interests (e.g., in response to the first question he talks how about Kentucky has "forty-eight percent of our cash income from our farmers"). Morton shifts gears from critique of method to make an appeal to moderation followed by a slippery slope argument depicting that Americans won't stop eating sugar and beef or stop drinking coffee, but moderation¹⁴ is good for all of those products from a health and economic standpoint (e.g., "put the sugar business out," "break South America by stopping the import of coffee"). This appeal helps to cover bases of counter-argument (e.g., well, even if you think the statistical research has merit, we can't afford the economic costs of changing our behavior).

¹⁴ The theme of moderation comes up elsewhere in the documentary, but it comes strongest here (earlier in the special, for instance, L.H. Garland, a radiologist and skeptic of the report says it is his role as a doctor to "urge young people to be moderate in all things.")

One final point worth visiting on the experts giving statements and interviews in both documentaries is that it is curious that in the NBC special, both ostensibly “anti-tobacco” scientists presented were individuals who worked on experimental or more material research than statistical analysis. Alton Ochsner, a prominent critic of smoking, was a surgeon who had used evidence of autopsies of smokers’ lungs to suggest a connection to lung cancer since the 1930s and Ernst Wynder, an epidemiologist, who had conducted one of the ground-breaking (as well as cruel) studies of the 1950s that produced skin cancer in mice by applying them with cigarette tar. While Ochsner is very assertive in arguing for a connection between smoking and lung cancer in particular, Wynder’s testimony is more interesting in light of the rest of the NBC special. Wynder uses language like “as free researchers,” “whether we can modify the tobacco product,” “these studies will lead to safer, not necessarily safe smoking products,” “most smokers will continue to smoke,” and “I think that with more and more work in this area we should combine in the research efforts of private research institutions together with that of industry...[to create] a modified tobacco product which will be safer.” This last point is especially pertinent because Wynder—beginning in 1955 and continuing for 40 more years—had a history of being influenced by the tobacco industry with research funding and other sources of influence that helped soften Wynder’s research and perspectives on the harmful effects of tobacco, even if he still remained against tobacco (Fields and Chapman, 2003). Ultimately, the sort of language mentioned above could help establish smoking as something that could be better, where research could improve it, and that people would always smoke anyway—perspectives that helped enable the business to continue. As an “anti-tobacco” voice, this one is pretty good for the tobacco industry, and helps frame the statistical association as perhaps something that is a mere “bump in the road” rather than something

that suggests smoking is a serious matter concerning lung cancer, that we should interpret it as evidence to stop smoking.

By contrast, CBS's "anti-tobacco" scientist was Cuyler Hammond, director of statistical research at the American Cancer Society and co-author of one of the ground-breaking epidemiological studies of the 1950s that statistically linked smoking to lung cancer. Hammond immediately evaluates the report by stating, dryly, that the "significant" finding of *Smoking and Health* was that "the government committee came to the same conclusions that the great majority of scientists had in all previous commissions," using graduation resources ("great majority," "all previous") to help amplify the notion that, as stated earlier by Reasoner, "some people already convinced about the issue called the Surgeon General group the flat earth committee, a jury summoned to decide officially if the earth was really round."

The CBS documentary does not disparage statistics, but the NBC documentary has Morton do so, as well as several statements implying that statistics are not valued pieces of evidence (e.g., "disparities in statistical evidence linking cigarette smoking and lung cancer worried some researchers" and "Statistical or not, the case against cigarette smoking..."). In the NBC special, the choice of "anti-tobacco" scientists that were not reliant on statistics, Wynder's specific language that mirrors talking points of tobacco industry, and the explicit critiques of statistics are notable for a critique on multiple fronts of the report as being organized in a way that made an ethical appeal against the credibility of using statistics to determine future behavior.

Two very different stances are apparent in these news specials: one with stronger endorsement of the findings in *Smoking and Health* (CBS) and one that suggests a fairly even standpoint of merit and doubt to the report (NBC). In its choice of content/arrangement (e.g., background on committee, interviews rather than statements), CBS also had more of a CUSP

approach than NBC in how it showed some of the social aspects of the science that produced the statistic that helped to shrink the distance between viewer and analysis, potentially creating goodwill. In the remaining portion of the chapter, I turn to ways that statistical frames signaled interpretations through evaluative language and images, arrangement, and ethical appeals in newspaper coverage of the report.

2.4 January 12-13, 1964: Background and Analysis of Newspapers

Since the report release and press conference took place on a Saturday, I decided to limit my corpus to newspaper issues on January 12 and 13, a Sunday and Monday, to get initial coverage from both daily and weekday newspapers¹⁵. To locate newspaper articles to build my corpus, I used the historical newspaper databases for the *New York Times*, *Washington Post*, *Wall Street Journal*, *Pittsburgh Post-Gazette*, and the newspaper database aggregator *Elephind.com*. *Elephind.com* is a website owned by Veridian, which digitizes local newspaper archives for universities in the U.S. and abroad. You can search in this website, and it browses across all publicly available newspaper databases created by Veridian's software, which comes to about 3,800 newspapers total. I had access to the other historical newspaper databases through the

¹⁵ Since some of these newspapers did not run on Sunday and others ran on both Sunday and Monday, I only included the first issue that covered the report (i.e., I did not include Monday coverage if a newspaper ran on Sunday with coverage of the report and press conference) because I wanted to ensure more consistent comparisons across newspapers (e.g., rhetorical moves of a second day of coverage of a newspaper that ran on Sunday/Monday might be different in kind to a first day of coverage in another newspaper on Monday).

University of Pittsburgh’s library access—other historical newspapers available through the library either did not cover the 1960s (e.g., *Los Angeles Times*) or did not cover *Smoking and Health* from January 11-13, 1964 (e.g., *The Pittsburgh Courier*). To search, I used various combinations of “smoking,” “tobacco,” “lung cancer,” “surgeon general,” “public health service,” and “smoking and health.” This, of course, is not as exhaustive collection of newspapers that covered this news. It can only be a very partial sample to help think about how statistical frames change in different contexts, since so many more newspapers, broadcast news, and radio news covered *Smoking and Health* than I have access to investigate.

This sampling points to a broader problem in researching mid-twentieth century news media as compared to research in nineteenth century and early twentieth news media—understandably so, due to copyright issues. However, this ultimately limits research during this time period to granular analyses of material found at physical archives, digital research of more accessible archives of national newspapers (e.g., *The New York Times*, *The Washington Post*), or, as in my case, an idiosyncratic mix of national newspapers that are accessible and whatever I can get my hands on. I located nine newspapers that covered the release of *Smoking and Health*, which was a collection of newspapers that are fairly geographically concentrated, with four from California and three being national newspapers. If I had the time and resources, I would have tried to get a better geographic spread of newspapers, which would have meant spending money on digital access and visiting physical archives. What I do have is less generalizable than I would like, but it does offer differences in statistical framing worthy of study.

Unsurprisingly, the *New York Times* had the most articles and pages covering the report, while the *Washington Post* and *Wall Street Journal* also had a lot of coverage. The other more

regional newspapers covered the report less but were also smaller newspapers. In the below table, I have the name of each newspaper, the region it covered, and any other relevant information.

Table 5. Newspapers in Corpus.

Newspaper	Info. (region, notes)
<i>The Daily Banner</i>	Covered Greencastle, IN, home of DePauw University and broader Putnam County, IN, as well. Monday-Saturday, 6 pages per issue.
<i>The Desert Sun</i>	Covered Palm Springs, CA and larger Coachella Valley in Southern CA. Monday-Saturday, 16-20 pages per issue.
<i>Madera Tribune</i>	Covered Madera County, which is geographic center of CA. Only daily paper there in mid-60s. Monday-Friday, 8-10 pages per issue.
<i>The New York Times</i>	Paper of record for U.S. Covered national and local issues in great depth. Sunday-Saturday, 50-150 pages per issue.
<i>The Pittsburgh-Post Gazette</i>	One of leading newspapers for Pittsburgh, PA at the time. Owned by Paul Block, Jr. and William Block. In 1950s, was considered a good paper to publish material defending tobacco industry (see Proctor 2012, pp. 248-249). Monday-Saturday, about 30-50 pages per issue.
<i>Santa Cruz Sentinel</i>	Covered Santa Cruz County on central coast of CA. Sunday-Friday, about 30-40 pages per issue.
<i>The Sun-Telegram</i>	Covered San Bernadino County and some of Riverside County in Southern California. Sunday-Saturday, about 50-70 pages per issue.
<i>The Wall Street Journal</i>	Primarily covered financial news, national stories, and NYC area. Monday-Friday, about 30 pages per issue.

<i>The Washington Post</i>	Covered Washington, DC area and many national stories in depth. Sunday-Saturday, about 60 pages per issue.
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There were some straightforward news reports covering *Smoking and Health* along with coverage of experts and officials reacting or analyzing the results, historicizing of tobacco, commentary on tobacco’s economic status, etc. I analyze the rhetoric at the same three levels I did with the news specials (i.e., language of statistic, language/imagery within same article relevant to statistic that appears much earlier or later, language/imagery in different articles as relevant to ethical appeals, etc.

The *Desert Sun*, *Madera Tribune*, and *Daily Banner* used a version of the same United Press International (UPI)¹⁶ story covering the report with some small differences between them in how they represented the lung cancer and smoking association, but nothing very notable. For newspapers with less space or fewer resources, it is likely that an untouched UPI or AP report may have had an outsized influence on coverage of the report and statistic. The other newspapers had some more notable differences between them that I will analyze in the remaining portion of this chapter. First, I analyze *The Sun-Telegram* and *The Santa Cruz Sentinel* together because they were structured very similarly and both used the same AP articles. Next, I analyze *The Pittsburgh-Post Gazette* and *The Wall Street Journal* together because of different framings of a similar rhetorical move of presenting multiple viewpoints on the report. Finally, I look at *The New York*

¹⁶ UPI is a news wire service that still exists as of 2020 but had much more influence during the mid-twentieth century and was a competitor with the Associated Press at that time.

Times and *The Washington Post* together because they were similarly sized and had similar strong evaluative language but with some differences in approach.

2.4.1 *The Sun-Telegram* and *The Santa Cruz Sentinel*: Similar Content and Structure, Different Framing Similar to NBC and CBS Differences

The Sun-Telegram (ST) out of San Bernardino, CA and *The Santa Cruz Sentinel* (SCS), out of Santa Cruz, CA had very similar articles as well as exact copies of articles, nearly all coming from the newswire service, the Associated Press (AP). Whereas the ST does more to align with the “both sides” rhetoric of NBC, the SCS does a bit more to more strongly evaluate the statistic as evidence of a genuine public health concern, first and foremost. Both front pages have the report as the most salient story and both stories are versions of an AP story by Frank Carey¹⁷. As to the text of the statistical language about lung cancer and smoking in both articles, the first sentence (Carey, 1964, 1) brings up fairly specific language about lung cancer and smoking: “Heavy cigarette smoking is the principal cause of cancer of the lungs and the larynx and a health hazard so grave as to call for remedial action, a blue ribbon science panel concluded yesterday.” The positive evaluative language of the committee ends after this sentence (“blue ribbon science panel”), though there are resources of graduation that help to flag positive judgments of capacity and tenacity (e.g., describing the length of the report, the length of time the committee analyzed

¹⁷ The only difference for the Carey article is that the SCS version cuts six paragraphs, presumably to shorten it to fit it on their front page in their much shorter newspaper issue—most of the cuts were on more specifics from the report without that much strong evaluative language one way or another.

studies). Later, it calls a “clear-cut indictment” of smoking in relation to how it “far outweighs other factors” in causing lung cancer (language that comes directly from *Smoking and Health*) and commented that the report “hit hardest” at cigarettes as a “significant cause” of lung cancer and other diseases. Repetition of graduated language like “principal cause,” “significant cause,” and “far outweighs [other factors]” (twice) helps to flag negative appreciations of smoking. There are a few instances that undermine the committee or the report (e.g., “it undertook no fresh research”), but, as stated, there were few instances of positive evaluative language, as well, which mirrors NBC’s approach.

The ST’s main headline (1) reads “Cigarettes Called Grave Hazard” followed by the sub-headline “Remedial Action Urged By Medical Scientists.” The SCS’s headline’s syntax put in the first position “Cigarettes Can Kill, U.S. Reports” with the sub-headline reading “Cancer Link Cited; Remedial Action Urged.” The SCS also gave front page space to a small picture of Terry gazing at the reader with an open copy of the report held open by both of his hands and there was another picture—much larger—to the left of an extended arm holding a single cigarette, surrounded by a great deal of empty space to focus salience on the arm. This minimalist picture (see Figure 5) creates a striking contrast between the “simple” cigarette and the blunt headline “Cigarettes Can Kill.”



Figure 5. Cigarettes Can Kill and Image, SCS.

There is no imagery on the ST front page, but there is, embedded within the text of the main AP report an article titled “Tobacco Institute Says: Report Not Final Chapter” (see Figure 6). The layout and the topics of both of these news reports in the ST help to create the same sort of parallelism that the NBC special often utilized by its arrangement of segments and syntax. The article itself is a version of Geroge V. Allen’s statement as analyzed in the last section, with diction like “cooperation” and need for “additional research” that help invoke judgments of positive propriety for the tobacco industry and negative veracity of *Smoking and Health*.

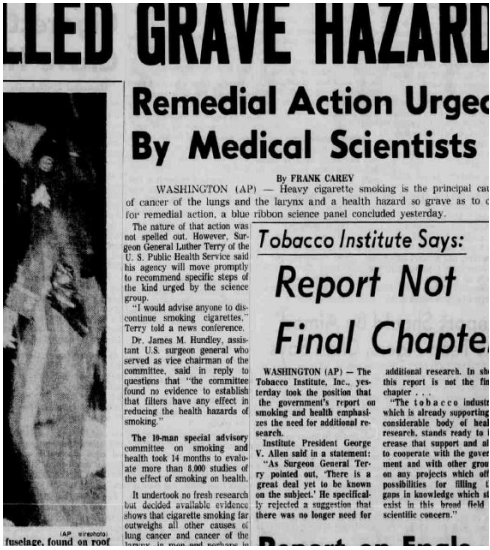


Figure 6. Embedded Tobacco Industry Response Story in ST.

By contrast, the other story on the subject on the first page in the SCS is a series of interviews with residents of Santa Cruz on their reaction to *Smoking and Health*. Four out of the five interviewees express an approving reaction to the report and a desire to quit smoking (see Figure 7)—images of each individual also help to put a relatable human face, potentially invoking affect and creating solidarity between the reader and the positions of the interviewees¹⁸. Having the appearance of majority peer agreement of non-experts in the image helps buttress the impact of the expert majority agreement as expressed by the report itself. The difference in imagery and arrangement of articles surrounding the AP report create different contexts for meaning making for these two newspapers, despite the using the same report as the most salient news report on their respective front pages. The ST has a tendency to follow the rhythms that the NBC special follows, whereas the SCS mirrors CBS a bit more, utilizing stronger evaluative language, arranging sections of text and images in ways that make ethical appeals, etc. All together, though, both rely on rhetoric that makes the statistic out to be more of a blackbox in PAST approach rather than a CUSP approach, in Perreault’s terms.



Figure 7. Interviews with Santa Cruz Residents in SCS.

¹⁸ Though, this being the 1960s, these pictures are, unsurprisingly, “relatable” for the default imagined white reader.

For the other articles in the ST and SCS, both papers shared several articles from the AP and other sources on a second page after the front page. The SCS (3) had a large picture of the committee seated at a large table, papers scattered about, all gazing at the reader under header of “The Scientific Panel,” helping to invoke a judgment of capacity and tenacity (see Figure 8).



Figure 8. Committee Seated At Table in SCS.

In the ST (2), the headline for an article about the American Cancer Society’s (ACS) response is “Cancer Group Chief Calls for 6 Actions” and the SCS headline is “American Cancer Society Chief Urges Action.” Though subtle, the “urges action” is a bit more intensified language than “calls for.” Other than the headlines, both articles remain the same. Less of the statement appears here compared to the NBC special’s coverage of the statement, but what remains related to lung cancer is the language (3): “There is no longer room for doubt about the relationship of smoking to lung cancer.” In an article with a reaction from former ACS and AMA president John Cline featured in both newspapers (page 2 in ST and 3 in SCS), Cline calls smoking a “major factor” in the causation of lung cancer, confirming the position of the ACS and argues for more to be done to prevent teenagers from smoking. A reader seeing this repeated graduation from other reputable

sources help to build a steady and additive potential for persuasion of the report's merits on lung cancer and smoking.

The ST continues similar notes as NBC in regard to the muted push-pull of "both sides" coverage. The ST has an article called "Smoking Won't Be Abolished" on page 2. The pro-tobacco article on the second page is notable in the ST, since there was also an article covering Allen's statement, which was embedded within the article covering the report on the front page. In this story, several industry figures and congressman and governors of states dependent on tobacco talk critiqued the report or commented on why it would not have any impact on tobacco sales. One figure, governor of North Carolina Terry Sanford, said that the report was an "inconclusive rehash of old information." Sanford was also quoted as saying that "none of [the studies] were conclusive and most of which is based on statistical studies." The report being framed as "outdated" invokes negative judgments of capacity, and the slam of "statistical" studies also had potential to discredit statistics like the lung cancer-smoking association.

By contrast, the SCS, prominently at the center of its third page, has an editorial titled "Cancer Statistics Just Apply To The Other Guy." While the editorial can be read as arguing something to the effect of that we are all going to die and we all have hard habits to break, which smoking is just one of several, it implicitly lends credibility to statistical analysis in the title and the opening statement that the report was an "inevitable verdict," provoking a negative judgment of propriety and inscribing a negative appreciation of social valuation. These two "extra" articles, along with the combinations of imagery, layout, and differing evaluative language interspersed within the shared and differing articles make for two different collection of resources that either increase the probability of a more affirmative interpretation of the lung cancer association (SCS) or a more skeptical interpretation of the association (ST).

2.4.2 *The Pittsburgh Post-Gazette* and *The Wall Street Journal*: Representing Multiple Viewpoints with the *WSJ* on the CUSP

These two newspapers are interesting to look at together because of how they represent multiple viewpoints but with different rhetorical effects. The *Pittsburgh Post-Gazette* did not cite UPI or AP for any of its four articles on the report. Its main news report, on page 1 and continued on page 5, entitled “Arguments Shaping Up On Smoking: Demands for U.S. Curbs, Research Follows ‘Indictment’” on *Smoking and Health* has an interesting framing device in its lead paragraph, with the following: “Do-something-now forces and the more-research-is-needed camp were drawing battle lines today in the wake of Saturday’s report calling heavy cigaret smoking a grave menace to life and health.” Following this statement comes a sentence very reminiscent of the AP report’s language, using “principal cause” to describe smoking’s role in relation to developing lung cancer. The rest of the subjects on the first page relate to potential reactions by the government and then the beginning of a section on the industry response to retain the “do something” vs. “more research is needed” framing. Continuing on: “Because the panel in its 14 months of took no original research but only evaluated some 8,000 earlier studies, pro-tobacco spokesmen insisted that nothing new was put forth and nothing finally proven” and, thus, “much more research by public and private agencies is needed before any drastic action can be justified.” The repetition of “nothing” amplifies the idea that there was little substance to the report, all of it was old and not “original.” Since that was the case, “much more research” would be needed before any “drastic” (see: any) action could be justified. The section continues with a point that these pro-tobacco spokesman were “quick to point out” that Terry “had said the research on smoking and health should continue, and at an increased rate.” A further dividing of “more research” and “action

now” camps is done by one Democrat who proposed \$5 million in research money vs. another senator with action on labeling and education as well as the ACS’s to give warnings.

Arrangement plays a role in a pro-tobacco response that follows in a section called “Reactions From Both Sides.” There’s a quote from a “tailor’s helper” that the report scared him (i.e., stance that believes report). The tailor gets four lines while *two full paragraphs* cover pro-tobacco responses. Governor of North Carolina, Terry Sanford, is quoted as saying that the answers to the “tobacco-health question remain to be provided by basic medical research,” followed by a lengthy statement on how North Carolinians had faith that the question would be answered, with the phrase repeated, by “basic medical research.” The second pro-tobacco source, The American Tobacco Institute, calls for “more research,” and is described as pledging to add to its existing \$7.5 million committed to health research. Ironically, following this is the president of the AMA, Edward Annis, stating that it was “unrealistic to assume the American people are suddenly going to quit smoking” and that is why more research was needed to seek and remove elements of tobacco smoke that cause health issues. Annis—without the context of his and the AMA’s appearance of impropriety in regard to collusion with the tobacco industry—is a powerful rhetoric of omission that supplements the “more research” rhetoric in the previous two paragraphs. The organization here is reminiscent of NBC’s approach in, arguably, disproportionate space provided for pro-tobacco voices and its binary framing that helps prop up doubt.

The imagery is also notable. The front page has an image of Terry’s daughter, Janet, who is described as a 20-year-old studying at Vanderbilt University. She is looking down and burning her remaining cigarettes, showing her following her father’s advice. It is titled “Father Knows Best.” The caption has a humorous tone and Janet is conventionally attractive, so one reading could be simply a pleasant and light anecdotal image to view in tandem with the more “serious” news

article. Another reading might be that this represents a naïve 20-year-old woman going “overboard,” as L.H. Garland mentioned in the NBC special, or going “hysterical” as Senator Morton mentioned in the CBS report. Coupled with the framing of “do-something” forces and “more-research” forces earlier, someone with a more prejudicial view of centralized government action will likely view this image as an overreaction.



Figure 9. Janet Terry Burning Her Cigarettes.

Another image is a political cartoon (Hungerford, 10) appearing later on that has the image of a smoker with a distressed look on his face blowing a cloud of smoke where “Health Hazard” is printed at the center, reading the report, and sitting on a giant ball-and-chain double the size of the smoker. On the ball is printed “The Smoking Habit.” This image along with Janet Terry, create a contrast of defeatism and overreaction.

There is surprisingly little coverage of the more specific findings of the report in the *Pittsburgh Post-Gazette*. Even the smallest newspaper in my corpus, *The Daily Banner*, goes into more specific findings. There is a lot of space for pro-tobacco voices and some imagery that might influence someone prone to treat *Smoking and Health* with skepticism. The defeatism in the political cartoon resembles the half-hearted interest in the content of the report and reflects the greater interest in the realpolitik of consequences of the report and disproportionate room for dismissing the report.

By surprising contrast, considering its leanings with big business, *The Wall Street Journal* has fairly even coverage of the report with several very supportive rhetorical orientations toward *Smoking and Health* and the lung cancer/smoking correlation. In the main article covering the report on page 3, author Jonathan Spivak goes to great lengths to contextualize both how the relationship between lung cancer and smoking were evaluated as causal and to contextualize the criticism by the tobacco industry that help to bridge the divide between science and broader society creating something much closer to the CUSP approach than other statistical frames in my corpus.

Spivak spends much of the article writing about government action, FTC intervention, effects on advertising, possible legislation, and reactions for different people in industry and organizations. The association appears in the third paragraph: “The 10-member scientific advisory group, composed of non-Government experts, found cigaret smoking to be a major cause of lung cancer and chronic bronchitis and implicated it with several other diseases.” Positive evaluative language about the committee and report appear here (e.g., “experts”), but also elsewhere (e.g., “hard-hitting” report, “almost unequivocal condemnation of cigaret smoking”). Later on, Spivak writes that the “toughest language was directed at the relationship of cigaret smoking to lung cancer. It said that smoking ‘far outweighs all other factors’ as the cause of lung cancer in men

and that the risk increases with the duration of smoking and the number of cigarettes smoked.” Spivak also brought in elements of the report’s lengthy treatment of how it defined causality, explaining that the definition for a “causal relationship” was dealt with “in depth,” and that the criteria used helped to “confir[m] the statistical findings.” While noting that “no original research was conducted,” Spivak did also note the extent to which the committee researched existing literature and testimony on “both sides of the issue,” invoking a positive judgment of tenacity. There was a brief mention of “further research needed,” as stated by the committee, but later on Spivak surveys comments from tobacco industry figures, noting many did not respond—this contrast implies that the report is a strong statement on the status of research into the issue.

Spivak’s ending here mirrors the *Pittsburgh Post-Gazette*’s, as he quotes Annis, but rather than only relying on Annis’s statement, Spivak prefaces the statement with some interesting arrangement, setting up the implication about the potential political advantage of the AMA’s commitment to “more research” rhetoric:

Although it has long opposed smoking by teenagers, the American Medical Association hasn’t taken a definitive stand on the smoking-health question, having deferred making a declaration until the current report was issued.

In December, however, the AMA voted to undertake a research program to resolve some of the unknowns about smoking’s effect on health. Mr. Allen of the Tobacco Institute emphasized the need for more research in his comments on the Surgeon General’s committee report.

There is a dissonance here. If they wanted to wait for the report, why start the research program in December? What is the relevance of Allen’s comments after noting the AMA’s research initiative? After parts of Annis’s statement is printed, Spivak concludes that the AMA’s “announced research

program seems to imply that the organization isn't convinced that the case against cigarettes has been proved. Several of its constituent state medical societies, however, have taken formal stands against cigarettes and the Federal committee's report probably will spur others to take formal stands.” Presenting this divide undercuts the ethos of those proposing “more research” rhetoric helps to support the statistical findings of the report mentioned earlier in the article. On its surface, the moves here are similar to the *Pittsburgh Post-Gazette*, but looking more closely reveals a better reflection on the work of the committee and thus the statistical association.

2.4.3 *The New York Times* and *The Washington Post*: Strong Language, Careful Arrangement, *Post* on the CUSP

Both *The New York Times* and *The Washington Post* use strong evaluative language relative to other newspapers analyzed so far. Arrangement is also important in terms of ethical appeals, but this is difficult to judge compared to other newspapers since both the *Times* and the *Post* are so large. In *The New York Times*, the association between lung cancer and smoking first appears in the third paragraph of the main article on page 1 and continued on page 65 by Walter Sullivan covering the report: “Combining the results of many surveys, the study panel found no doubt about the role of cigarette- smoking in causing cancer of the lungs.” There is an interesting choice to lead with the American Cancer Society’s language (i.e., “no doubt about”) for the first statement on a reaction to the report. This move helps amplify “causing” through the graduation resource of focus-authenticity—here, the “no doubt” helps to suggest there is nothing higher in a form of truth regarding the causal nature. This a very strong stance to begin with, flagging a positive judgment of veracity in the endorsed statement from the report. The graduation that begins the sentence, “Combining the results of many surveys,” also flags a positive judgment of capacity prior to

landing the last clause on causality. The next sentence reads, “In men who smoke cigarettes, the death rate from that disease is almost 1,000 per cent higher than in nonsmokers, it said. Lung cancer has become the most frequent form of cancer in men.” This sentence borrows from the report on about the rates of death relative to nonsmokers, with the “1,000” helping to amplify what came before it in the prior paragraph.

Page 65 continues the main article from the front page with the next instance of a statistical association mentioned, the “far outweighs” language is used, with a new qualifying sentence that adds more information: “The report said that, in men, cigarette smoking ‘far outweighs all other factors’ as a cause of lung cancer. The incidence of this disease has risen dramatically during the years that cigarettes have replaced other forms of smoking.” Inserting the information on the rise of cigarettes, graduated by “risen dramatically,” reorients the reader to focus on cigarettes specifically. Later on, there is a paragraph that is heavily numerical: “In the combined results from seven surveys, 1,833 of the deaths among smokers were diagnosed as resulting from lung cancer. Using the rate among nonsmokers as a guide, only 170.3 of those men would have died had they not smoked, the report said. Thus the rate among smokers was almost 10 times as high.” Lots of graduation here is used to flag judgments of veracity and capacity as well as appreciations of reaction: “combines results from seven surveys,” “1,833 of the deaths,” “only 170.3,” and then the repetitious sentence that restates the results of 1,833 and 170.3 into the ratio “almost 10 times as high.”

Throughout the article, there is a lot of positive evaluative language related to the committee and the report to help make ethical appeals that could influence interpretations of the statistical information. The author uses strong evaluative language of what the report did to pro-tobacco arguments prior to the statistic: “The report dealt a severe blow...[to] the tobacco industry”

and “dismiss[ing]” their arguments “one by one.” Appreciations of reaction, judgments of veracity, the use of denial, and graduation resources (e.g., severe, one by one) all help to ratchet up both the seriousness and the reputable nature of the report, helping to frame subsequent readings of statistical information. Details about the length of time the review took place to compose the report are included. The article also conceded critiques of those who “questioned the validity of earlier studies” (e.g., that the “statistics were confused by other factors, such as air pollution in large cities, stress, and heredity”) before reporting language that the committee admitted that no “simple cause-and-effect relationship probably exists,” followed by dismissing these points as smoking was deemed “clearly the most important factor” in some diseases, adding also graduation resources behind the material for the report (e.g., “the conclusions of the committee rested heavily on seven prospective studies carried out since 1951, involving 1,123,000 men”). A reader more inclined to side with the report could be swayed here to dismiss the critiques from the evaluative language that builds toward this final number that helps to invoke a judgment of veracity (i.e., that is a lot of people to draw from, there must be some truth to this). Finally, a lot of background information on the formation of the committee also helps to invoke judgments of capacity.

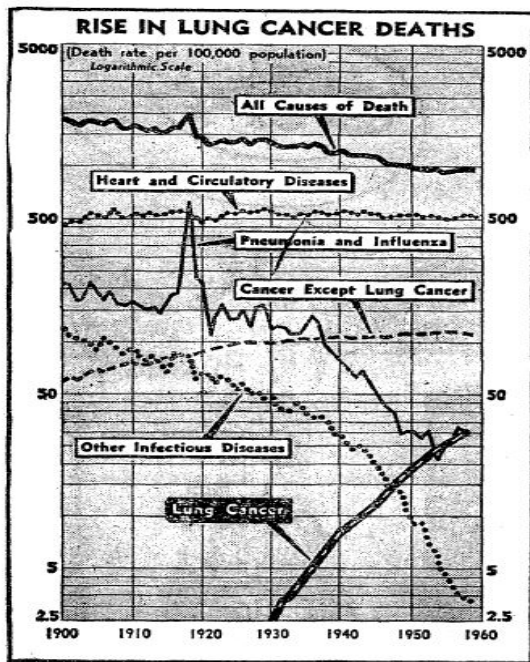
On page E12, there is a summary of the report and its effects with different language. In the opening of the article “The Smoking Report,” it adapts language from the opening of *Smoking and Health* with the term “linked” and a passage about the wide support for the findings by other governments and organizations: “The Surgeon General’s Advisory Committee on Smoking and Health has declared that there is a definite causative link between lung cancer and other major diseases and the continued use of tobacco. To put it bluntly, smoking is harmful to health—and remedial action must be taken.” The word “definite” graduates “causative,” before using the more technical language to restate in a plainer way with the “put it bluntly” statement about it being

harmful to health. The author continues with a great deal of graduation resources by writing that the conclusion had been reached “after an objective and meticulous study of many thousands of scientific reports,” which led to “overwhelming evidence” that smoking, “especially of cigarettes,” was “the main factor in the increase in lung cancer” along with other findings.

In the opening line of the article before “definite causative link” statement, the author writes that the findings of the report “could hardly have been otherwise in view of findings by many physicians and health organizations” in the U.S. and around the world. This is expanded upon soon after the “main factor” passage, stating that the findings “confirm[ed] and strengthen[ed]” several organizations findings related to smoking and disease. In the introductory section to *Smoking and Health*, early on in the report it notes that “tobacco, especially cigarette smoking, has been causally linked to several diseases...These widely reported findings, which have been the cause of much public concern over the past decade, have been accepted in many countries by official health agencies, medical associations, and voluntary health organizations.” The opening of this article uses stronger graduation resources to amplify this statement and with more specifics from the ACS, American Heart Association, and other organizations. Positive and intensified evaluative language is used throughout on the committee and the report. For instance, he report is called “bold and devastating,” smokers of all kinds are told not to ignore the findings. This article and the article on page 1 both use fairly strong evaluative language that aligns with *Smoking and Health*'s conclusions relative to other newspaper coverage.

A full 1.5 pages of excerpts from the introductory section of *Smoking and Health* are also printed in this issue on pages 64-65. One notable addition here are original tables and graphs not originally in the report. One image is adapted from a paper by Cuyler Hammond (the epidemiologist who appeared in the CBS special, saying that the report had confirmed what had

already been believed by scientific community). The chart shows the dramatic rise in lung cancer rates since the 1930s and succinctly helps show it as a serious problem, potentially helping to contribute to an inference as smoking as a cause (especially since charts above it show the rise in smoking per capita rates since 1950).



Jan. 12, 1964 Adapted From Report by E. C. Hammond
 DEATH RATES: Except for cancer and heart and circulatory diseases, death rate has shown a general decline.

Figure 10. Rise in Lung Cancer Rates.

There are some ethical appeals worth noting. The rest of page 65 consists of very prominent pictures of each committee member followed by brief captions about their credentials (helping to invoke judgments of capacity). There are some moments that represent the tobacco industry that make ethical appeals, but, compared to the positive coverage the report and committee receive, it is marginalized. In the main article, there is a response from the tobacco industry that says they “rejected” the report, saying it was “not the last word on smoking and health,” which must have been a paraphrase of Allen. This comes in brackets, though, and is a quick aside before moving on to other findings. One brief article at the very bottom right corner of page 65 is entitled “Report

Not Convincing To A Yale Scientist.” This article was written by Harry S.N. Green, who had testified in 1957 about his skepticism about the connection between lung cancer and smoking and had been a prominent public figure critiquing this research. In this article, Greene is quoted as saying “the Government has only statistics” and “a statistical association has to be interpreted.” Greene continued that “it might show cause and effect or it might show happenstance,” helping to create a parallelistic argument common in tobacco industry talking points and seen a lot in the NBC special. Even more striking is the close resemblance of Greene’s last statement to that of L.H. Garland in the NBC special, about how there hasn’t been good evidence in experimental studies in the decades they have tried to bring the results about: “But the results must be subjected to a laboratory test. They’ve been doing that for 15 years and have come up with absolutely nothing.” Because of the sheer size of *The New York Times*, this article (along with others, like one covering George V. Allen’s statement) shares much less proportional space in the coverage as compared to skeptical voices in other publications.

The Washington Post also has extensive coverage of the report containing a lot of strong evaluative language. The first mention of the lung cancer and smoking association is the headline itself on the front page that introduces two articles and one small summary-box: “Cigarette Smoking Cited as Main Cause Of Deadly Lung Cancer.” The evaluative language gets stronger past this headline. The next mention of the association would likely be found in the “Highlights of Report” summary that splits the two main articles (see Figure 11).

Cigarette Smoking Cited as Main Cause Of Deadly Lung Cancer

More Research Still Needed, Says Industry

By Jerry Desmette
Staff Reporter

A spokesman for the tobacco industry met yesterday's smoking report with a call for further research.

Said Tobacco Institute president George V. Allen: "I endorse wholeheartedly and without any reservation Surgeon General Perry's call . . . not for less, but for more research . . ."

Most of the large cigarette firms left the talking to Allen, although a spokesman for one company admitted that his colleagues had reacted strongly to the report. How? "No com-

Highlights of Report

Here's what the Surgeon General's Advisory Committee said about:

Lung Cancer—Cigarette smoking is the chief cause, beyond any scientific doubt.

Heart Disease—Risk greater among cigarette smokers, causal relationship not established, but it would be prudent to assume smoking is a cause.

Bronchitis and Emphysema—Cigarette smoking is the most important of the causes of chronic bronchitis, and increases the risk of dying from chronic bronchitis and emphysema (both are lung disorders).

Pipes and Cigars—The risk of developing lung cancer for pipe and cigar smokers is greater than for non-smokers but much less than for cigarette smokers, the report said.

Filter Tips—No scientific evidence that any filter tip, including those containing activated charcoal, alters the health hazards of cigarette smoking.

Surgeon General Sees Government Acting Promptly

By Kate Hainline
Staff Reporter

A Government-appointed jury yesterday indicted cigarettes as a deadly menace to United States health.

The report of a special advisory committee to the Public Health Service Surgeon General, said the health hazard of smoking is "of sufficient importance to warrant appropriate remedial action."

In effect, at least, the report said that cigarette smoking can kill you in many ways.

The committee reported that even veteran smokers who stop smoking cigarettes increase their chances of living longer. The mortality rate,

Figure 11. Washington Post Front Page Layout.

Cigarettes are “the chief cause, beyond any scientific doubt” in this summary¹⁹. The word “chief” intensifies “cause,” as does “beyond any scientific doubt,” which flags a judgment of veracity.

In the main article covering the report (to left of “highlights” box), the next mention reads as “The report clearly branded cigarette smoking as the ‘chief cause’ of lung cancer. Committee members that finding was based on more than just statistical evidence.” The “clearly” both intensifies the way in which cigarette smoking was described as a cause and it inscribes an appreciation of composition for the report, as something simple or clearly stated in terms of understanding or readability. Again we have “chief” modifying cause, but this time in quotation marks, signaling that someone on the committee used this language. Finally, the follow-up sentence invokes a positive judgment of veracity with graduation resources that amplify by comparison, using “more than” to imply that there was evidence in addition to statistical

¹⁹ The only other place I see the word “chief” is in *Smoking and Health* in relation to coronary artery disease and excess death figures (lung cancer is mentioned just after this, but the word “chief” is not repeated)—it is possible the word was used during the press conference.

information, qualifying to potentially persuade readers who may not be open to this form of evidence.

Ethical appeals are also notable; positive and graduated evaluative language is used on the report and the committee throughout this article. The opening line is a speech act where the report “indict[s]” the personified “deadly menace” of smoking. The scientists are referred to as “unbiased,” There are several quotes from Terry that offer some positive evaluative language about the report and committee (e.g., committee was “unanimous,” report was “most comprehensive compilation and analysis ever taken on...smoking and health”). Also, on page A19, there were close shots of each committee member and captions about their credentials, invoking positive judgments of capacity. There was some more varied coverage, with some ethical appeals made against the committee and report, but like *The New York Times*, this is minimal. One notable element is the similar layout to the *Sun-Telegram* where criticism of the report given similar space. To the left of the main article is an article on the industry response by Jerry Doolittle entitled “More Research Still Needed, Says Industry.” This article mostly consists of Allen’s statement, with the themes of “cooperation” and “more research” in play. The layout, though, is reminiscent of the *Sun-Telegram* in how it implies a parallel argument on “both sides.”

Finally, I want to look at one last element of evaluation in relation to the correlation in the *Post* that utilizes a CUSP approach on page E6, in “The Outlook” (a section for editorials, commentary, etc. for Sunday edition). The author notes that the findings are based on a range of studies (e.g., animal experiments, autopsy studies) as well as statistical analysis and comments that, “The Committee acknowledges that it is not enough to show ‘a statistical association between the use of tobacco and a disease’—that ‘causal significance of the use of tobacco in relation to the disease is the crucial question.’ But it concludes that cigarette smoking is ‘causally related’ to lung

cancer, laryngeal cancer, chronic bronchitis and other diseases.” Including this information can help skeptical readers who believe statistics are not to be trusted. Engagement resources like this concession just mentioned and then the counter that this evidence helps show a causal relationship help give some background on the social and interpretive processes utilized. This is further graduated by the following, “And it reviews seven population studies which show a death rate for male smokers from lung cancer nearly 1000 per cent higher than for non-smokers. Unsurprisingly, in a commentary, the positive and negative evaluative language that supports the report is very strong: the report is “a sweeping and well supported statement,” “confirms the worst fears,” “appears to be scholarly and thorough,” “menace to health.” Like Spivak, taking the time to explain how the committee used criteria to evaluate the relationship as causal helps to position statistical analysis as based on interpretation with various pieces of evidence, showing the more social and rhetorical process that statistics require for their composition.

2.5 Conclusion

As the lung cancer correlation to smoking statistic circulated from *Smoking and Health* to press coverage in the news specials and in newspapers, it was reprinted word-for-word in new contexts, it picked up new modifiers (e.g., responsible, beyond doubt, principal), the immediate text surrounding it helped to frame the information in new lights, and it was arranged in a different ecology of articles and images that helped to build ethical appeals to potentially call into question or promote the abilities of the committee and the credibility of the report. It is difficult to interpret a given phrase of statistical language about correlation in its immediate surroundings, but a broader picture can reveal a battle for determining interpretation. As the Yale scientist Harry Greene is

quoted as saying on page 65 in *The New York Times*, “a statistical association has to be interpreted.” And this is true! *Smoking and Health* explains this about how it approached causality and the *Wall Street Journal* as well as the *Washington Post* had moments where they contextualized the correlation with this information, applying a CUSP approach that allows readers to see statistics as reliant on interpretation and social processes of establishing and agreeing upon an evaluation of criteria.

Though there were many uses of “cause” to describe the relationship, there was also a lot of room to try to crack open what that word might mean in a larger context—with some minimal exceptions as mentioned previously. It might be that ethical appeals that were only indirectly related to the causal evaluation replaced what could have been a more in-depth explanation of how the evaluation of causality was determined. Further, use of engagement resources and how multiple viewpoints were arranged over an entire text made interpretation a tricky act (e.g., NBC approach vs. CBS approach). This calls into question the slipperiness between a number, an interpretation of that number, and an interpretation of that interpretation of that number, and how best to represent these distances to a wider public.

I’m left to wonder whether there’s a way to focus even more attention on the social processes that create a correlation interpretation, something that can communicate to a lay audience without assuming they cannot participate in that interpretive process themselves. In other words, are there ways to live somewhere in between the calculation/interpretation and the interpretation of that calculation/interpretation while remaining legible to a public audience? And, further, how can doubt be expressed both technically and in terms of common usage to help address this previous question? That is, how can doubt become part of a process of interpretation rather than the interpretation itself, as seen with many tobacco industry responses? Are there ways, as a

rhetor, to better anticipate those responses by better communicating processes rather than results? One way to at least partially address this is to have more of a CUSP approach, (as the CBS news special does, as Spivak does and *The Washington Post* does all to varying degrees) to reveal the social processes involved in showing that the evaluation of causality was not something that happened, but that a group of people did based on careful study.

I think there is room for a more pedagogical choice in getting a better window into how these determinations are made, which can create goodwill in an audience. But how much space that takes up and how concisely this can be done is another question. The importance of approaching this rhetorical problem remains today, especially for more abstract public health issues like global warming and COVID-19. How do you avoid the appearance of lecturing someone and how do you let them in on how knowledge was created to help them see what you see? At the very least, aligning appropriate evaluative language alongside thoughtful strategies for how segments of text are arranged in how they might construct ethical appeals are some lessons to be taken here for other science communication problems that are reliant on quantitative rhetoric. But, more of a CUSP approach might be warranted, to allow readers to feel that they are included and respected in interpretation of these numbers, even if they are not fully taught or explained.

Finally, there is much in this chapter on who is measuring, some on how it is measured, but not a lot on what is measured. Smoking and smokers get surprisingly little attention despite the amount of death *Smoking and Health* argues smoking is responsible for. There is much abstraction and little embodiment, which fits the times when 20th century-styled communicative rationalism reigned (especially in the mainstream press). It might be interesting to think how this correlation could be more embodied in its rhetoric, what that might look like, and how it might (or might not) be an effective approach.

What statistics might do for us in figuring out what to do with our health comes down to trust. Do we trust what we are told? How do we do that? In the evaluative strength of this language used as the statistic circulated, in how ethical appeals were built, in the (few) moments we are brought into how the statistic was created: are these moves that help build trust between rhetors and audiences? And, if it happens, does that survive in circulation? At least in this case study, it is a mixed bag and I wonder if there is a better way to do it.

3.0 Circulation and Probability: 2016 U.S. Presidential Election Polling Aggregators

In this chapter, I examine how *FiveThirtyEight*'s proposed chance for Hillary Clinton and Donald Trump winning the U.S. presidential election (which came to about 71% and 29% on election day) are evaluated via appraisal resources and how they are changed as they circulate to the mainstream press in different ways. Statistics of probability can be seen to say something about the future, they can be looked at in ways that *do* something to us emotionally: settle our anxiety, anger us, entertain us, assure us, etc. This statistic, certainly, held a large shadow over public perceptions of the election in 2016. For instance, *WIRED*'s Marcus Wohlsen aptly titled his article about compulsive checking of *FiveThirtyEight* as "I Just Want Nate Silver to Tell Me It's All Going to Be Fine." If we look to statistics to tell us what will happen (and whatever that might mean to us), it is worth considering how writers evaluate these statistics for us, both in terms of how Silver and *FiveThirtyEight* frame them but also how they are taken up by others. What I found in this analysis is that the probability was used in a fairly diverse combination of ways: to be connected to the future to guard against being right or being wrong, to entertain, to connect to current events, to spur people to action, and to put it in terms of understanding elections as an intellectual project.

Probabilities have to do with futurity; in a public sense, they are often about entertaining an audience (e.g., who is going to win the game?) or about informing in order to prompt actions (e.g., it's going to rain, I'm going to bring my umbrella). In most articles citing this statistic, the entertainment mode occurred most often, but as I will argue toward the conclusion, I wonder if there are ways they could be better framed in terms of action and in terms of pursuing an intellectual project, as some rhetors tried to do in my corpus. In other cases, there were more critical orientations toward this statistic. Like in the chapter on the smoking/lung cancer correlation,

perhaps in part due to the complexity of the statistic, many ethical appeals were made surrounding both who was doing the measuring and how it was done. Finally, some framed this statistic by changing the language around it, by using new terms to approach the statistic as more of an instrument to think with rather than an inartistic proof to perceive (or, as a flawed lie to dismiss). Together, this analysis reveals an array of frames for a probability: from curious observance, to despair, to anger, to active wonder, to political action.

Because polls can have such an outsized influence on U.S. electoral politics, they are worthy of serious study in the rhetoric they employ. First, I will analyze text and data visualizations from *FiveThirtyEight* about the 2016 U.S. Presidential election in respect to appraisal resources used. Second, I will analyze polling results displayed in these texts and visualizations that circulated in the U.S. press on November 7, 2016 and November 8, 2016. Third, I will conclude with some interpretations of how these results suggest ways to consider our rhetorical relationship to probabilities in more active rather than passive ways.

3.1 Polling and Rhetoric

Polling as a practice and polling as meaning-making to non-experts can be very different things. Recently, there has been experimental research that has seriously questioned the problems inherent in interpretation of polling by the public. Westwood, Messing, and Lelkes (2020) ran a series of experiments where one group received a probability forecast and one group did not to see if it affected voting turnout. Westwood, Messing, and Lelkes (26) found that “probabilistic horserace coverage lowers perceived electoral competition, confuses many potential voters, and, as odds diverge from 50-50, can have demobilizing effects [on voter turnout].” Based on several

of these experiments, Westwood et al. believe that the rhetoric (my word, of course, rather than theirs) of probabilistic forecasts give prospective voters too much certainty about an outcome. One point of confusion, for instance, is that probabilistic forecasts are about chances of *winning* rather than the *vote share* (i.e., an 85% chance of winning vs. predicting a candidate winning 85% of the vote). Another potential point of confusion is that elections are too rare for these expressions to be meaningful. Westwood et al. (6) use the example of a weather forecast. We see weather forecasts all the time, and generally can get a sense of “a 35% chance of rain” meaning that it is a good idea to take an umbrella; elections are rare enough that a 35% chance of a candidate winning an election is hard to make meaning out of without more contextual information²⁰. There’s a weird irony here: something inherently uncertain can create a stronger sense of certainty.

Though mainly focused on prescriptive polling (e.g., proportion of people supporting banning handguns vs. against the banning of handguns) rather than predictive polling (e.g., who will win an election), Ellwanger (2017) argues that public opinion polling makes explicit *doxa* (something normally unspoken) through the pollster—they tell us what we already believe in a way that shrinks a more pluralistic view of common political topics. The pollster is both

²⁰ Though, even in this example of an “easy” and familiar genre of expressions of probability, probabilistic weather forecasts are notoriously difficult to make meaning out of for non-experts. For instance, in a famous study of public perceptions of probability, Gigerenzer et al. (2005) randomly surveyed people in five cities across Europe and the U.S. to ask them to explain what a “30% chance of rain” means. Only in New York City did the majority of people (63%) respond that it means that if the day happened 10 times, 3 of those iterations would have at least some trace of rain. The other cities did not have a majority of responding in a way meteorologists intend. Other responses included interpretations like 30% of the area will receive rain and 30% of the time in the day it will be raining. All this is to say: probability is notoriously difficult to make meaning out of and communicate.

“interpreter and agent for social change” by assembling fragments of beliefs via polling and folding it into a package that gets fed back into political discourse (Ellwanger, 187); a poll (and especially an aggregation of polling) has great rhetorical force for solidifying beliefs about the world, especially in democracies.

This rhetorical effect might be even greater, of course, when the profile of the statistic is higher. Polling-aggregation visualizations and reporting during the 2016 U.S. Presidential election approach something similar to what Martin de Santos (2009, 475) calls a “fact totem”: something that captures the public imagination *periodically* where people are aware of their own fascination with it. De Santos examines the statistic “country risk” in Argentina in 2001. This statistic was a financial indicator, primarily sourced from interest rates that a given country’s bonds pay compared to U.S. Treasury bonds. In 2001, country risk was introduced into Argentina and was covered daily, taking on what de Santos (477) saw as “ritual-like” properties, in that it became a habitual practice to see how country risk changed over time and how the media and consumers of that media interpreted and made meaning out of that number and its periodic change.

In 2016, *FiveThirtyEight* was regularly covered and cited in the press leading up to 2016 U.S. presidential election day. As a fact-totem, this statistic was part of the daily culture life of a lot of people in the U.S. and beyond in 2016. With such a large following, it represents a rhetorical touchstone in how the election entered into the public imagination. In the next section, I outline my method for finding and analyzing texts that cited this statistic as it existed in the public imagination. I then analyze patterns in these texts for how appraisal resources were utilized to create different kinds of statistical frames.

3.2 Method

To get a sense of how the *FiveThirtyEight* probability of Clinton and Trump winning was evaluated through statistical framing, I collected media texts on the day of the election (November 8, 2016) and the first full day prior to the election (November 7, 2016)²¹, as this was a likely moment where interest in these statistics was highest²². Claims I make in this chapter are really just limited to commentary on how traditional media outlets, as well as bloggers, framed the statistic in the final two days prior to the final election results. I am not looking at any date after election day, since this chapter is interested in statistical framing around a narrative of futurity, of predictability. Backward-looking rhetoric surrounding predictions is also interesting and worthy of study, but that is a different research question that cannot be addressed in the space of one dissertation chapter.

²¹ Since I examine this statistic on November 7 and up to the moment when polls began closing on November 8, I examine not any one form of this statistic, but whatever manifestation of the number at the time when the writer cites it. Because this statistic does not change much from November 7 to the point at which elections results become reported on the night of November 8, orientations toward evaluating the numbers do not differ all that much. Another analysis would absolutely be very interesting in charting statistical framing at different points in time.

²² It is hard to measure this without analyzing website traffic without some kind of financial price. Therefore, I used Google Trends for the search terms [fivethirtyeight](#) to get a sense when these search terms were most popular in Google. Unsurprisingly, this term was most popular during the week of the election. I had found that there were more texts (and richer, longer texts) published on November 7th, possibly because what I call later call “quick guides” (i.e., brief articles quickly contextualizing the election) were more appealing the day of the election when voting was already under way.

In terms of the texts analyzed in my corpus, I decided to limit my analysis to articles on news and cultural commentary websites (to include blogs). Compared to the 1960s and the 1890s (the time periods for the two other case studies in this dissertation), traditional media texts like newspaper and magazine articles have a less prominent role in disseminating information. Thus, it can also be really valuable to analyze statistical framing found in social media to consider changing forms during circulation is invaluable. I decided not analyze social media for two reasons: 1. The level of close reading and coding I have done in this dissertation would make the amount of texts difficult to analyze; without a better distant reading method, this is not realistic²³, and 2. Analyzing social media ventures toward studying reception just as much as it is studying rhetoric. In other words, it is difficult to discern where someone is an *audience* and when someone is a *rhetor*. Since it is beyond the scope of this dissertation to study reception, I decided to make things more straightforward and only study traditional media texts (along with blogs, when relevant). I also excluded any “live blogs” for this reason. These restrictions definitely limits conclusions I can make in this analysis. Missing out on how writers framed the *FiveThirtyEight* probability of Trump and Clinton winning the election on Twitter, Facebook, on podcasts (to include *FiveThirtyEight*’s weekly podcast), in videos, etc. likely misses out on a large amount rhetoric to analyze.

To find texts that cited the *FiveThirtyEight* probability of candidates winning the presidential election, I used Google as my search engine because of its advanced search tools (especially around time frame). To help reduce bias in texts I found, following Janine Solberg’s

²³ Throughout this project, I have tried very hard to determine “boundaries” for statistics, and have failed. Boundaries would help better situate a corpus to do more distant reading of statistical texts.

(2012) advice, I took into consideration the position I took up when searching (e.g., location, browser). I used a web browser that I never use personally—that way, tracking data on my web browser that might customize what I found would not return skewed results. Further, I was also not logged into my Google account while I searched, which also helped avoid a personalized return of search results. It is difficult to say if this was totally necessary to do, as I was looking to gather exhaustive material rather than select material, and I’m also not totally sure all of these steps had much of an effect (e.g., Google still has an idiosyncratic way of ranking pages based on their SEO preferences). Still, I thought taking some precautions rather than not, can potentially have some degree of ensuring I find everything and anything that might be relevant to this analysis.

I used the search term “fivethirtyeight” during the timeframe of November 7, 2016 through November 8, 2016, which returned 140 results. Some texts were behind a paywall and I could not access another way²⁴, so I could not confirm if they cited the election forecast of percentage probability of Clinton and Trump winning or not, but otherwise, I clicked on each result and checked to see if it contained a citation of *FiveThirtyEight’s* election forecast—specifically, something that mentioned the quantified chance of Clinton and/or Trump winning the election (e.g., texts that *only* included *FiveThirtyEight’s* forecasted popular vote or electoral vote was not included). I excluded one video²⁵ that cited probability of Clinton and Trump winning which left

²⁴ Texts behind a paywall were also excluded. I could’ve paid for access, but, I’m a graduate student, so nah.

²⁵ This video was clipped from live election coverage on cable news. My feeling was that including this video would be unrepresentative of video coverage citing this statistic since news coverage of this election was 24/7 at this point in the election cycle, and this statistic was possibly cited many times. This is different compared to the study of the smoking correlation statistic, as the two news specials likely had a large influence on initial coverage of *Smoking and Health* compared to this singular clip of one segment.

37 texts to make up the corpus for this analysis. The 37 texts I found is certainly not exhaustive. I already mentioned paywalls, but it would be unlikely that a Google search returned all relevant results. However, these texts did provide a diverse selection of kinds of texts and perspectives on the election that made for a rich analysis of how statistical frames around this number were composed.

I grouped these texts by three categories: “quick guides,” “critiques,” and “tangentials.” These categories helped consider, in different spaces, how statistical frames were constructed around the *FiveThirtyEight* statistic of probability for Trump and Clinton winning the election in terms of the result produced, what was measured, who was measuring, and how it was measured. The first category, quick guides, were the most common, with 25 of the 37 being classified as quick guides²⁶. These were often short news articles or blog posts that describe the status of the election generally or briefly analyze one aspect of the election in preparation for election day. The statistic from *FiveThirtyEight* was often cited by these articles as a quick move to establish Clinton’s and Trump’s chances for winning as one statistic and piece of information among several other to contextualize forecasters’ and pundits’ impressions of the election outlook. Often, there was focus on who was measuring and what was measured, but rarely how it was measured. Critiques accounted for 6 of the 37 texts. These texts extensively engaged forecasting and polling methods and methodologies to consider why certain forecasts and polling results were what they were and how they diverged from other forecasters and pollsters. A handful of quick guides also engaged how the statistic was calculated, but this was always brief without much depth. The critiques engaged in an examination of how the statistic was measured much more substantively.

²⁶ One was a reprint, so 24 unique articles and 25 total articles classified as quick guides.

Tangentials were texts that were only indirectly related to the election (e.g., gambling, cocktail recipe, climate change, baseball)—there were 6 tangential texts. The statistic might be used here in the lead of an article or as an aside to make analogy or provide insight on the main topic.

3.3 Background on Statistic and *FiveThirtyEight*'s Statistical Framing

The statistic I am specifically analyzing across texts is *FiveThirtyEight*'s proposed chance for Hillary Clinton and Donald Trump to win the U.S. presidential election. Prior to the beginning of votes being cast, the “polls-only” forecast was a 71.4% chance for Clinton to win and a 28.6% chance for Trump to win. The “polls-plus” forecast, which also includes consideration of other contextual factors like economic statistics that are correlated with how people vote, was only slightly different: 71.8% for Clinton and 28.2% for Trump. To create these numbers, Silver (2016) describes four steps: collecting, weighing, and averaging polls; adjusting polls; combining polls with demographic information (and, for “polls-plus” other information like economic data); and accounting for uncertainty and running thousands of simulations. Like writing, there is more than one way to do it well; but it is possible some of the ways will be better or worse than others. The same is true of statistical modeling, and like any reflective writer, someone making a model can lay out reasons for why they think their path to modeling is justified. I want to take a moment to briefly describe *FiveThirtyEight*'s method in creating this number, not to judge it, but to just give a sense at how it is arrived at.

Polls are collected based on reputation and availability, they are then weighted based on a number of factors (e.g., sample size, recency), they are then adjusted based on a number of factors (e.g., adjusting between ‘likely voters’, ‘registered voters,’ and ‘adults’ polls to put them on more

equal footing), then combine polls with other data (e.g., regression analyses on partisanship in states and regions, race, and religion), and changing the weight to different things over time (e.g., as election day nears, recency in polling receives more weight). A last step is to run simulations, and this is ultimately how the percentage chance of winning is calculated. The simulations take into consideration different types of possible errors in polling and historical polling going back to 1972 to produce results drawn from a *t*-distribution at 10 degrees of freedom. The *t*-distribution has fatter tails than the normal distribution, and thus is more open to extreme outcomes. Nate Silver, the primary author of the model, explains that this choice is made because, ultimately, the 11 elections going back to 1972 make for a small sample size, and he argues that this means forecasters should account for the uncertainty that accompanies that smaller sample.

On a computer, it was typically presented in the following screenshot of the data visualization on their “projects” page:

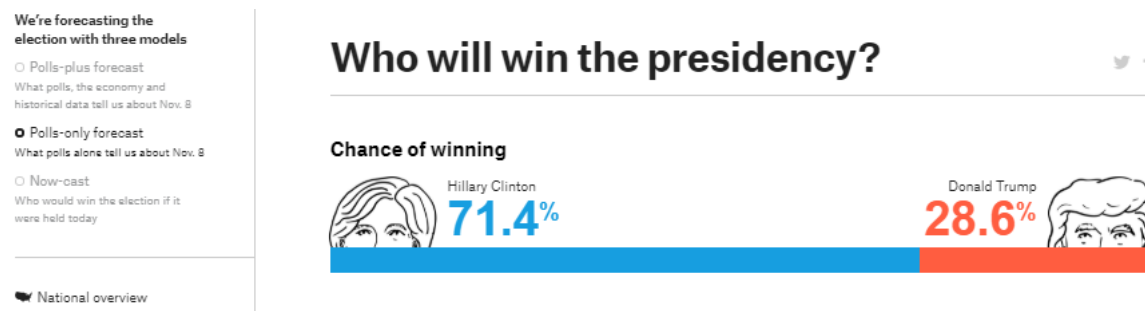


Figure 12. FiveThirtyEight Polls-Only Data Visualization for Percentage Chance of Winning.

Though this is a “forecast” rather than a prediction (i.e., presenting probabilities and not an argument for a singular outcome), the question and stacked bar graph work together in an interesting way here. The question, “Who will win the presidency?” can be read as a research question where viewpoints are expanded and a move to entertain is done (i.e., all of the data visualizations and information on this page, including the one above, give some information about possible outcomes). However, this question can also be read in light of the graduation resources

that might amplify or diminish elements in ways that flag attitudes to take on. If a supporter of Clinton, the graduation by quantification through 71.4% and the way the blue overwhelms the picture compared to the red in the stacked bar graph might help create an appreciation of reaction of quality (i.e., yes, I like this, Clinton is going to win). In other words, the quantity (in terms of number and in terms of mass by color) do not make room for a more intuitive sense of uncertainty.

Another visualization that uses this statistic is below:

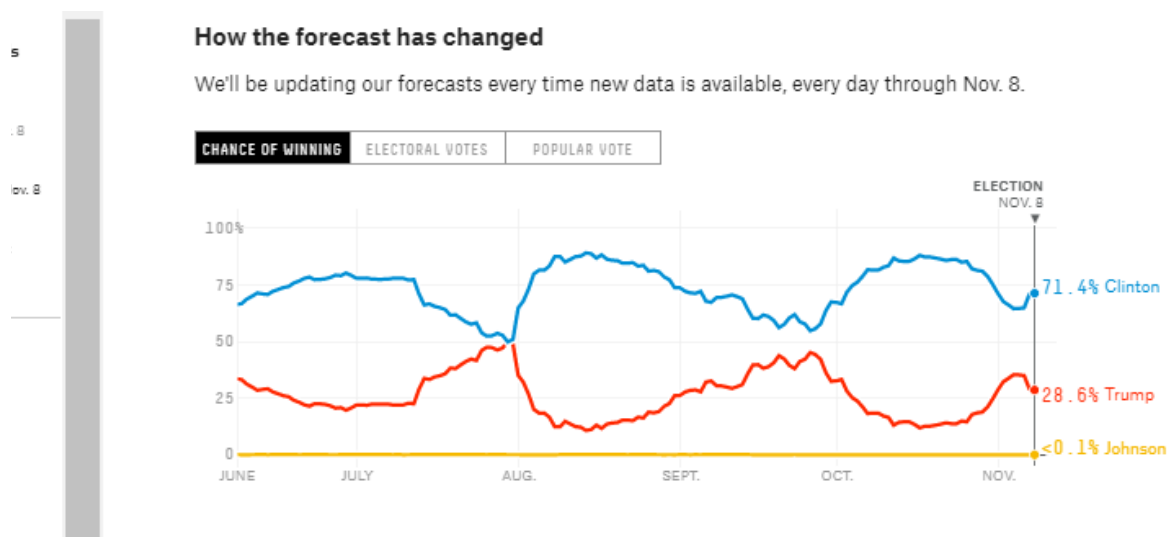


Figure 13. FiveThirtyEight Forecast Change Graphic.

This visualization helps to show us how the model has changed over a longer length of time than most users might perceive when they repeatedly refreshed the webpage to check the stacked bar graph up top. The color contrasts help to follow and make distinct the fluctuations over time. As we will see in analyses of critiques of *FiveThirtyEight*, this visual becomes a symbol of a lack of confidence in modeling but in circulating to another text, it also became a generative way to think about the news cycle corresponding to these fluctuations.

There is not much text on the “projects” page that displays these two visualizations that depict the percent chance for Clinton and Trump winning. However, in my corpus, two articles by Nate Silver published in *FiveThirtyEight* cite this statistic, both being daily “updates” on

November 7th and November 8th that provide a perspective on how the model was shifting and things to look out for in the coming days. Both articles use the statistic as a central part of the article. The November 7th article uses it in the first sentence as a starting point and the November 8th article uses it in the second paragraph and then again later on to set up an explanation of why Trump's chances remain so high compared to Romney's chances in 2012. Silver composes statistical frames for signaling interpretations around these numbers in ways that will invite criticism (we will see this in the subsection on "critiques" soon) with lots of hedging that also contains short simple sentences that seem to leave open moments where he sounds a lot more assertive and confident. It is an odd rhetorical mix that nevertheless has an understandable formulation given the nature of statistical modeling and the way in which Silver and *FiveThirtyEight* chose to go about constructing their model. Let's look at some examples of how appraisal resources are used throughout both articles and how they help construct statistical frames.

In the November 7th article, entitled "Election Update: Clinton Gains, And The Polls Magically Converge," Silver leads with the percentage at "70 percent," which is highlighted as "up from 65 percent chance on Sunday night, so Clinton has had a good run in the polls in the final days of the campaign." The increase, of course, signals a positive evaluation of the number for Clinton supporters in light of a narrative of progress—i.e., up from 65, Clinton has been doing better in the polls. Throughout the rest of the article, there are two moments where Silver hedges and then sort of counter-hedges that I want to highlight as influential on interpretation of this figure (and, later, how it invites critique). My claim here is that while Silver's tone does mirror the uncertainty of the race, this is done implicitly through the rhythm of his writing which can invoke a negative judgment of his own capacity as a data scientist, forecaster, statistician, soothsayer—whatever readers who crave certainty might see him as.

First, Silver notes that the electoral map data visualization on the projects page had four states turn from red to blue (see here for what this map looks like: <https://projects.fivethirtyeight.com/2016-election-forecast/>). He writes that they “do not think that’s a particularly meaningful metric, because the forecasts are probabilistic—Clinton’s chances of winning Florida increased to 54 percent from 48 percent, for instance, which is nontrivial but not an especially large change. Still we know it is something a lot of readers follow.” There is a back-and-forth rhythm here among engagement resources used: denial (“do not think”), concede (“which is”), counter (“but”), and counter (“still”). Graduation resources also add to this rhythm: focus-soften (“particularly”), quantification-mass-descale (“not an especially large change”), and quantification-mass-upscale (“a lot”). It isn’t meaningful, but it is nontrivial, but it is not an especially large change, but we want to bring it up anyway because readers find it important.

Later in the text, Silver is commenting on how several polls are beginning to show a 3-4 point lead for Clinton nationally, which, to him, might reflect what he calls “herding” (i.e., when pollsters start to do various adjustments, like changing how they treat outliers, so as to align their results with other reputable polls). Silver leads off assertively, invoking a negative judgment of propriety with “It’s worth raising an eyebrow when the polls...show a range this tight at the end of an election, especially, given that they’d diverged so much earlier in the campaign.” However, but the end of the paragraph, Silver begins to take on a similar rhythm of writing as exhibited by the engagement resources used here: “So the tight range of polls shouldn’t be taken to mean that everyone’s figured exactly how to poll this challenging election just in the nick of time. Still, the polls clearly agree that Clinton is the favorite, and perhaps has a slight wind at her back for Election Day.” We get a denial (“shouldn’t”), and then a counter (“Still”), then an entertain (“perhaps”) with graduation resources that also amplify these movements (e.g., “just in the nick of time,”

“clearly agree”, “favorite,” “slight,” and “wind at her back.” This last part almost entirely undercuts what he writes earlier in the paragraph. The 70% figure from the beginning of the article exists not alone but in an ecology of meaning with these rhythms of writing, which make possible interpretations that focus on the rhetor as lacking in ability rather than the analysis as properly grounded in a respect for and reliance on uncertainty. This is not to critique the substance of the hedges, but in how they are arranged and composed.

In the November 8th article, entitled “Final Election Update: There’s A Wide Range Of Outcomes, And Most Of Them Come Up Clinton,” Silver does a good job in more explicitly outlining what his interpretation and composition of the forecast means to him in ways that were more implicit in the November 7th article. He starts the article this way:

Throughout the election, our forecast models have consistently come to two conclusions. First, that Hillary Clinton was more likely than not to become the next president. And second, that the range of possible Electoral College outcomes — including the chance of a Donald Trump victory, but also a Clinton landslide that could see her winning states such as Arizona — was comparatively wide.

While qualified with the barely upscaled “more likely than not,” Silver points out Clinton as the favorite first before using language that nicely presents a distribution of possible outcomes. Here, the em-dash interrupts the range in way that qualifies before a landing on a clear and direct statement: the range of possible outcomes are “comparatively wide.” Using a victory of Trump as one potential outcome and a landslide by Clinton as another potential outcome shows that these are two extremes that could happen among many possibilities. There is less back-and-forth movement as compared to much of the writing in the previous article, with only one real

engagement resource used, but that is used in service of displaying the possible outcome of the range that is more assertively and directly stated.

This article reads as an attempt to defend his model and his capacity, so there appears to be a lot of care in explaining himself. Silver had faced a lot of criticism in the week prior to the election, perhaps most strongly from *HuffPost*²⁷'s (at the time) bureau chief Ryan Grim—Grim accused Silver of “just guessing” and “putting his thumbs on the scales,” implying he was doing this to pump up Trump’s numbers and keep the clicks coming. The uncertainty is highlighted explicitly. Silver entertains through the question, “So what’s the source of all the uncertainty? And why does the same model¹ that gave Mitt Romney [only a 9 percent chance](#) of winning the Electoral College on the eve of the 2012 election put Trump’s chances about three times higher — 28 percent — this year?” Silver answers that it comes down to Clinton’s lead in an aggregation of polling is still within the range of the margin of error, the number of undecided and third-party voters is much higher in the 2016 election compared to previous elections, and Clinton’s demographic coalition (e.g., college-educated white people and Latinx people) are inefficiently distributed relative to the electoral college. Silver then goes on to explain each in greater detail.

As another indirect answer to criticism, in the final paragraph, Silver writes, “Despite what you might think, we haven’t been trying to scare anyone with these updates.” The entertain “might think” and the denial “we haven’t been” helps to try to invoke a judgment of capacity that continues with an explanation of probabilistic modeling: “The goal of a probabilistic model is not to provide deterministic predictions (‘Clinton will win Wisconsin’) but instead to provide an assessment of

²⁷ Partially because it is shorter, I use the current *HuffPost* in this chapter rather than *The Huffington Post*, which is what the publication was known as in 2016.

probabilities and risks.” Silver then uses the example of the 2012 election, where risks were “lower than commonly acknowledged” for Obama in terms of undecided voters and strong polling in swing states. For Clinton, Silver notes that the “opposite is true.” Silver nicely concludes to explain what he is not doing and to use a strong, recent example that clearly shows the difference between both election environments and why his model (and its assumptions) returns the results it does. However, Silver ends the article with this sentence: “Nonetheless, Clinton is probably going to win, and she could win by a big margin.” This interpretation is completely compatible with what comes before it, but the use of “nonetheless” is really strange. This word at this placement in the sentences serves to counter everything before it—nevertheless, in spite of, despite, etc. What he writes here *agrees* with what he has stated up to this point. Why undercut it? There is a struggle with communicating how to evaluate this uncertainty in a consistent way throughout his writing.

Admittedly, as stated in the introduction to this chapter, communicating uncertainty and probability is very difficult. Quantitative uncertainty is not intuitive to humans. In the conclusion, I will write about some examples of communicating uncertainty that are more intuitive and might help mitigate some of these difficulties. However, first, I will explore how this statistic in its environment in the data visualizations on the *FiveThirtyEight* projects page and in the writing of Nate Silver (as exemplified from these articles from November 7th and 8th) change in statistical framing in the critiques, quick guides, and tangential texts.

3.4 Critiques: Ethical Appeals and Changing the Language

As mentioned, Silver faced a lot of criticism leading up to election day. Just as Silver criticized “herding,” writers at outlets like *HuffPost* that also had their own forecasting model,

forecasters like Sam Wang at Princeton University, and cultural critics paying attention to this squabble all started to notice and comment on Silver's divergence from the consensus that Clinton was nearly certainly going to win the election. In my corpus of articles and blog posts, I identified six articles from *New York Magazine's Intelligencer*, *Washington Post*, *Paste*, *Slate*, *HuffPost*, and a blog about computation called *Gödel's Letter and P=NP*.

Three themes emerge as this statistic is framed by these six writers. First, a lot of attention is paid to ethos in terms of methodology (for Nate Silver and also for the writer themselves). Second, there is emphasis on the social responsibility of creating this number (and numbers like it). Many of these writers mention “anxiety” or “hysteria” that this number brings forth from readers (which of course assumes, I think, a strictly liberal audience). Finally, the nature of “wrong” and “right” are also notable here—what that means and does not mean. These themes coalesce to help signal to readers how to interpret the statistic by evaluating, simultaneously, how sound the methodology is, the motives of who created the methodology, and what role such numbers should play in our lives.

Four of the six texts have header images of Nate Silver. In the *Washington Post*, Silver is looking directly at the viewer with cell phone in his hand; in the *Intelligencer* Silver has a blank look on his face as he looks away from the camera; in *Paste* Silver has a smirk on his face that looks a bit condescending as he is in dialogue with someone else on a panel; and in *Slate* Silver is touched up a bit with a bright and playful smirk over top of an image of a network connecting nodes with blue and red dividing the image. These four images correspond fairly well with the tone of the article toward Silver as an embodiment of the qualms or concerns each writer has with Silver and *FiveThirtyEight*. *Paste*, *Intelligencer*, and *The Washington Post*, make ethical appeals that critique motive and competence on the part of *FiveThirtyEight*—where the first two images

fit the stereotype of a condescending intellectual, the one in *The Washington Post* invites an open-ended judgment of Silver's motive in his hedging to be both right and wrong simultaneously, as he looks directly at the camera waiting for our response. The playfulness of the *Slate* image matches the playfulness of the article that is entitled "Who Will Be America's Next Top Modeler?" that is written by a mathematician about his perspective about the different methods of the different polling aggregators. *HuffPost* falls in with *Paste*, *Intelligencer*, and *The Washington Post* and its header image contains an electoral map that is possible based on *FiveThirtyEight*'s distribution of simulation outcomes—a 363 electoral vote rout by Trump. *Gödel's Letter and P=NP* has the same image as *The Washington Post*, but this post is mostly written in support of Silver and it comes across as incidental (i.e., here is a picture of Silver, the guy we are talking about).

3.4.1 Rhetoric Immediately Proximal to *FiveThirtyEight* Statistic in Critiques

Each of these writers cites *FiveThirtyEight*'s probability of Clinton and Trump winning the election the statistic early in their piece, usually in the first paragraph and nearly always in reference to other polls and statistical models. Unsurprisingly (since this is the publication where Ryan Grim published his attack on Silver a few days prior), *HuffPost* contributor Evan Cohen (2016) is most explicit with inscribed judgment about this number right from the start: "the most popular and widely quoted website out there, fivethirtyeight.com, has something tragically wrong with its presidential prediction model. With the same information, 538 is currently predicting a 65 percent chance of a [Clinton](#) victory, while [other outlets have a 98% and a 99% chance]." Inscribed here is a negative appreciation of composition via "tragically wrong"—there is something not right with the model, it is flawed, etc. Invoked is a negative judgment of capacity and perhaps even propriety as the disparity between 65% and 98-99% is made more salient by "With the same

information,” implying that if anyone were to analyze this information they would form a rough consensus and not so large a differing of analysis and interpretation.

Paste has a title that explicitly inscribes a negative judgment of capacity with “Nate Silver’s Rationale on Trump is Inherently Misguided,” but it is a bit subtler when the statistic shows up in the first sentence of the article. Rather than the author leading the critique, Jacob Weindling lets others speak for him at first while highlighting the dissonance with Silver’s former successes: “The man who rose to prominence by predicting 99 out of 100 states correctly throughout Barack Obama’s presidency is now coming under fire from many of the same people who so vehemently championed his work before.” The graduation resources by quantity suggest that something is wrong for this person to now be “under fire” since they once “vehemently championed his work,” and in combination with the title, this flags a negative judgment of capacity. What follows are a list of models that give an 84% chance for Clinton, a 99% chance, a 98% chance, and a 77% chance for betting markets as “a little less bullish.” This sets up a counter to introduce Silver’s number in the next paragraph at 65%.

KW Regan in the *Gödel’s Letter and P=NP* blog post also foregrounds an evaluation before presenting a list of forecasts to contrast with *FiveThirtyEight’s* forecast. However, Regan emphasizes judgments of normality as positive, in terms of diverging from consensus. Language is used like “gone out on a limb,” “Four years ago we posted on how the forecast...jibed with polls and forecasts by other poll aggregators,” and “This year there is no jibe.” Identifying these differences builds toward this sentence: “FiveThirtyEight has the election much closer than most of the other forecasters do. But Silver is no ‘nut’—last election, in 2012, he was right about the winner of all 50 states and the District of Columbia.” The counter here with “no ‘nut’” then extends further into the piece of evidence from 2012 that helps prop up Silver in a positive judgment of

capacity. After then starting with Trump having a 30% chance of winning, Regan continues with the other forecasts with the closest one being *The Upshot* that is “still only half of what FiveThirtyEight has been giving him.” Before moving into an exploration of methodology, Regan frames things again in the past by presenting a swing in critiques by political position: “In 2012 the complaints of bias in the data used by Silver came mainly from the Republican side and were proved wrong by the results. This year the thunder about numbers [seems](#) all on the [left](#).” The invoked judgment is one of positive propriety, but there is also an implication that Silver might just be proved right again, invoking a positive judgment of capacity.

While *HuffPost*, *Paste*, and *Gödel’s Letter and P=NP* foreground evaluations before using a list of other polls, the other articles take different tactics. The *Intelligencer* emphasizes a contrast with two aggregators in particular based on an ongoing news story about Ryan Grim and Nate Silver fighting on Twitter and they also use a ratio instead of a percentage, which can have some affective consequences to it. In an article entitled “Why Nate Silver’s Forecast (Probably) Overstates Trump’s Chances,” Eric Levitz (2016) is much more subdued despite having a harsher critique later in the article. In the first paragraph, the article is positioned in response to Silver’s Twitter beef with Ryan Grim and others about his model before Levitz cites the statistic here: “Right now, [FiveThirtyEight](#) — the site founded by celebrated data wizard Nate Silver — gives Trump a nearly one in three shot of winning the presidency Tuesday night. The [Huffington Post](#), by contrast, puts his chances at roughly 2 percent.” There is the obvious inscribed positive judgments of normality and capacity in “celebrated data wizard” in this sentence. However, there is also something notable in terms of *pathos*. Wolfe (2010) notes that the use of a ratio rather than a percent makes a more pathetic appeal because it feels more immediate and concrete than an abstract percentage. The one-in-three feels more likely than perhaps a 28% chance might, and,

based on the goal of the article to critique the methodology, the goal here might be to invoke a negative affect of insecurity to get the Clinton supporter reader interested and use the contrast with the *HuffPost*'s abstract percentage that would exacerbate it as less likely. This then sets up a concession to why Silver has this number before critiquing this methodology in the remainder of the article.

In *Slate*, mathematician Jordan Ellenberg (2016) also uses the ratio rather than the percentage in terms of Trump's chances. Ellenberg examines differences between methodologies of different forecasters, but Silver's divergence is a main part of the story he tells. He writes, in a humorous tone prior (e.g., what we really care about is not the election result but how the forecasters did) before calling the competition among forecasters a "battle among the polling aggregators, who in the wake of Nate Silver's successes in 2008 and 2012 have sprung up all over the internet like a scatter plot of toadstools after an autumn rain." Silver is set up as the veteran master with his "successes" spawning "a scatter plot of toadstools" of new forecasters. This early invoking and inscribing of positive judgments of capacity is followed by writing that every forecaster agrees Trump is "unlikely to win" but how unlikely is where things "mel[t] into numerical discord." Wang says it is "basically over," Nate Cohn says Trump has a 16 percent chance, and then Ellenberg elongates the suspense as we wait for more famous forecaster's result with the question "And Nate Silver?" This helps graduate by intensity until we get to more graduation and a flagging of negative affect of insecurity for liberal readers: "Liberals have to lie down with a cold compress on their foreheads whenever they refresh his page, because he still sees Trump as having about a 1 in 3 shot of winning." That "1 in 3" helps to amplify that invoking of affect through the colorful language about embodied effects of checking *FiveThirtyEight*'s project webpage. Ellenberg amplifies by copia by restating: "In other words, Trump has as good a chance

of gaining the White House as [Jose Altuve](#) does of getting a hit in a typical at-bat. And Jose Altuve gets a lot of hits.”

In *The Washington Post*, Dana Milbank (2016) does not contextualize *FiveThirtyEight*'s forecast as the previous critiques do, but, instead, is more interested in this forecast as a way to talk about forecasting in general. Milbank sets up his attack forecasting this way:

There's still hours of voting yet to go before we begin to find out who our next president will be. But this much we can be sure of: Nate Silver was right. If Donald Trump wins, Silver, the number-crunching genius behind the popular website *FiveThirtyEight*, called it. He said on ABC News on Sunday that Hillary Clinton is “one state away from potentially losing the electoral college. And if Clinton wins the electoral college? Silver predicted that, too. His website on Tuesday gave her [a 71 percent](#) chance of winning the electoral vote.

Milbank uses the engagement-entertain resource to present possible scenarios and how Silver is right in both of them. Here is a moment that harkens back to a possible issue in how *FiveThirtyEight* presents this statistic in their data visualization and in writing—the hedging does not always come through and when it does, it undercuts more than it qualifies in a way to represent uncertainty. Milbank sees Silver as opportunistic and “predicting” (not forecasting via probabilistic reasoning—the way Milbank uses “predicting” suggests an investment in knowing an outcome “for sure” and being “right”), which renders the inscribed positive judgment of “number-crunching genius” as something actually negative—he sees this positive judgment of capacity as an invoked negative judgment of propriety through these engagement resources that follow that phrase.

This range of use of appraisal resources coalesce in signaling interpretations about who is doing the measuring (i.e., Nate Silver, *FiveThirtyEight*) and how they are doing the measuring to

make ethical and pathetic appeals that are not necessarily as grounded in logical appeals that these writers and their readers might consider themselves engaging in. These statistical frames in their more immediate engagement with the number help to give readers little narratives about this number: a maverick scientist irresponsibly diverges from consensus opinion, a know-it-all who wants it both ways, a bunch of nerds having a fight, an intellectualizing of electoral politics that is causing too much anxiety in those who consume that intellectualizing, and so on. Judgments and affects that are subsequently amplified abound in these small spaces of text. But, they also expand outward throughout these articles as the critiques of methodology and epistemology take a more substantive form in ways that also signal interpretations for this number.

In other parts of these texts, appraisal resources are channeled in ways to further signal interpretations of this statistic via attacks on ethos via exploration of methodology and exploring forecasting as research rather than punditry. Regarding ethos, this happens in terms of judgments of capacity and propriety. Regarding forecasting as research, engagement resources help to consider definitional questions of an intellectual project (e.g., what do we mean by right or wrong? What are different possibilities for assumptions of forecasting models?). I'll focus on ethos in *HuffPost*, *The Washington Post*, and *Paste*. I'll focus on framing of research in *Intelligencer*, *Slate*, and *Gödel's Letter and P=NP*.

3.4.2 Ethical Appeals in Critiques

In *HuffPost*, the author uses a lot of negative inscribed and invoked judgments and appreciations. The *FiveThirtyEight* model is characterized as “all over the map,” that it fluctuates “often irrationally,” that the model is “overly complex,” and that it is “probably too smart for its own good.” The implication here is that *FiveThirtyEight* is over-intellectualizing this project to the

point of losing touch with reality. The author, Evan Cohen, is a financial analyst who has experience creating statistical models on his own, and he uses this experience rhetorically to set up other inscriptions and invocations of attitude elsewhere. Early on, Cohen writes that “In my more than 20 years of building and managing financial and statistical models first as an investment banker and for the past 15 years as an economic consultant, the mantra for model building has always been ‘garbage in, garbage out.’” Here, he graduates by quantity with amount of years doing similar work and amplifies by *copia* to name all of the things he’s done as well as stacking the 15 years on top of the 20 years. Later on, he writes:

As a financial analyst at an investment bank, or a research analyst at an economic consulting firm, your job would be in serious jeopardy if you produced 538’s model output without a clear explanation of how those fat tails that represent an inordinate number of close to impossible scenarios could actually occur. A model like that just isn’t client-ready.

Time to re-think those assumptions!

He again references his specific jobs, though not himself specifically, and speaking from this expertise he draws in the reader in the shared experience of recognizing co-workers who do not do their job that well and how that can lead to a possibility of being fired. Mapping the *FiveThirtyEight* model onto this scenario he uses the inscribed affect of “serious jeopardy” to invoke a negative judgment of capacity and appreciation of social value with the model not being “client-ready.” In other words, that the model is not appropriately fulfilling its purpose of entertaining its audience with information on the election or for being accurate enough for other polling enthusiasts.

This second appeal to ethos drives home and fills in a gap for the author: the output of the model is not plausible. To know what a plausible outcome would mean a reason for what makes

an output plausible. Cohen does not spend much time to do this, but these appeals to ethos do help in an attempt to establish his expertise itself as properly evaluating whether the *FiveThirtyEight* distribution of outcomes based on simulations are plausible. Cohen concedes that he is not “questioning any specific assumption that 538 makes, from their state-by-state correlations to their use of a t-distribution to create ‘fat tails’ in their probability distributions (i.e., higher likelihood of otherwise obscure events).” Cohen continues that what he is “questioning is 538’s professional competence and responsibility in reality checking the output of their model.” This concession is countered by not the technique but the ability for Silver and others to evaluate the outcome as something that makes sense. And whether that means the model is not as valid as it could be, despite each individual assumption being merited. Throughout, Cohen repeats that results are “unrealistic,” that they don’t “pass the smell test,” etc. The evidence he uses to support this are going to *FiveThirtyEight*’s distribution to show that seven percent of outcomes have Clinton with fewer than 200 electoral votes. He never tells us why this implausible; which, again, is why the appeals to expertise are important to create a stronger foundation via appraisal resources to help get an audience to trust this judgment. What’s more, he asks questions like “Does that map look remotely plausible to you?” to coerce an agreement out of a non-expert with an expert. My analysis here really isn’t about whether the argument is correct or not, just how inscriptions and invocations of attitude (and their amplification) help to build a statistical frame that is heavily reliant on creating an ethical appeal.

Milbank also relies on appraisal resources to allow ethical appeals to influence an interpretation of the number in his text. In the *Washington Post* article, the focus is on how Silver may have changed his methodology in order to ensure he is right in the end. Milbank looks to be influenced by Silver’s writing style—how Silver has a back-and-forth rhythm in his writing that

hedges in different directions, but in very strong ways that often undercut previous statements. Milbank asks this question that he then answers: “How can Silver be predicting a healthy Clinton victory while also noting she is in danger of losing (and simultaneously making allowance for the possibility she’ll win in a landslide)? Well, this is the result of a complex statistical method known as covering your bases. Or your backside.” Here Milbank mocks Silver at first with “complex statistical method known as covering your bases” that inscribes a negative appreciation of composition (i.e., “complex”) and a negative judgment of propriety (i.e., “covering your bases). This is then amplified higher by the fragment “Or your backside.” Milbank taps into an appeal to common sense, which invokes a negative judgment of veracity, as well—two conflicting things cannot be true at the same time, this is a tactic of someone dishonest (i.e., Silver).

Milbank builds his own ethos as fair writer and then continues to question Silver’s motives. Milbank concedes a positive judgment of capacity for Silver by highlighting his success in 2008 and 2012, but this is quickly countered: “But this year, he completely missed Trump, pegging the businessman’s chance of winning the GOP nomination at “[considerably](#)” less than 20 percent. And Silver, once bitten, is twice shy. [His probability](#) that Clinton will win the presidency has bounced all over the lot.” The implication here is that Silver being wrong led him to be more cautious, to a degree that suggests statistical modeling as a practice of predicting is inherently flawed, with those flaws being more severe during this election cycle. This becomes more explicit as Milbank develops his argument further, again building his own ethos by again conceding something to Silver with a backhanded compliment before inscribing a negative affect of distrust and negative judgment of capacity (i.e., “he doesn’t know with much confidence”): “But I don’t fault Silver for his caution. It’s honest. What it really says is he doesn’t know with much confidence what’s going to happen.” Milbank goes on to write about John Maynard Keynes’ idea

of “animal spirits,” in how peoples’ behavior cannot be predicted precisely because we act with “spontaneous optimism” rather than using a cold calculative approach to the actions we take. He then cites Ryan Grim’s critique of Silver as “just guessing” and Silver’s response that his approach is what works best based on the evidence and disciplinary standards of polling analysis. Milbank responds, “Maybe it does. Maybe it will again. But Silver is just guessing. And, in the run-up to this election, he made so many guesses that at least one of them has to be correct.” The close is on the hedging. He characterizes it as opportunistic rather than informed by best research practices. The percentage of Clinton’s chances is surrounded by this critique of hedging that ultimately lowers confidence in how a reader might interpret it as accurate rather than cynically constructed to stroke a public figure’s ego, of always being “right.”

Paste also takes up this idea of being right and wrong that seems to be at odds with Silver’s writing style that relies so much on figuring out a way to communicate the likelihood of a range of outcomes based on a very specific method of making this determination. In *Paste*, Jacob Weindling, like Milbank, concedes to Silver—even more so, ending with an evaluation of his methods that his approach that uses assumptions that give a lot of weight to uncertainty for the 2016 election “isn’t completely unwarranted.” Weindling counters, though, here, with this graduation by quantity in the comparison of the percent chance change over time: “However, Clinton dropped from 83% on October 26th down to 65% in 538’s model. Has the race changed that dramatically since we learned that the FBI is in the middle of a partial mutiny? Doubtful.” Like Cohen, we don’t get a really specific reason why this is doubtful in terms of methodology, we just get an explanation for what the writer thinks will happen in a parallel setting. But, this monoglossic, assertive answer of “Doubtful” in combination with the near-20 point disparity over the course of two weeks combines to set up his retort and signal to us that we should listen to him.

Weindling goes on to explore how samples could be skewed because of polarization, that people polled usually move very little in their allegiance to a major two-party candidate, and the history of states' allegiance to the two major parties in the past few elections suggests a likely Clinton victory. Invoking a slight negative judgment of propriety, Weindling continues that "It's difficult to imagine that 538's general election model wasn't tweaked after the lumps it took in the primary, predicting that Trump was a sideshow at best." We now get to more explicit inscriptions of attitude that polling has a "fatal flaw" in that they become "permanently outdated" once voting starts. Citing early voting and polls issues with capturing Latinx voting, Weindling claims Silver is "hedging too hard based on flawed assumptions, or at worst, harvesting free media from America's biggest steaming orange turd," that "Silver's argument in favor of a Trump presidency basically seems to be $\sqrt{(?)}^{\sqrt{}}$," and that he has been "scared...into making any confident prediction."

The shift in tone is dramatic, with leaps from a counter-analysis from another set of assumptions about U.S. electoral politics to inscriptions and invocations of attitude that suggest, at worst, a corrupt manipulation of data to serve a well-known media figure's ego and wealth. Weindling argues that Silver is not "drilling down to the facts of the matter" and "his model refuses to commit to any firm trajectory," using denial twice and invoking a negative judgment of capacity that leads to the last line of the article: "Uncertainty means never having to say you were wrong." Uncertainty is framed here as a rhetorical tool one uses so as to never be wrong. Thus, any interpretation of the chance of Clinton or Trump winning is in the shadow of this depiction of Silver's ethos, succinctly captured in this last line.

3.4.3 Changing the Language to Change the Debate in Critiques

The *Intelligencer*, *Slate*, and *Gödel's Letter and $P=NP$* frame the statistic a bit more as a result of an intellectual project. These pieces are more comfortable with uncertainty and less trapped in a right/wrong binary. There is less concern with ethos, and more concern with methodology; that is, as I have explored previous, there is less about “who” is measuring and more about “how” it is measured for evaluating the statistic with appraisal resources. The *Intelligencer* piece by Eric Levitz is engaging in the dispute between Grim and Silver, and concedes that Grim is being too harsh and that there is some merit to Silver’s approach with the weight he applies to uncertainty, but he ultimately concludes that there is not enough attention in this approach to similar reasons that Weindling mentions (e.g., early voting). Mirroring the title of the piece (i.e., “Why Nate Silver’s Forecast (Probably) Overstates Trump’s Chances”), Levitz ultimately concludes the article with “So, ya know, anything’s possible. Just not *as* possible as Nate Silver’s model would have you believe.” This couches the analysis with appraisal resources of engagement (e.g., entertain, deny) where a concession is made but it is qualified that Silver is overstating the case.

Though they also pay more respect to methodology, the authors of the pieces in *Slate* and *Gödel's Letter and $P=NP$* don’t make definitive evaluations like Levitz ultimately does. KW Regan, in *Gödel's Letter and $P=NP$* , cites Silver on his explanation about the higher number of uncommitted voters and third-party voters relative to previous elections. Regan, then, makes a more independently interpretive move following this citation: “There is also greater uncertainty about the effects of news developments such as releases by Wikileaks, the FBI investigation into Clinton’s e-mail server, Obamacare premium hikes, and scandalous past behavior by various people.” Regan corresponds these events to movements in the forecast from the 2012 forecast

(Figure X) and from from the 2016 forecast, as well as from *The Upshot* (to show similar movement despite different results):



Figure 14. 2012 FiveThirtyEight Forecast Over Time.

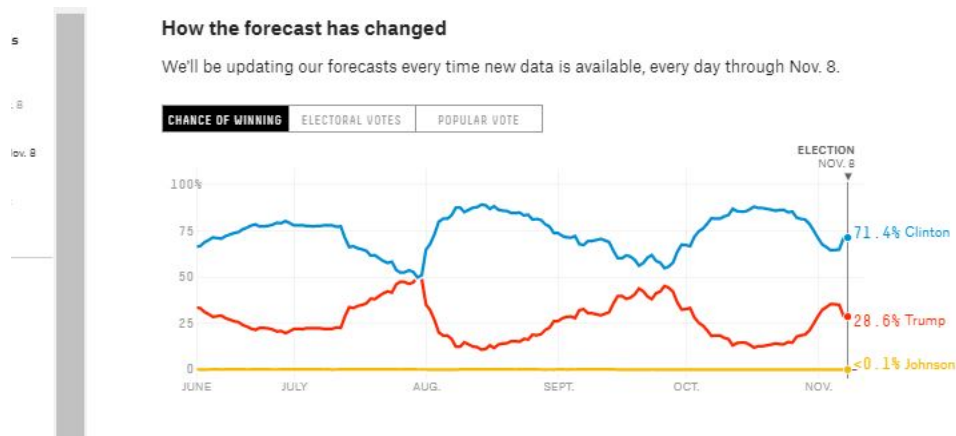


Figure 15. 2016 FiveThirtyEight Forecast Over Time.

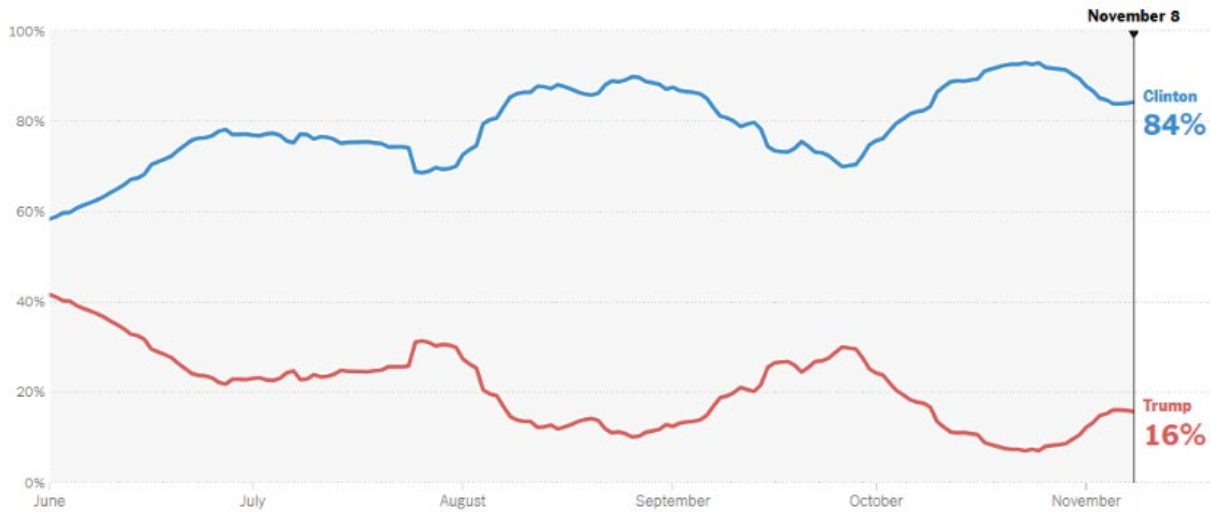


Figure 16. 2016 The Upshot Forecast Over Time.

Regan uses the debate about divergence in forecasts and reframes it in terms of a similar rate of fluctuation as corresponding to newsworthy events. He then uses Grim’s term of “unskewing,” which Grim used to argue that Silver was unethically changing his assumptions about the makeup of polling samples to correct biases and flips it to not spend time on ethos in his evaluation of the number. Instead, he uses “unskewing” as jump-off point to pursue why polls might be showing these fluctuations. Regan continues, “What go into these aggregate models are the polls, and by and large the polls have shown similar movements. Hence I think the key this time is not unskewing the *polls* but rather the *electorate*.” This shifts to an invoked appreciation of composition-complexity. Rather than assuming bad motives, Regan explores a research question using his expertise in a chess-playing simulation he is doing research on. Here, he finds that players might rely on impulses in some ways that voters might be relying on impulses more than they had done historically. That is, they respond more to “political weather” rather than prior valuation. There is not enough space to fully engage this research here, but I am less interested in that engagement than the rhetorical reframing of “unskewing” as a way to explore a methodological

problem. Thus, the statistic is posed as a problem to solve about how the election works rather than tracking down which forecasters are right and which ones are wrong.

Jordan Ellenberg also shifts language in a way that reframes the statistic in light of a research question. Ellenberg, in *Slate*, asks, “Who will be right, Silver or his critics?” Ellenberg answers that this is where things “get sticky,” invoking an appreciation of composition-complexity. He poses another question readers might be wondering, “Silver, after all, is telling us that Clinton might win and Trump might win. Can he even be wrong?” From a pundit’s perspective, Ellenberg admits that the answer might be no. But, from his perspective as mathematician, he changes the terms of the debate:

I’d say *right* and *wrong* aren’t the words we should be using. I prefer *better* and *worse*. If Trump wins, for instance, Sam Wang isn’t exactly wrong—he admits there’s a nonzero chance that’ll happen! But he definitely comes out looking worse than Nate Silver does. And if Clinton holds on, is everybody equally right? Not necessarily. Silver’s uncertainty is unusually strong in *both* directions.

“Right” and “wrong” can inscribe a lot of different attitudes depending on the context: a judgment of veracity or propriety, an appreciation of social valuation or composition, and even affects if the context asks for something in relation to ego (e.g., like earlier mentions of Silver’s “confidence”). Shifting the terms here to “better” and “worse” provide a spectrum of graduation that can upscale or descale the interpretations signaled here and they invoke judgments of capacity more than the moralistic attitudes that come with a right/wrong binary. Ellenberg goes on to talk about the probability distribution that each model holds, and how that is a better way to think about this statistic (and others like it)—they try to model the likeliest range of outcomes based on different assumptions about how presidential elections work in the U.S.

This shift is also notable in terms of prediction vs. forecasting. Epidemiologist Joshua M. Epstein (2008), in his lecture “Why Model?” which was reprinted in the *Journal of Artificial Societies and Social Simulation*, explains that when most people encounter modeling, they assume that prediction is the definitive reason for why people build statistical models. Epstein argues that while this may be a reason someone builds a model, he counts at least 16 other reasons for using models: explanation, guide data collection, illuminate core dynamics, suggest dynamical analogies, discover new questions, promote a scientific habit of mind, bound outcomes of plausible ranges, illuminate core uncertainties, offer crisis options, demonstrate trade-offs and suggest efficiencies, challenge the robustness of prevailing theory, expose prevailing wisdom as incompatible with available data, train practitioners, discipline the policy dialogue, educate the general public, reveal the apparently simple to be complex. While models can predict, and while readers of sites like *FiveThirtyEight* might desire a prediction, a prediction is something done when the predictor is promising a singular outcome. Probability models don’t really do this. And neither does *FiveThirtyEight*, *The Upshot*, or other data journalism publications. But there is a rhetorical tension between what these forecasting models do, what readers expect of these forecasting models, and how rhetors communicating these forecasting models frame them for their audience. Ellenberg, as well as Regan, seem to be entering into the criticism of Silver with this in mind. As Epstein’s list suggests, these models (and the statistics they produce) might be better framed as educating the public or discovering research questions. Another way to put it would be to be an investigation into how elections work rather than purely what the future holds.

What Regan and Ellenburg pursue (and to a lesser extent, what Levitz does) is to play in the realm of figuring out a research question, into pursuing an intellectual project of thinking about how elections work. They use engagement resources, in particular, as ways to invite their readers

to think about evaluating the statistic by *FiveThirtyEight* in this spirit. It is a more active process that is inviting. The other critiques inscribe much more attitude in ways that feel like the courtroom—they are trying to get to the bottom of why *FiveThirtyEight* diverges from the consensus and what that means about what the future will be. These are two different tactics that have much greater interpretive consequence for how readers might evaluate the statistic.

3.5 Quick Guides

Unsurprisingly, a great deal of the quick guides use the statistic in a brief way to contextualize and generate interest for what might happen during the election. Many of these were short news reports or blog post listicles with bullet-point style lists of information related to the election. In this section, I want to write generally about some patterns in how the statistic was framed and then explore a few examples in greater detail: how visualizations were created to shift a point of interest about the probability of who would win compared to the original *FiveThirtyEight* visualizations, how the probability was framed in terms of newsworthiness to help contextualize the statistic in different ways, how ethical appeals were relied upon, and how texts made salient consensus and dissensus.

3.5.1 Visualizations in Quick Guides

First, I want to take note of the data visualizations used in these texts. Of these 24 articles, the most commonly used data visualization relevant to *FiveThirtyEight* was the stacked bar graph denoting the percentage chance of Clinton and Trump winning—this was used in texts 5 times.

There were also some visualizations related to the *FiveThirtyEight* statistic that were amended a visualization from *FiveThirtyEight* or created a whole new one. *Mekko Graphics*, in a blog post that displays graphic design outputs the company can created used a bar graph to show how the forecast narrowed the chances between Clinton and Trump on October 21st compared to November 5th. *Oraclum Blog*, a blog for a data science company that makes statistical models, created a visualization that included *FiveThirtyEight*'s information among other forecasters to show change over time (see Figure 17).

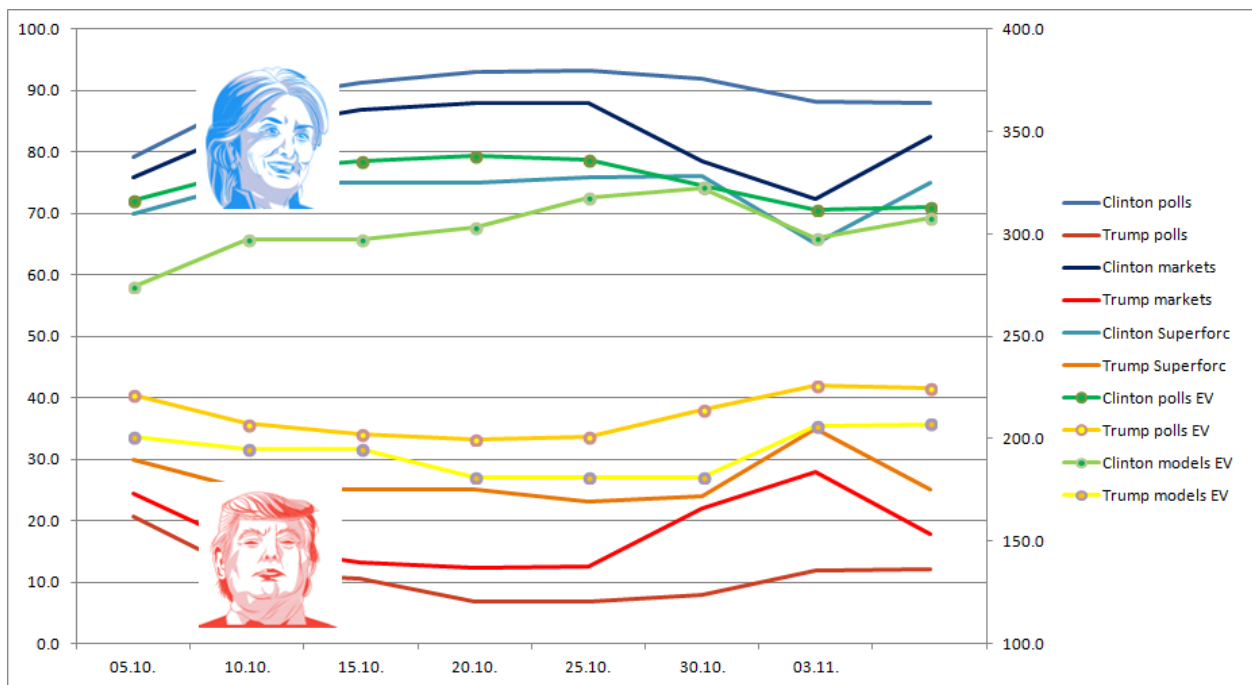


Figure 17. Oraelum Blog Visualization.

Finally, *Don's Notes*, a blog by a software developer that keeps notes on topics of various interest to its author, used the *FiveThirtyEight* line graph over time to try to communicate and map different newsworthy events.

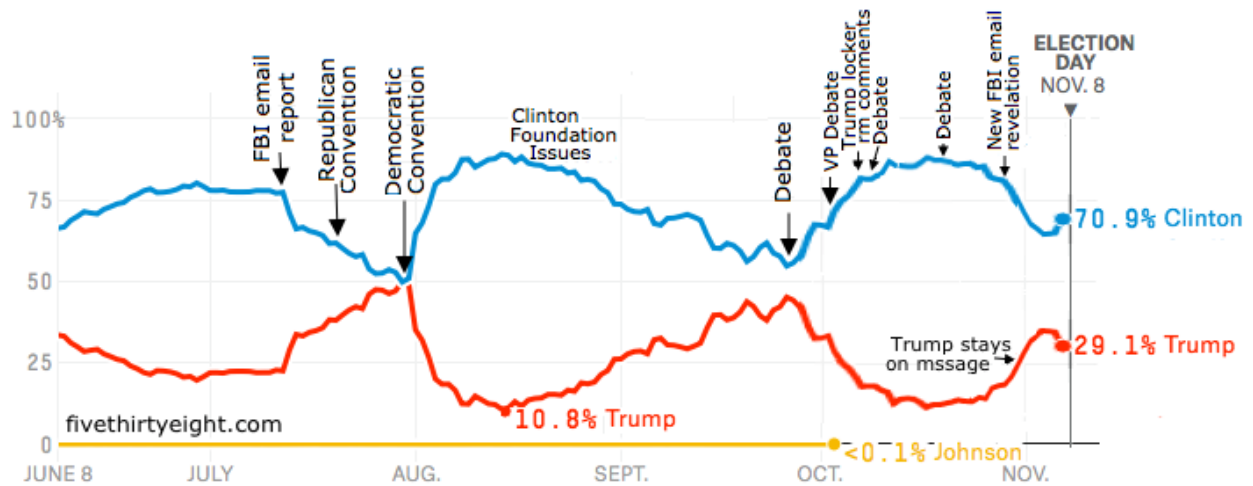


Figure 18. Don’s Notes Remixed Line Graph.

Both of these visualizations amplify different items by color and representing the passage of time to tell a story about what might happen and why it will happen.

3.5.2 Newsworthiness and Quick Guides

The move about newsworthiness and how it might have affected the polls is something that happened often in the quick guides, only it was usually done alphanumerically rather than visually. James Comey was referenced three times near the statistic, invoking appreciations of reaction in an online newspaper out of reference to how his influence may have been outsized on the polling. In *The Daily Egyptian*, a student newspaper for Southern Illinois University at Carbondale, this was amplified further by the three images chosen in the article: one of Clinton speaking, one of Trump speaking, and one of Comey speaking. Other news items, mentioned more indirectly, were in reference to Trump “surprising” people, again invoking or inscribing appreciations of reaction. For instance, in *heavy*, the statistical frame reads, “FivethirtyEight predicts that Clinton has a 71.6% chance of winning the presidency based on electoral college predictions, but Trump has

surprised before.” The counter sets up the “surprised” as a move to draw interest in the article about important states in the election (and how they might affect the electoral map). Finally, one interesting move in a listicle article covering polls and forecasts on election day on *Visual Capitalist*, a blog that specializes in data storytelling, has a list item on consensus of pollsters and forecasters (more on this later) followed by a second bullet point that reads “But Brexit Moments Happen...” as a way to frame an interpretation of the *FiveThirtyEight* stacked bar graph and electoral map data visualizations. The author follows this with “As we all saw in June, polling numbers are not to be trusted” in reference to Brexit and using *FiveThirtyEight*’s numbers as a way to show that the consensus might be wrong.

3.5.3 Ethical Appeals in Quick Guides

As already discussed elsewhere in this chapter, there were also similar moves of inscribing and invoking attitude in ways that built ethical appeals to help construct statistical frames. There was also use of fluctuations in the forecast results as a way to amplify a sense of uncertainty (e.g., from the data science blog *Level* “Nate Silver’s *FiveThirtyEight.com* is still predicting that Hillary Clinton will beat Donald Trump, putting her chances of winning at about 65.5 percent as of this morning. That’s down over 20% from a high of 87% after the second debate on October 10th”) or to use numbers to point at contrasts between forecasters to communicate uncertainty (e.g., the title of a post on the blog *Bark Bark Woof Woof* of “99.9% vs. 66.9%”). Inscribed attitudes of affect-disquiet also were used to generate interest in terms of “anxiety” or “frequent checks” of *FiveThirtyEight*, associating the statistics with anxiety in a humorous way. However, I want to use the remaining space of this section to look into the surprising way in which the *FiveThirtyEight* statistic was used as part of an aggregation of aggregators—unlike what is found in the critiques,

this statistic was used in combination with others to amplify a sense of a likelihood of a Clinton win, implying a consensus of pollsters and polling aggregators.

3.5.4 Quick Guides and Consensus

Five of the 24 quick guides made this consensus move in their statistical frame in the following publications: *Newsweek*, *Oraclum Blog*, *RealClear Politics*, *Vox*, and *Time*. Sometimes, a move to suggest Clinton was likely to win and that many pollsters and aggregators agreed was captured in a brief sentence. Sometimes this consensus-making produces confident statements, that include the *FiveThirtyEight* forecast as a prediction Clinton will win: “Forecasts still show Clinton winning the election.” The use of “show” endorses to contract viewpoints against the notion that Clinton will win. *Time* makes a similar move here: “With just hours to go until the polls close on Election Day, pollsters and predictors have released their final maps of the 2016 election—and most agree that Hillary Clinton will win, but no one agrees by how much.” The graduation resource of “most” to help downscale the agreement is in tension with “no one agrees by how much,” which implies pollsters do in fact agree that Clinton will win. *Vox* was more qualified and precise, but undercut this qualification and precision here: “Overall, the various forecasting models — you can check out a roundup at the Upshot — estimate Clinton’s chances of victory between 72 percent and 99 percent. So they disagree on whether she's a reasonably solid favorite or an overwhelming one, but they all view her as likely to win.” The disagreement is highlighted, but for readers hoping for a Clinton victory (as many *Vox* readers arguably are) can easily skip over “likely” as it comes after the counter of “but” that contrasts with the purported mild disagreement over how much of a favorite Clinton is.

Oraculum Blog does among the best, as they start off with the strong statement of consensus before clearly qualifying how *FiveThirtyEight* diverges: “a clear victory for Hillary Clinton. Only FiveThirtyEight has been cautious, the others are mostly confident that Hillary should win a landslide (notice the electoral college predictions).” *RealClear Politics* also does a good job: “FiveThirtyEight, the Upshot and the Huffington Post (despite differences in assumptions and how they’re built) all give Clinton a win probability over 50 percent (64 percent, 84 percent and 98.1 percent, respectively) but don’t say that a Democratic victory is a 100 percent certainty.” While they all agree, the less than 100 percent graduation resource helps to emphasize uncertainty is in play for all of them—and since we get each number, we get to see the diversity in that uncertainty among forecasters. Still, it is interesting that this move to collapse different pollsters and aggregators together creates a rhetorical effect that they all believe in a singular outcome, which is at odds with the nature of polling and, especially, polling aggregation that helps create forecasts.

3.6 Tangentials

The articles that cited the *FiveThirtyEight* statistic under the “tangential” class were on a variety of topics: climate change, higher education, baseball, marketing, gambling, and cocktails. I want to highlight three of these articles because they engage statistical framing in respect to thinking about probability expressions as research projects but also as calls to action—two approaches to statistical framing that I find most meaningful and useful for public writing rather than the voyeur version that some of the critiques and quick guides seem to frame the statistic as.

In an article about the effects of a Trump presidency on global warming on *Climate Home News*, a news site specializing in climate news, Megan Darby uses the following data visualization

that illustrates projected carbon emissions during a Trump presidency and during a Clinton presidency before citing the *FiveThirtyEight* statistic:

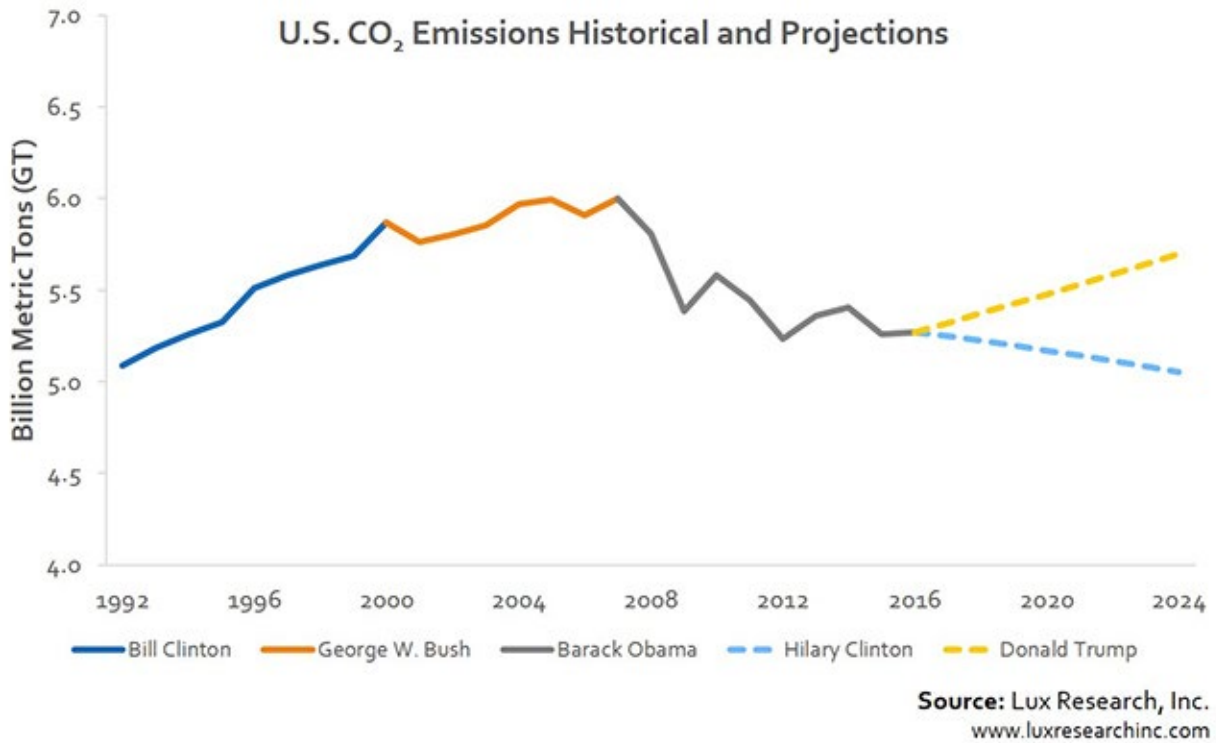


Figure 19. Projected Carbon Emissions.

Right after this visualization, Darby writes:

With polls open across much of the country, analysts FiveThirtyEight [give Clinton](#) a 71% chance of winning. The veteran politician has many routes to victory and need not win all the swing states.

Trump still has a substantive chance, buoyed by fans who identify with his aggressive rhetoric. Even if he loses, don't expect him to go quietly. The underdog has pre-emptively alleged the election is rigged and refused to say he would accept the vote count.

This figure is immediately downscaled even further by “many routes to victory and need not win all the swing states” to help supplement the effect of difference between emissions for each

potential presidential administration. The chances of winning for Trump are amplified further with inscribed judgments of tenacity (e.g., “aggressive”) and then an engagement resource of concession about “not going quietly.” This implies a fired-up base that might still impact climate policy even if Trump loses. This exemplifies how this statistic is enmeshed in a very different ecology of meanings outside of electoral politics but still adjacent to it, demonstrating how statistics can flexibly integrate into many systems of meaning despite being relatively stable (i.e., the statistic still depicts chances of the candidates winning).

On a philbernstein.com, a blog about marketing and advertising tips, Phil Bernstein analyzes a letter by the Clinton campaign, commenting on how the *FiveThirtyEight* statistic helps to get a reaction out of readers and move them toward action. The campaign email title reads, “Stop Refreshing FiveThirtyEight,” which does a good job in invoking a negative affect of disquiet, assuming readers are likely anxious about the election and putting their anxiety into such refreshing. The email begins, “Per Nate Silver’s latest forecast, [Donald Trump] now has a 1-in-3 chance of beating us on Tuesday. If that number stresses you out, here’s what you can do — **Chip in.**” Again, the affect inscribed is disquiet, with the 1-in-3 concrete ratio into the “stresses you out” all to help move readers toward action. The campaign letter then closes the email to ask for action again, “Refreshing *FiveThirtyEight* every five minutes and worrying over the latest polls from Florida or North Carolina won’t do anything to help us actually beat this guy. Chipping in right now, even if it’s just a single dollar, will.” The graduation resources by extent (i.e., “every five minutes”) and inscribed affect (i.e., “worrying”) reinforce and amplify the notion of taking action. At a secondary level, Bernstein’s rhetorical analysis of this campaign email amplifies these moves further by his own comments on them.

Action is another theme in the final tangential text I want to spend time on. In “Probability Isn’t Destiny: Data Should Inform Us, Not Rule Us,” John Warner explores how probabilistic judgment through data analyses of several kinds (but especially the 2016 election) can be a lesson in how these things can help us think about subjects in different ways but should not overtake a disproportionate influence in our decision-making. Warner starts his essay with “Nate Silver’s FiveThirtyEight has gotten some things wrong this past year.” He amplifies this claim through examples: the low percentage chance for winning the NBA championship for the Cavaliers, the for the World Series for the Cubs, and for Trump’s winning of the Republican nomination. Warner, though, takes time in his essay to untangle this right/wrong binary. Warner writes that “Anxious supporters of Hillary Clinton have imbued Silver with a kind of mystical power, their moods fluctuating with Trump’s probability of winning, even though Nate Silver has exactly nothing to do with the outcome of the election.” This inscribes affect of disquiet, but to undermine it through the counter of “even though,” suggesting this is not the right way to have a relationship to this statistic. Warner then counters Grim’s “just guessing” critique to write it is “not true.” However, he counters this with “But it’s also sort of true in that Silver’s model relies on assumptions about what the data means that are, at their heart, guesses, informed guesses, but guesses nonetheless.” They are guesses, but they are particular kinds of guesses. Not ones to be dismissed. This shifting of language, similar to what Ellenberg and Regan do, helps to have a different orientation to this statistic than to consider it as merely right or wrong. Warner continues that “These marvelous tools we have to collect and aggregate data have given us another route to informing our opinions, but we would never let FiveThirtyEight tell us who the next president is.” There is an emphasis on *action* here.

What do we do with these numbers? What do they mean? They do not do the work for us. We need to not be so distant from them, but more intimate. They can inform our judgment but we must decide how to use them in the material world. Warner uses this inquiry to pivot to the world of education, in how we should not be so caught up in being “data-driven” that we make mistakes like interpreting a hypothetical statistic of “85% of students” sharing a certain trait means that we should guide them away from a certain educational pursuit. Warner continues, “I’m sure these are useful tools, but we can’t lose sight of the fact that they’re tools meant to be used according to human discretion.” This is no disparagement of statistical models, but that these are more instruments to think with than tools to indiscriminately apply as a universal. We must think critically, we must interpret them in a specific time and place. Warner used the statistic as a way to consider a relationship between a reader and a statistic, and how to use it to think with.

3.7 Conclusion

There are ways to make probability more intuitive. In terms of the 2016 U.S. Presidential election, *The Upshot* does a good job in their election day coverage using animation in their data visualization. In their visualization, you can see the dial could be turned to different sections that qualitatively describes the probability (e.g., “Very Likely,” “Tossup”). What is notable here, though, is how the dial enacts and shows probability—in real time, the needle would flicker between the 25th and 75th percentile reflect uncertainty surrounding the results and reflect the range of outcomes based on simulations using the most recent data (e.g., margin of error).

Many found this unnerving. Catherine D’Ignazio and Lauren Klein (2020, 91) in *Data Feminism*, drawing from perspectives of the designers of the gauge, argue that this animation

“gave people the perceptual, intuitive, *visceral, and emotional* experience of uncertainty in order to reinforce the quantitative depiction of uncertainty.” D’Ignazio and Klein advocate for visualizations that leverage emotion and embodiment to make data memorable in a way that creates a lasting impression. Here, the gauge maps intuitive uncertainty onto the non-intuitive quantitative uncertainty the model depends on. The motion itself helps to emphasize a story of dynamism, of change, of uncertainty in ways a static stacked bar graph from *FiveThirtyEight* does not do. It would be difficult to figure out how to replicate something like this beyond election day, but using more animation rather than static colors or shading (e.g., to show confidence intervals) might do a better job. However, beyond communicating a more intuitive notion of uncertainty, is there a broader question to ask about communicating probabilities around politics? What do rhetors and audiences share (or can share) in their construction as a political project? What assumptions need to be more explicitly stated?

Taylor Black (2018, 519) uses the soothsayer trope from early modern theater as a way to think about “why forecasters find themselves interpreted far in excess of their intentions,” and how their readers “desire a performance of the future.” Black explains that, though there are distinctions between a prediction and a forecast, both have a performative dimension that cannot be avoided, and that forecasters like Nate Silver and others must more directly engage with the performative nature of forecasting. For Black, both predicting and forecasting have, in the terms of J.L. Austin, similar illocutionary force in that they call futures into being via the act of predicting or forecasting, no matter if they are more true or false. Unlike Silver, the soothsayer recognizes this, and embraces the performative dimension of what they are doing in ways that care deeply for the audience. For Silver and others, it often feels as though they are more concerned with lecturing what they are or

are not doing. Silver, in particular, hedges in ways that are confusing and easily interpretable as more concerned with being perceived as correct or incorrect.

Black, however, argues that forecasting could also benefit from being more action-oriented. In this chapter, the probability of Trump and Clinton winning the election from *FiveThirtyEight* most often circulated as some sort of prediction of a singular outcome and was framed as an object to observe more than a problem or action to engage. If we consider the *FiveThirtyEight* statistic like a fact-totem in de Santos' terms, or as something more in the genre of epideictic rhetoric, this call means we might move toward a cooperation between statistics and readers/writers of those statistics. What do we do with the statistic? Do we use it to learn more about elections, as Ellenberg and Regan do? Do we think more about action we can take with them, as Warner advocates for? I believe both of these efforts are far more constructive in making meaning out of probability than the passive consumption of probabilities and predictions that create anxiety or become a sort of bloodless sport for those far removed from negative consequences that these forecasts can exacerbate (e.g., possibly suppressing election turnout).

If audiences want a soothsayer, writers should consider how to meet this need head on, for sure, but perhaps make an effort (and I think Ellenberg does this best) to invite readers into a conversation about what the number means rather than just tell them what it means, or make critiques of those who calculate the number as trustworthy or not, etc. This might exist as more of a CUSP approach, as in the last chapter on exploring how causality was evaluated in reference to correlation. Or it can also promote an interpretation of these numbers as ways to think about how elections work, how voters might think about elections, and what they say about a given nation that participates in elections. More broadly, probabilities can be about understanding phenomenon and not necessarily predicting any one outcome. Like with the circulation of the smoking/lung

cancer statistic, I am left wondering if there are ways to compose statistics that invite audiences to engage in the work of how they were created, as products of social processes, and how that invitation can promote a mode of statistical framing that productively reveals its inherent relationship to rhetoric and uncertainty—even if the statistic is never fully explained or understood.

4.0 Statistical Framing and Human Suffering: A Statistic of Lynching in 1892-93

In the two previous case studies, I looked at the range of semiotic resources used to make meaning out of a statistic, how a variety of voices were incorporated to signal an interpretation and a way to feel about a statistic, and how ways to reveal statistics as results of social processes help to make a different kind of meaning out of a statistic (e.g., as an intellectual project to learn about phenomenon in articles by Ellenberg about the *FiveThirtyEight* probability). In each instance, this illustrated different ways to signal evaluations of the results themselves, what was measured, how it was measured, and who was doing the measuring. In this chapter, there is more of a focus on the ethical complications of what is measured: human suffering²⁸. Which, then turns to the case of *who* is measured. The statistic I look at in this chapter is a variation of statistic about the 8 years of Black lynching victims from 1883 through 1891 originating from an article in the *Chicago Tribune*, branching from that article to a few others, including an influential article in the *Independent* and in to the writing of Ida B. Wells across three pamphlets and at least two speeches subsequently covered by the press.

I analyze how the statistic was taken up, composed, and re-composed in news coverage by “neutral” reporters, by lynching apologists, and by anti-racism activists like Wells. I argue that Wells’ rhetoric is notable for the ways in which she incorporated into her statistical writing some rhetorical elements of the African American Verbal Tradition (AVT) and what critical race

²⁸ Lung cancer and the results of political elections, of course, lead to human suffering. However, in those two case studies, that prospect was not as foregrounded as it was in this case study about lynching—especially in Wells’ rhetoric.

theorists call “counterstory” to, what Jacqueline Jones Royster calls, “turn the stomach” of her audiences. These two practices, I argue, take up a much more ethical form of quantitative argumentation within the micro-rhetorical act of a statistic as compared to some other rhetors that used the same statistic during the same time period because Wells follows what Catherine D’Ignazio and Lauren Klein (2020, p. 96) in their third chapter call for in educational and memorable data-driven arguments: activating emotion, leveraging embodiment, and creating novel presentation forms for “honoring context, architecting attention, and taking action to defy stereotypes and reimagine the world.” When it comes to statistics that get so close to issues of justice, a minimalist approach risks failing to leave an impact.

In what follows, I look at the context for quantification and race in the 1890s, rhetorical aspects of lynching in the 1890s, and several rhetorical analyses of statistical frames of different iterations of the 8-year lynching statistic. I then conclude with a reflection on considering affective aspects of statistical writing when writing about material directly related to human suffering and justice.

4.1 Lynching, Race, and Quantitative Rhetoric During Early Jim Crow

The beginning of the Jim Crow era was a pivotal moment in how Americans began to talk about race in quantified ways. Khalil Gibran Muhammad (2011, 31) notes that the year 1890, twenty-five years after the end of slavery, was a milestone because it marked the first time the census could record information about adult African Americans whom were all born free, and whom had not “been properly trained and cared for by beneficent masters.” By 1884, there was

already something called the “negro problem”²⁹ as white commoners and scientists alike were beginning to position much of the post-Civil War perceived danger of Blackness squarely at inherent and biological tendencies of African Americans, but there was also a colorblind aspect to this that I discuss later. Crime was one domain that was measured and quantified to help support arguments about this “problem.” Lynching was another domain for racialized statistical discourse. Ore (2019, 11) argues that lynching is about citizenship, that it is a “constitutive performance of American civic identity,” and has been since the eighteenth century when it was used to punish British Tories during the American revolution. “Murder” is a word rarely used in the press in regard to police shootings of people of color because of the loaded legal meanings embedded in the term’s use. However, Ore (2019, xiii) argues this term is the closest we have for something to communicate the “taking of human life that has value,” and this is what happens and has happened, again and again, to African Americans from the lynchings of Jim Crow to the extra-judicial executions at the hands of police and others today. Wells often used the term “murder” where others might have used “killed” or “lynched.” These sorts of choices—the word, the syntax—are important considerations of how we talk about violence and how we talk about quantification in particular. Much of Wells’ rhetoric was grounded in exposing contradictions, and just as she used the shock and gore of lynching photographs to contrast with her investigative reporting (see Ore, 60-62), Wells used statistics to place next to other rhetorical moves to show contradictions, practicing an indirect rhetoric of signifying (see Smitherman, 1986, 119-120).

Among other rhetorical tactics when speaking and writing about lynching (e.g., reprinting death threats, citing consensual relations between white women and lynched Black men, including

²⁹ An article by scientist Nathaniel S. Shaler in the *Atlantic Monthly* 54, 696-709.

images and detailed depictions of the ways in which people were lynched in her articles and pamphlets; see Dray, 2002, p. 53-108), Wells used quantitative rhetoric often. Wells frequently cited the *Chicago Tribune*'s annual statistics of lynching, often amending them to reflect her own recording (see Waldrep, 2002, p. 114). Amy Louise Wood (2009, p. 1) notes that, compared to other terrors facing African Americans during Jim Crow, "lynching was an infrequent and extraordinary occurrence." It was much more likely that Black men and women would "become victims of personal assault, murder, or rape than lynching, and, as Richard Wright explained, they withstood all sorts of injuries and insults on a daily basis" (Wood, p.1). But lynching held a psychological force (Wood, p. 1). The notion that it could happen even once was terrifying, and providing statistical information that it happened much more than once could, arguably, amplify that terror and encourage political action. To use statistics is one thing, though, and *how* to do so is quite another.

Publishing statistics to supplement descriptions of these horrific acts allowed Wells and others to refute vague defenses of the practice as either minor or justified; displaying lynching as continually occurring for a range of dubious reasons helped support an argument that it was a systemic problem. Statistics also helped address a potential credibility gap for white audiences. In *A Red Record*, Wells (1895) writes that she drew from "compilations made by white men" drawn from "reports sent over the civilized world by white men in the South," reasoning that this evidence will force condemnation: "out of their own mouths shall the murderers be condemned" (82). As a Black woman, Wells was open to attacks on her credibility (Royster, 2000, 65), so her reasoning was sound to use the *Tribune* and the "own mouths" of white men to assist in building her credibility while simultaneously showcasing her rhetorical talents on the whole.

Jim Crow was a quantified age of racial discourse, and that continued through the twentieth century and into the twenty-first³⁰. Since the middle of the nineteenth century, quantification had been seen as the most “reliable and objective form of fact”, and since “knowledge was composed of facts,” then counting was to be paid the most reverence for reflecting reality (Cohen, 1982, p. 205). Statistics were in the mainstream as rhetorical tools and discourses around race were no exception. This continues into today in many discourses of race.

4.2 Method

I gathered 21 articles from periodicals and passages from pamphlets from the time period of May 1892 (the first instance of the statistic) to as late as December 1893 (I wanted to do a two-year period of collection, but I found nothing past this date). To locate these texts, I used variants of the keywords “lynching,” “negro,” “tribune,” “wells,” and “ida” in various combinations across several databases (*Chronicling America*; *ProQuest American Periodicals*; *Gale’s 19th Century Newspapers*; *ProQuest Historical Newspapers* for the *Washington Post*, *Pittsburgh Post-Gazette*, *New York Times*, and the *Los Angeles Times*; *Accessible Archives African American Newspapers*; *19th Century British Pamphlets*; *LSE Selected Pamphlets*; *Early American Newspapers*; and *The*

³⁰ Open up Michelle Alexander’s *The New Jim Crow*, turn on Ava DuVernay’s documentary *13th*, scroll through the latest news or wander through a Reddit forum or two and you will encounter several quantitative expressions of racial politics. Prior to Jim Crow, too, the abolitionists were fond of making quantitative arguments about slavery (Goddu, 2009) and many racist arguments were made about crime (e.g., see *First Annual Report of the Board of Managers of the Prison Discipline Society, Boston, June 2, 1826, Fourth Edition 1827*).

African American Experience in Ohio). Of these 21 articles and passages, there were 5 articles that were reprints, leaving 16 texts for me to code for appraisal.

While these 16 texts were rich resources for rhetorical analysis, I do not claim here that they are totalizing. Digital archives of nineteenth century newspaper articles and pamphlets are incomplete—the newspapers I was able to locate are only a fraction of the U.S. newspapers in circulation between 1892 and 1893. Further, these archives afforded different capabilities and have varied degrees of functionality. For instance, I could not search *The African American Experience in Ohio*, so I had to rely on my error-prone human abilities to click on individual issues of newspapers in this collection, one by one. Furthermore, there is no guarantee that the OCR software used to make the digital texts readable is reliable enough to always locate relevant texts according to my keywords. Finally, some archives had more refined search features, like *Chronicling America*, which allowed me to use multiple keywords and put them in relation by proximity (e.g., within 5 words).

As discussed in chapter 1, I looked for moments in the text that were proximal to the statistic (i.e., the “results” of the calculation) as well as other elements that made a comment on what the statistic measured, how it was measured, and who did the measuring. In the following analyses, I write about notable patterns and instances of rhetoric as statistical frames were written and re-written in new contexts. First, I analyze the original statistical frame from *The Chicago Tribune*.

4.3 May 20, 1892 *Tribune* Article's Use of 1883-1891 Lynching Statistic

The figure for the number of African Americans lynched from 1883-1891³¹ and the charges for which they were lynched is likely to have first appeared in a May 20th article in the *Chicago Tribune* that is refuting an opinion piece from the *New Orleans Times-Democrat* about lynching³². These two papers were natural sparring partners on the subject. The *New Orleans Times-Democrat* had a record of publishing pro-Jim Crow sentiments and was a natural critic of anti-lynching efforts (see Sommers, 1974)³³. Conversely, the *Chicago Tribune* was a newspaper at the forefront of anti-lynching advocacy, as it published annual statistics of lynching victims.

³¹ The aggregate number 728 provided by the *Tribune* and subsequently cited by others is more than the 678 that is added up from the table used in the original *Tribune* article and printed elsewhere as well as the 698 added up from the offenses alleged (though, it is possible some had more than one offense alleged). It is not clear if there is a typo in the table or a miscalculation in the aggregate figure of 728.

³² I can find no record of this statistic published in the *Tribune* before May 20, 1892 using the digital archives I had at my disposal. Ida B. Wells' citation of the *Tribune* as the source for this statistic in her own writing corresponds more with a June 1892 article in *The Independent*—(e.g., in list of offenses charged for lynching victims, shared language includes: “making threats” instead of “making trouble” and “were charged with” instead of “lynched for.” Further, there is no record in the *Tribune* of any citation of this statistic in 1891 or 1892.

³³ I did not have access to *The New Orleans Times-Democrat* to confirm, but in Dale Sommers' (1974) analysis of urban race relations in New Orleans from 1865-1900, the *Times-Democrat* is cited several times with articles condemning miscegenation, condemning boxing matches between Black and white men, and more general opposition to equality between white and Black people (e.g., “equality...gives negroes false ideas and dangerous beliefs,” 42).

The *Tribune* article on page 4 begins by re-printing much of the *Times-Democrat's* article, and then takes three points of contention to answer with “a few figures that suggest cold facts,” despite also conceding that “no amount of argument probably would convince the prejudiced *Times-Democrat*” about the subject of lynching. The *Times-Democrat* accuses Republican newspapers of exaggerating both the extent and the injustice of lynchings due to the upcoming elections in order to score political points to obtain more votes. After a lengthy excerpt, the *Tribune* article refutes three points in the excerpt: that only a “few” African Americans are lynched, that many northern states subscribe to lynch law in a comparable way to some southern states, and that African Americans are almost exclusively lynched due to charges of sexual assault. The 1883-1891 figure is used for this last point about sexual assault.

The author reprints the *Times-Democrat's* reasoning by writing that “In the South with rare exceptions the negroes are lynched only for a single crime,” and then responds with a question: “Are the exceptions rare?” This move is an expository question, where the question is asked to entertain a position rather than contract dialogic positions (Martin and White, 2005, 110). In other words, it positions the reader to see the *Times-Democrat's* claim as one of a number of claims and this move helps to transition to a quantitative analysis with multiple pieces of evidence, something that will make the *Times-Democrat's* claim look deficient by comparison. It helps to set up the exploration of the claim while simultaneously positioning the author as one who is open to many views. It is a move that helps build the rhetor's credibility.

The question is first followed by this: “Of 728 negroes lynched during the last eight years 269 were lynched for rape, or because they were charged with that offense, or in some cases were only suspected.” The comparison of the 728 and 269 figures help to invoke a judgment of veracity through an amplification by comparison, because the figures placed side by side refute the earlier

claim by the *Times-Democrat*, suggesting that they may not be telling the truth, or, at the least, are incapable of doing so (in other words, arguably, this could be an invoked judgment of capacity rather than veracity, but the overall tone of the piece suggests more of a moral argument than an argument about competency). The implication here and in what follows is that the charges claimed for lynching may be embellished or spurious.

The final two clauses help to amplify this attitude by expanding dialogic possibilities: people were lynched not only because they committed rape, but because they were “charged” for rape (maybe they were innocent?), and also only “suspected” (since the evidence was even weaker, maybe the suspicion was spurious or intentionally fabricated, etc.). This move to entertain simultaneously graduates by a hypothetical quantification of number—if some were innocent and some were even spuriously charged, far *fewer* people than 269 were lynched because of an act of sexual assault. This graduation helps the earlier number comparison to further strengthen the flagged judgment of veracity. These clauses also function to graduate by intensification to flag a judgment of propriety. Going from the preposition “for” to the verb “charged” and then the verb “suspected” which is then downscaled further by “only,” further signals that the people involved in lynching are not just immoral because of the act of extrajudicially murdering people but also because they do so with little evidence, likely murdering many innocent people.

The next sentence further intensifies the attitudes of judgment invoked by the disparity between the claim of the *Times-Democrat* and the difference in the overall lynching figure and charges assigned: “In the same period 252 were lynched for murder, 44 for robbery, 37 for incendiarism, 32 for unknown reasons, 27 on account of race prejudice, 13 for quarrels with white men, 10 for making trouble, 7 for rioting, 5 for miscegenation, and 4 for burglary.” Each item in the series offers a moment for a reader to, again, consider charges other than rape, again flagging

the attitudes established so far and further amplifying them. In this series, each item serves to show another instance of a negation of the charge of rape, amplifying by *copia*. Each item has the reader linger again and again with a charge other than rape, amplifying the effect of the contrasting figures of 728 and 269 that invoked a judgment of veracity earlier.

The author then uses a sentence to take a pause to transition to another way to break down the overall 728 figure for lynching victims: “The Southern negro haters never have been at a loss to find reasons for lynching negroes.” For the first time, really, there’s an effort to inscribe an attitude directly rather than only invoking one, priming a sympathetic reader to more fully entrench their position of seeing a villain—“Southern negro haters”—as the cause of these statistics. Other than signaling the affective attitude of antipathy by use of “haters,” this sentence does the work of engaging the reader by contracting possible views through a denial, suggesting that these offenders, motivated by prejudice, are actively seeking out reasons to lynch. Coming from the expository question that at least feigned a sense of openness, the heteroglossic contraction enacted by this denial helps to heighten the invoked attitudes built by the graduation by force described above. This progression is a way to try to remove the grounds of reasonable doubt for the audience.

This transition sentence works as a preface to the following statistic: “For instance, they have lynched in these eight years three for circulating scandals, three for defending themselves when attacked by whites, two for cutting levees, two for turning State’s evidence against whites, two for gambling, one for drinking, one for trying to poison a well, one for colonizing negroes, one for swindling, one for poisoning horses, and one for voodooism.” By *copia*, the collective list and corresponding numbers (i.e., any number greater than zero) helps to invoke judgments of propriety related to their presumed ridiculousness as well as the significance of these “crimes” running disproportionate to the punishment they elicited. Finally, this list again supports the notion

that there are charges other than rape for lynching, amplifying by *copia* to flag an invoked judgment of veracity.

The author then calls back to the original text and restates conclusions from the figures announced so far by performing one last calculation: “Instead of lynching negroes with rare exceptions ‘for one crime,’ that one crime only constitutes about one-third of the total number.” The borrowed language calling back to the beginning of the passage creates parallelism between: a position that speaks without evidence and a position of the author that has used several pieces evidence before landing on the last calculation (one that could have been approximated with figures already presented so far). Moreover, the use of “only” here helps to establish that the author is overtly countering this position and also downscaling the result of “one-third,” pushing the reader to see this result as much less than the quoted “rare exception” would imply. What is written here is information already present throughout the passage, but by presenting it more succinctly it amplifies what comes before it.

The final sentence makes an ethical appeal related to the motive for providing this information: “These statistics are referred to the *Times-Democrat*, not as political matter, but as significant illustration of the conditions of law, order, and social economy in that section.” A motive is presented—“political manner”—only to be countered by some loaded terms that invoke an attitude of appreciation relating to social valuation, amplifying the severity of disorder and violence by stacking a rhetorical triplet of concerns to provide a “significant illustration” (which inscribes an appreciation for reaction). Couched in sectionalism, a sympathetic reader is set up to appreciate the significance of what these figures reveal and the disorder of the south as something beyond politics, as something that must be addressed.

This passage is marked by several instances of amplification, unpacking the number 728 at four points with further quantification: 1) the frequency of rape charges, 2) frequencies for charges of other crimes, 3) the frequency of reasons for lynching that appear spurious, and 4) a proportion of lynchings purported to be for sexual assault. At each instance, and within some instances, invoked judgments of propriety and of veracity are amplified at each return to similar realizations that rape charges are in the minority for lynchings and/or that lynchings occur for odd reasons. In the middle two cases, within the series of frequencies, and the movement through the series amplifies these attitudes of judgment.

Resources of engagement are also crucial throughout the passage. Expanding dialogically through attributing by acknowledgement of the *Times-Democrat's* language is not only important for the content of the piece (i.e., the piece is “about” a response to the *Times-Democrat's* claims) but also offers strategic rhetorical importance to introduce several items in ways that contrasts (implicitly by syntax and explicitly with counter moves like “but” or “only”) with the claims by the author, claims backed up by more (and repeated) evidence. These statistics, using graduation (i.e., amplification) resources and engagement resources that simultaneously expand and contract possible viewpoints work to function as a thorough procedure of unfolding evidence in response to a claim perceived as spurious, immoral, and false.

What is absent in this passage, however, is attention on the victims. Much of the attention is directed toward the record of the acts committed and an argument focused on the veracity of the *Times-Democrat* and the actions/character of southern law. In particular, the attention on what victims were charged with and the conclusion's diagnosis of the “conditions of law, order, and social economy” in the south conceal the horror of the act itself as the word “lynching” comes to hide much of that horror at the behest of a “gotcha” styled argument, trying to “catch” the *Times-*

Democrat in a lie in much of the writing in this passage. Of the articles I found that resemble the original *Tribune*'s statistical framing, most of them retain this character, with some exceptions.

4.4 Articles Mirroring Rhetoric of May *Tribune* Statistical Frame

I found six iterations of this statistical frame across six articles that can be traced back directly to the *Tribune* article: one from the *Daily Inter Ocean* out of Chicago on May 28, 1892; one from *The Independent* out of New York on June 2, 1892; one from the *Morning Oregonian*³⁴ on June 8, 1892; and one version of an article appearing in the *Daily Inter Ocean* on June 5, 1892, the *Southwestern Christian Advocate* on June 8, 1892 out of New Orleans, and *The Elevator* on June 18, 1892 out of San Francisco (these versions were reprinting from an article in the *Cleveland Leader* that I could not locate). Each of these publications had roots in Republican politics and/or racially liberal or anti-racist politics.³⁵ Many of the same moves in the *Tribune* article were

³⁴ The *Morning Oregonian* uses language that aligns much less with the *Tribune*'s language as compared to the other articles mentioned in this paragraph.

³⁵ The *Cleveland Leader* was the white Republican newspaper opposition to the Democratic *Plain Dealer* ("About The Cleveland Leader. [Volume] (Cleveland [Ohio]) 1865-1865."); *The Daily Inter Ocean* was a staunchly Republican newspaper and a newspaper Wells was commissioned to write for (Giddings, 2008, 274-275); the *Southwestern Christian Advocate* was the "preeminent publication" for the Black members of the Methodist Episcopal Church and the "most forceful advocate for racial equality" within the denomination at the time (Bennett, 2011, 169); *The Independent* was a weekly magazine published in New York City that included writing on religion, news items, politics, and literary works—like the newspapers describe above, it was racially liberal and aligned with Republican politics (Mott, 1957, 376); based out of San Francisco, *The Elevator* was a central hub of information exchange of

mirrored in these uptakes, but I want to focus on a few notable differences: the use of engagement resources to build goodwill with a potentially skeptical audience and stronger evaluative language.

In the June 8 *Morning Oregonian* article on page 4 more explicitly positions the article with a political stance, that of a sympathetic orientation to assimilationist³⁶ thinking and reaching a sectionalist conclusion to compare the north and the south. There is a large reliance on engagement resources early on to simultaneously contract and expand viewpoints in ways that cast doubt on these viewpoints' merit and to position the author as a politically "balanced" observer before focusing energy on the south as immoral and chaotic.

Before providing the statistical information, the author takes great care to build their ethos with a reader who may be resistant. The first sentence of the frame states the claim of lynchings done because of "criminal assault upon white women" by the engagement resource of distancing, also graduated by quantification of "constantly": "It is being constantly advanced as a justification for the frequent lynchings..." The word "advanced" functions similarly to a word like "claim," something that expresses another viewpoint, but in a way that implies the author does not necessarily agree with it. The first clause of the next sentence opens with a denial ("There is no doubt...") coupled with inscribed and invoked negative attitudes of judgment-propriety,

African American communities in Pacific Rim (Han, 2016, 31); and the *Morning Oregonian* was a white Republican newspaper (Scott, 1890, 414).

³⁶ Ibram X. Kendi (2016) divides racial ideas among three categories: segregationist, assimilationist, and antiracist. Segregationist rhetoric is concerned mostly with finality and biological determinism (e.g., African Americans are permanently inferior because of genetics). Assimilationist rhetoric posits African Americans as inferior to other racial groups due to some redeemable, but presently difficult, circumstance (e.g., climate, "culture," general history of oppression). Antiracist rhetoric would posit no hierarchy of value, talent, etc. among racialized groups.

appreciation-valuation, appreciation-reaction-quality (“...that this is an offense against society that arouses the revengeful passions of a community more than any other...”) to position the author as emphatically disapproving of sexual assault and acknowledges the crime’s nature in affecting a community (and amplifying it as affecting a community “more than any other”). The next clause further amplifies this disapproving attitude connected to an approval of racial hierarchies as naturalized: “and especially is this true when the assault is committed by a member of an inferior race upon one of the superior.”

At this point, the author uses these engagement resources, graduation, and inscribed and invoked attitudes to lend credibility to a position that the connection between lynching and rape is understandable. A pivot toward questioning the veracity of this claim (arguably started with the move to distance with “advanced” earlier) begins in the next sentence: “and were it true that the lynching of negroes is confined to cases of this kind, while it would not be a complete justification for illegal violence, the conduct of the lynchers would be judged much more leniently; but such is not the case.” The use of “were it true” does the double-work of entertaining other possibilities and invoking a judgment of veracity levied against lynching apologists that make claims that lynching victims are violent rapists. The clause is interrupted by a concession that almost supports lynching (it uses a softened focus on the word “justification” to do this) that “while it would not be a complete justification for illegal violence” before providing the counter with the punchy clause “but such is not the case.”

This preface concedes that sexual assault is horrible, mobs that address this crime have understandable reactions, and racial hierarchies are natural—while simultaneously using graduation and engagement resources to distance their own outright approval of the behavior. The aim is for truth-value of statistics to help sway this sympathetic persona into an advocate against

lynching (though, ultimately a rather tame one, one that is more concerned with law and order and sectional rivalries). Similar moves in the more overtly statistical rhetoric are then used after this. Elsewhere, there is more intensified evaluative language used to frame the statistical information. Four of the six articles take on Oscar Penn Fitzgerald as their interlocutor. A bishop of the Methodist Episcopal Church, South³⁷, Bishop Fitzgerald (“Bishop Fitzgerald on Lynching,” 1892, 13) in his speech on lynching in 1892 emphasized, like many lynching apologists, the extent of the crimes committed by those who were lynched—the “unspeakable crime” (i.e., rape). He also rebuked northern critics of lynching as not showing enough sympathy for the victims of the alleged “unspeakable crime[s].” In the June 2 *Independent* article on page 13, the author uses resources of graduation and engagement to make stronger claims. Toward the middle of the June 2 *Independent* article, the writer cites the *Tribune* and builds ethical appeal by inscribing a judgment of tenacity (i.e., “taken pains to collate lynchings reported in the South for ten years”) before introducing a table of lynching statistics for African Americans from 1882-1891. Contrasted with Fitzgerald, with appraisal resources used to paint him as untruthful, the *Tribune* is depicted as scrupulous. The table helps to invoke judgments of propriety and graduates by quantification in two ways: amplification by Quintilian’s method of augmentation (i.e., heightening: numbers increase each year) and *copia* (i.e., the piling on of year after year).

The author then returns to Fitzgerald, and borrows language from the *Tribune*, but with stronger evaluative language (see Table 6).

³⁷ This was the Methodist denomination that split from the Methodist Episcopal Church over the issue of slavery.

Table 6. Comparison of The Independent and The Tribune.

<i>The Independent</i>	<i>The Chicago Tribune</i>
<p>“The offense which Bishop Fitzgerald makes the one cause and excuse for lynching was charged in only one-third of the cases*, and no one knows how many of these were mere suspicion, or were instances of conspiracy**.”</p> <p>*From Sentence A</p> <p>**From Sentence B</p>	<p>Sentence A: “Instead of lynching negroes with rare exceptions ‘for one crime,’ that one crime only constitutes about one-third of the total number.”</p>
	<p>Sentence B: “Of 728 negroes lynched during the last eight years 269 were lynched for rape, or because they were charged with that offense, or in some cases were only suspected.”</p>

Pieces of two sentences from the *Tribune* are found here. In the first clause about the proportion of those charged with rape there is language that is roughly as strong in *The Independent* as compared to Sentence A from the *Tribune* in the ways it evaluates the “one-third” figure. However, what is borrowed from Sentence B is much stronger. The trailing clauses here intensify further than the trailing clauses in Sentence B of the *Tribune*. The phrase “instances of conspiracy” is stronger than the highest point of amplification in Sentence B of “or in some cases were only suspected.” Conspiracy is a much more explicit charge than suspicion, and the range of intensification shifts from charged-to-suspected to suspicion-to-conspiracy.

There is also stronger language in terms of engagement. In the *Independent*, the author uses heteroglossic contracting denial of “This is not the fact” after a sentence about the claim of rape as the reason why lynchings happen. In the original *Tribune* article, there is an expansive entertain move doing similar work: “Are the exceptions rare?” (i.e., lynchings done for reasons other than

rape). The denial more forcefully shuts down opposition and directs readers, more quickly than with the original entertain move, to see the statistic as hard proof.

After the denial, the author continues to forcefully refute this claim. The next sentence uses the repetition of “fact,” but it is graduated by focus, sharpened with “real” to undercut and amplify the negative judgment of veracity of the claim about lynching nearly always being a result of a rape: “The real fact is that the South is yet in a state of partial barbarism.” Inscribed judgment in this sentence (i.e., “partial barbarism”) and in the next sentence (i.e., “It condones murder”) further links the south and lynching apologists to unjustifiable violence. The intensified lexis of “murder” is especially notable, as most texts in my corpus use “lynching.” As with the more intensified lexis of conspiracy, the more contractive engagement, and this more prevalent and intense inscribed judgment, this statistical frame uses much more forceful appraisal resources to surround the numerical information in the statistical frame as contrasted with the *Tribune* and with other articles that take up its language.

4.5 The Rhetoric of Ida B. Wells

Like *The Independent*, Wells’ language is more forceful regarding how she composes in and around the 8-year lynching statistic. However, Wells’ rhetoric leans on elements of the African American Verbal Tradition (AVT) and what critical race theorists call “counterstory” in ways that leverage emotion and embodiment in memorable and jarring style that makes sure to maintain the sense of horror of lynching. Before analyzing Wells’ texts, I want to briefly situate Wells as a rhetor.

Shirley Wilson Logan (1999, 71) argues that what makes Ida B. Wells such an effective rhetor is her use of description, of how she utilizes, as Perelman and Olbrechts-Tyteca term it, presence. By selecting and making salient certain elements and details, Wells skillfully arranged information to make a lasting impression. These descriptions served a variety of purposes in Wells' rhetoric; as Jacqueline Jones Royster (2000, 68) notes, they had "a high potential for turning, not just the head, heart, and soul, but also the stomach." Royster (1997, 27) argues that Wells' project was grounded in persistent calls for action by defining lynching on her terms, bluntly and, when necessarily, graphically grounding in her arguments in example after example across various kinds of evidence. Wells had a talent to both take on an argumentative style that mimicked authoritative or "objective" tone that also mixed with a rhetoric that relied on pathos in a forceful way, that "turned the stomach" as Royster terms it.

Logan (2007, 50) calls Wells' style a "rhetoric of objectivity," where its "very starkness produced a strong emotional appeal and...call to action." Wells' goal was to be understated in how she talked about lynching, but, counterintuitively, in such a way as to maintain the horror of lynching. In her autobiography, Wells (1970, 31) explained that her lack of nervousness before speaking was because she knew the story of lynching by heart and that there was no need to embellish because "it makes its own way." Wells was particularly invested in foregrounding her investigative prowess and to underscore the horrors she uncovered. Logan (2007, 61) writes of Wells' speech at Tremont Temple in 1893 that (especially for the white and English audiences that she targeted her engagements for as the 1890s wore on) Wells recognized a need to deemphasize ethos and find ways to "allow concrete presentation of 'facts' to invoke emotion and inspire action." Despite this proposed lack of "embellishment," by contrast to other writers, it is *what* she focuses on in its concreteness that stands out.

One crucial component to the “performance of objectivity” that Logan describes is the use of the extended example. Logan (2007, 58) draws from the *Rhetorica ad Herennium* for the concept of “ocular demonstration” and *enargeia* from Quintilian to explain that Wells extensively used vivid examples to help perform her role as the “informed observant” to present information to her audience. Such a move entails rich descriptions of events to help make the event come right to the audience, to not narrate but to more exhibit. It is far more bodily and experiential, taking the audience out of the experience of listening or reading but *being* involved in the event.

Similarly, Anita August (2014) comments on how Wells utilizes a rhetoric of objectivity but in an embodied way. August writes that while Wells mimics a style much like a legal brief, it also takes on what Geneva Smitherman (1986, 150) calls *testifyin*, which Smitherman notes is “to tell the truth through story” in such a way that depends on enacting a witnessing of shared experience held by African Americans. August (160) writes that Wells gives an account, compiles evidence, and makes her case in legalistic rhetoric but also interrupts that rhetoric to incorporate elements of *testifyin* to “expose the obstacles of the legal system” related to lynching.

In my analysis of Wells’ evolving composition of statistical frames, I see several elements of Logan’s and August’s account of Wells blending different discourses that heavily rely on extended examples and techniques of amplification to, in Royster’s terms, turn the stomach as well as the head, heart, and soul. Using Smitherman’s notion of modes of Black discourse, I also incorporate into my analysis how Wells used elements from the African American Verbal Tradition (AVT) in terms of tonal semantics, narrative sequencing, and signifyin(g) in ways that often provided the effect of “counterstory,” a concept from critical race theory (CRT).

Aja Y. Martinez (2014, 24) writes that counterstory is a method of research in CRT that helps “empower the marginalized through the formation of stories with which intervene in the

erasures accomplished in ‘majoritarian’ stories or ‘master narratives.’” Majoritarian stories are the ones implicitly alive in many of the statistical writing examined above. Where there are gaps, prejudice fills them. Many of the passages above have no voice for the victims of lynching, they are only figures acted upon without a name, without attributes, without any story. For many readers in the 1890s (and, for that matter, today), prejudices about Blackness can buttress interpretations of statistical language about African Americans. While counterstory is typically one’s own personal experience, Delgado (1989, 2438) mentions that there is no limit on the form of counterstory, as anything from a personal narrative to an allegory or parable can do the work of problematizing majoritarian narratives that typically go forth unchecked. By her use of extended example, in particular, Wells utilizes a sort of micro-counterstory along with her use of AVT to make her statistical rhetoric much more cutting, memorable, and as I argue, ethical.

Below I examine Wells’ use of appraisal resources in the 8-year lynching statistical frame across four texts: *Southern Horrors* (October, 1892), “Lynch Law in All its Phases” (Feb/May 1893), *The Reason Why...* (August 1893), and *U.S. Atrocities: Summary* (1892 or 1894). Wells stays remarkably consistent with how her use of statistics are intricately weaved with concise and detailed accounts of lynchings to make sure her audience connects real human lives to what that statistic represents.

4.5.1 Wells’ Statistical Frames: *Southern Horrors*

Use of strong evaluative language is used by Wells like it is used in the *Independent* and elsewhere, but small narratives built from her investigative reporting help to punctuate and make concrete the very real human suffering a statistic of lynching represents. *Southern Horrors* was a pamphlet reprinted from a collection of articles published in the *New York Age*, a prominent

African American newspaper, in June 1892 and then published in October 1892. In the third chapter that begins on disenfranchisement in the south and southern whites' appeals for northern sympathy in regard to "outrages," Wells (60) writes the following in a statistical passage to contextualize the violence surrounding disenfranchisement before landing on the number:

All the while, although the political cause has been removed, the butcheries of black men at Barnwell, S.C.; Carrolton, Miss.; Waycross, Ga. ; and Memphis, Tenn.; have gone on; also the flaying alive of a man in Kentucky, the burning of one in Arkansas, the hanging of a fifteen-year-old girl in Louisiana, a woman in Jackson, Tenn., and one in Hollendale, Miss., until the dark and bloody record of the South shows 728 Afro-Americans lynched during the past eight years.

Inscribed judgments of negative propriety reside in "butcheries" as well as in "flaying[s]," "burnings," and "hangings" of men, women, and children. However, the more violent and vivid language also invokes appreciations of reaction-quality; these are "ugly" acts, stirring us emotionally, "turning the stomach". This attitude has affective associations, in that it asks the reader to emote in response to something, and in this case, the violent imagery provided. Unlike the *Tribune* listing reasons and abstracted language about lynchings in ways that keep the reader focused on bad conduct of the perpetrators, Wells' ocular demonstration invites more attention on the victims themselves who lived in real, named locations.

In themselves, these individual accounts of lynchings pile up as small counterstories to amplify by copia before the last clause contracts viewpoints to endorse the "dark and bloody record" of the 728 Black lynching victims, graduating by the quantification of 728, allowing each quick description to populate in the minds of readers as vastly multiplied. Rather than simply a list, though, it is more complex. The graduation by copia is infused with a mode of Black discourse

that Geneva Smitherman calls “tonal semantics.” Smitherman (1986, 142) writes that one feature of tonal semantics in AVT entails the repetition of words and sounds to emphasize and convey meaning. The phrase “butcheries of black men at Barnwell” begins the details of each murder, using alliteration to help lead into the emotional weight by first providing some tonal weight to the passage. This phrase governs the first of two parallel lists, with the syntax of both lists using parallelism to create a rhythm throughout the passage that helps emphasize what is conveyed.

Wells (60) makes sure to highlight that these lynchings were for “all manner of accusations” and ranged from “rape of white women to the case of the boy Will Lewis who was hanged at Tullahoma, Tenn., last year for being drunk and ‘sassy’ to white folks.” Graduating by extent with “all manner of accusations” helps flag a judgment of negative propriety, which eventually is culminated with the more concrete details of Will Lewis after mentioning the more abstract “rape of white women.” This pairing graduates by intensification, from the more serious to the least serious, governed by “all manner of accusations.”

Modes of Black discourse apply here, as well, and can be contrasted with the *Tribune* article that attempts a similar rhetorical move, but in a way that is far more abstract. Wells does something different. First, she uses narrative sequencing to use concrete narrative to render more general observations about the world (Smitherman, 147) as well as signifying, which harnesses indirection to subtly make a point, usually humorous and light, but also can be heavier, as is the topic of lynching here (Smitherman, 120). By having Will Lewis present in this text as compared to the abstraction of “rape of white women,” a more forceful and concrete representation of the abstraction of the reasons for which Black men were lynched and the scare quotes around “sassy” helped to signify how ridiculous the reasoning was. As Smitherman (121) notes, signifying has the potential to be more “teachy” than “preachy,” than the more direct path that the *Tribune* takes.

Here, Wells provides the specific reasoning, both diminishing (in the sense of severity of offense) and amplifying (in the sense of magnitude of injustice corresponding to the offense).

There's also an element of iconicity here, as the parallelism inherent in the 'abstract vs. concrete' ends of this range demonstrate the 'myth vs. reality' structure of lynching accusations. That is, rape of white women was often a spurious charge and bigotry was a more likely reason for lynching. Using an anecdote in the way she does, Wells provides a "counterstory" to the notion of rape as the reason why Black men are lynched.

More amplification happens after this. After giving the aggregate number of 728 and giving a range of reasons for lynching, to end with the Will Lewis example, Wells (60-61) amplifies by extent twice (once to note that the *Tribune* gave the 728 figure this past year and the second time to point out that at least 150 lynchings occurred in the past nine months) and also provides an appeal to ethos by citing the *Tribune's* annual lynching figures. Wells then turns her attention to the "unspeakable crime" so often cited by lynching apologists.

Wells then positions this number against the context of *why* lynching happens (i.e., her claim against lynching apologists' claim). Wells (61) writes: "To palliate this record (which grows worse as the Afro-American becomes intelligent) and excuse some of the most heinous crimes that ever stained the history of a country, the South is shielding itself behind the plausible screen of defending the honor of its women." Wells inscribes ("most heinous") and invokes ("that ever stained") negative reactions of quality (i.e., lexis that invites affective responses about things, in this case, crimes) and graduates them by intensification ("most heinous") and quantification by extent ("that ever stained"). Wells also subtly positions the south as dishonest by using the metaphor "shielding" to provoke a judgment of veracity (i.e., with co-text of heinous crimes, etc., shielding is set up to seem as a disingenuous action) with the inscribed appreciation of composition

with the word “plausible” (i.e., on the face of it, “defending honor” sounds, well, honorable justification). Wells then uses the proportion utilized in both the *Tribune* and the June 1892 *Independent* article to refute this claim: “This, too, in the face of the fact that only one-third of the 728 victims to mobs have been charged with such an offence, to say nothing of those of that one-third who were innocent of the charge.” Repetition of “one-third” helps to downscale the number when paired with the heteroglossic expanding move to entertain other possibilities by implying many of those victims were innocent.

Wells, again, uses detailed descriptions of lynching victims that function as counterstory, this time focused on false rape accusations. People are named, locations are named, tactics are named to again use narrative sequencing to concretize meaning. Wells takes great care to maintain the concrete humanity of lynching that risks obfuscation by abstract quantification. Here is one example that Wells (61) recounts:

A white correspondent of the Baltimore Sun declares that the Afro-American who was lynched at Chestertown, Maryland, in May, for assault on a white girl was innocent; that the deed was done by a white man, who had since disappeared. The girl herself maintained that her assailant was a white man. When that poor Afro-American was murdered, the whites excused their refusal of trial on the ground that they wished to spare the white girl the mortification of having to testify in court.

Wells invokes a judgment of veracity to build an appeal to ethos through the mention of the correspondent as white, and then expands viewpoints by the citation itself, acknowledging it through “declares.” The claim by the correspondent is that the lynching victim was innocent and that the person who was guilty was a white man, intensifying this negative judgment of propriety by the circumstantial note that he had since disappeared. Contrasting the “poor Afro-American”

who was murdered with the injustice of a refusal of trial because of the disproportionate consequences (i.e., murder vs. potential psychological distress) signifies to intensify the tragedy. That endpoint is jarring, in how it contrasts the circumstances prior to the language of sympathy for the supposed victim, a victim that said that her assailant was white and not Black.

4.5.2 Wells' Statistical Frames: Tremont Temple Speech ("Lynch Law in All its Phases")

Similar rhetoric appears in a speech Wells gave in Boston, though Wells arguably alters it a bit given the context. Wells' speech at Tremont Temple in Boston, Massachusetts in February 1893, published in *Our Day* in May 1893 had a clear influence from the June 1892 article in the *Independent*. Like the statistical frame in *Southern Horrors*, extended examples are used in tandem with statistical information, but they are much more graphic. Two incidents of lynchings are described of men who were "literally roasted to death" in the past ten years. Descriptive language like "chipped the flesh off his body" and "[r]ed hot irons were run down his throat and cooked his tongue" afforded and provoked negative judgments of propriety and negative appreciations of reaction-quality, all the while amplifying by copia through this narrative sequencing, as detail after detail builds. Logan (2007, 59) argues that, unlike the middle- and working-class Black women in Lyric Hall that gathered for Wells' famous October 5, 1892 speech, the audience of mostly northern white women at Tremont Temple knew far less about the horrors of lynching, and thus, in this speech the descriptions of lynching were far more detailed. But, like Wells' other speeches and writing, space was dedicated to pointing out logical inconsistencies and suspicious activity.

Like in *Southern Horrors*, Wells utilizes counterstory and signifying. Wells writes the following about lynching victim Henry Smith toward the end of the passage on the victims who were burned for "outraging and murdering a four-year-old white child":

If true, it was the deed of a madman, and should have been clearly proven so. The fact that no time for verification of the newspaper reports was given, is suspicious, especially when I remember that a negro was lynched in Indianola, Sharkey Co., Miss., last summer. The dispatches said it was because he had assaulted the sheriff's eight-year-old daughter. The girl was more than eighteen years old and was found by her father in this man's room, who was a servant on the place.

Wells expands viewpoints through the use of "if true" to entertain that there might be another version of the story. Wells uses another case to buttress her suspicion about why no time for verification was given. Similar to the anecdote Wells provides in *Southern Horrors* about the white girl who identified her assailant as white and not Black, Wells signifies with the blunt acknowledgement about what the dispatches said, countered by the fact that the girl was ten years older, an adult, and was with a servant of the house. This indirect rhetoric cuts in ways that leave a lasting impression that other anti-lynching statistical frames don't.

Wells then inscribes attitudes of judgment and appreciation that speak to the horror of lynching and amplifies this with a listing of each year and the number of African Americans lynched for that year. Wells then follows with a sentence similar to the *Independent* from June 1892, except that she uses the word "murdered"³⁸ instead of "lynched" and replaces "unknown

³⁸ In the reprinting of the *Cleveland Leader* article (or, an article that preceded the *Leader's* printing) in the African American newspaper *Southwestern Christian Advocate*, there is a preface to the reprint that reads as follows that also terms lynching as murder: "We have always regarded Bishop Fitzgerald, of the M. E. Church South, as one of the best men in his church, and one of the most friendly disposed toward the colored people of the South, but his recent defense of the indiscriminate and heartless lynching of our people in this section, puts him in the rank of the sympathizers with their murderers. The following from the *Cleveland Leader* exhibits the enormity of his sin against

offenses” with “reasons unstated (it was not necessary to have a reason).” These revisions make stronger evaluative claims than what is found in the *Independent*. As Ersula Ore (2019) notes, the word “murder” is a word not often used for extra-judicial killings of people of color, but it is the most accurate word. “Murder” intensifies the charge because it loses the possible implication that lynching might be justified (a prevailing idea in the day). The “reasons unstated (it was not necessary to have a reason)” shifts focus from “offense” (i.e., something was done) to “reason” (i.e., something may or may not have been done, we can’t say since there was no reason provided). Plus, the parenthetical amplifies by copia, by having the reader linger that much longer on the lack of reason with the added meaning potential behind reasons being unnecessary. The word “murder” is more morally loaded as was “reasons unstated,” both flagging negative judgments of propriety through intensification.

Wells uses counterstory again, but in this context, Wells lingers a bit longer compared to *Southern Horrors*. Whereas in *Southern Horrors* the lynching of a woman is described as “a woman in Jackson, Tenn.” in the list of accounts of lynchings that builds toward the number 728 at the end of the sentence, that instance is recounted in much more detail, fitting in with Logan’s thesis about Wells’ shifting her rhetorical approach for her audience in Boston whom may have been unfamiliar with the gruesome realities of lynching for African Americans. Here we get a full account of the woman who was accused of poisoning the white woman that she cooked for, with descriptive language of the female lynching victim being “dragged out” of jail with “every stich

the race.” Additionally, in the article from the New York magazine *The Independent*, “murder” is also used, but in a more distanced sense where it comments abstractly on the South rather than as directly about lynching as it does here (i.e., “[the South] condones murder”).

of clothing torn from her body” and she was hanged “in the public court house square in sight of everybody.” Like with the eight year old who was really 18, Wells adds circumstantial information that amplifies the violence described: “That white woman’s husband has since died, in the insane asylum, a raving maniac, and his ravings have led to the conclusion that he and not the cook , was the poisoner of his wife.” This storytelling and its details, again, humanizes the more abstract figures, providing a counterstory to majoritarian impressions of what the typical white person and what the typical Black person might represent in a criminal context.

4.5.3 Wells’ Statistical Frames: *The Reason Why...*

In *The Reason Why...* , Wells does use much of the same tactics she used in previous writing, but there are some notable differences, especially in terms of organization and in her more subtle signifying practices using short, simple sentences. More broadly, Wells starts shifting attention to different aspects of the same data. Namely, when no reason was given for lynchings. In 1893, the World’s Fair was held in Chicago to celebrate the 400th anniversary Columbus traveling to the Americas. Two planning boards were formed by the United States: one of men and one of women. Neither had any representation by African Americans, and this prompted a backlash from several Black activists, including Wells, Frederick Douglass, Irvine Garland Penn, and Ferdinand Barnett. In August 1893, they published a pamphlet, with a preface in three different languages, making the case as to why there was so little representation and discussion of African Americans at this fair, with each chapter focusing on different elements of U.S. society that coordinated to subjugate African Americans. Wells wrote a chapter on lynching, in which she again utilized the 8-year lynching statistic in a slightly revised frame.

Organizationally, Wells does several different things compared to the previous two statistical frames. First, the extended examples are far more muted and delayed until after the statistics, whereas in previous iterations they were weaved more throughout. Instead, Wells uses a numbered list to comment on the initial statistics, much more like in the legalistic style that August writes about where she signifies by indirectly pointing out logical inconsistencies with claims about lynching and the statistics she analyzes, much of which contains use of appraisal resources utilized in the previous statistical frames. Second, for the list of charges, Wells turns the series of charges into a table rather than a sentence and she places “no reasons given” in the last cell of the table, whereas previously it was in the middle of the series. Further, what was once a parenthetical aside about there being no necessity for providing a reason, now has its own paragraph of exploration (27-28):

That for nearly fifty of these lynchings no reason is given. There is no demand for reasons, or need of concealment for what no one is held responsible. The simple word of any white person against a Negro is sufficient to get a crowd of white men to lynch a Negro. Investigation as to the guilt or innocence of the accused is never made. Under these conditions, white men have only to blacken their faces, commit crimes against the peace of the community, accuse some Negro, nor rest till he is killed by a mob. Will Lewis, an 18 year old Negro youth was lynched at Tullahoma, Tennessee, August, 1891, for being “drunk and sassy to white folks.”

A series of signifying blunt statements about the injustice of these lynchings and how seemingly toothless the justice system is in the face of lynchings are supplied along with the stark hypothetical scenario in the penultimate sentence to show how powerful the mob is. The last sentence contains the quick example of Will Lewis that was used in past statistical frames by Wells. In the bulleted

list, this was the last item, as was the “no reason” for a charge in the table, possibly showing that Wells’ interest was shifting emphasis from rape being a mythic reason for lynching as the primary point of emphasis toward how unchecked the mobs were to lynch for any reason, even no reason. Following the bulleted list of interpretations of the 8-year lynching statistic, Wells uses the same concrete stories of specific lynching accounts that she has used prior, with little variation worth commenting on (e.g., the Black woman accused of poisoning a white woman in 1886 in Jackson, TN). As in the other cases, these stories help to humanize, as representative cases, what happens to lynching victims and put into question the institution of lynching as just or excusable. Wells utilizes language to “turn the stomach” of her readers much in the way that lynching photographs were used and she uses aspects of AVT via narrative sequencing and signifying to make statistics more concrete and their potential interpretations more cutting and memorable.

Wells (28-29) then focuses attention on 1892—the worst recorded year of lynching up that point—to turn up a sense of urgency, a move that graduates by quantification through number and through time (i.e., the proximity—how near in time something is and thus how important/worrisome/urgent it might be). Wells shows the number by state and then writes, “Of this number 160 were of Negro descent. Four of them were lynched in New York, Ohio and Kansas; the remainder were murdered in the south. Five of this number were females. The charges for which they were lynched covered a wide range.” One reading of this passage could be of the “objective” listing of facts. However, I want to point to two moments that show appraisal resources at work.

First, “murdered,” as discussed earlier, is a loaded term in this context. This is infused lexis that intensifies the process of lynching—it is a word that would not be used in place of lynching very often. It helps to invoke both a negative judgment of propriety and a negative appreciation-

reaction of quality. Second, including the sentence on the number of women and girls murdered is complex. On the surface, it is simple graduation by number of the “five” that flags the statement to invoke a negative judgment of propriety at the least. However, through the lens of signifying, the wider context of this sentence shows an invocation that produces anger and produces an instance of graduation by quantification. It is dripping with irony; this sentence takes place right before a listing of the “wide range” of reasons people were lynched, and in the 1890s, in the wider public consciousness as well as among anti-lynching activists, it was known that the promoted reason for lynchings was to *save* women from violence. This layer, along with the use of lexis like murder, provides another instance in which the reader is stirred with emotion in a way that is like an invocation of appreciation-reaction by quality.

The last item included in the list for reasons for lynchings by Wells (29) is “No offense stated, boy and girl.” As discussed earlier, Wells seemed to have grown more interested in focusing her rhetoric on lynching with no reason stated. Here, the statistics end with “no reason,” as with previous list for the 8-year figures, but who was lynched is also stated. The boy and girl who were lynched had a story that Wells (29) uncovered in her investigative reporting: “In the case of the boy and the girl above referred to, their father, named Hastings, was accused of the murder of a white man; his fourteen year old daughter and sixteen year old son were hanged and their bodies filled with bullets, then the father was also lynched.” The “ocular demonstration” via descriptive and alliterative lexis of “bodies filled with bullets” as well as the narrative order of the children being murdered prior to the father holds heavy emotional weight, separately invoking negative attitudes of propriety and reaction. After that description of a lynching of children for no reason, in front of their doomed father, Wells (29) writes the simple sentence “This was November, 1892, at Jonesville, Louisiana.”

Logan (2007) argues that Wells used a “rhetoric of objectivity,” at times, to create a disconnect between the heavy weight of the event and the stark and spare language to mark it as just another lynching of several. The patterning here by narrative sequencing is a marker of normalcy—here it is, November 1892 in Jonesville, another lynching. A whole family slaughtered. Wells follows with several other accounts of lynchings, including the one in Memphis that originally motivated her activism, using more extended details to help intensify the attitudes invoked throughout the passages. As in other instances of Wells’ rhetoric around the 8-year lynching statistic and beyond, these stories help to provide a counterstory, in CRT terms, to the majoritarian narratives surrounding lynching.

4.5.4 Wells’ Statistical Frames: *U.S. Atrocities*

Counterstory is also used in Wells’ “summary” section of *U.S. Atrocities*, which was mostly a reprint of *Southern Horrors* but for a British audience³⁹. However, she does so using a hypothetical story rather than one documented from her reporting. This summary at the end of *U.S. Atrocities* on page 19 includes a table for lynchings from 1882 through 1891 (so, beyond the 8-year period) but includes the same numbers for the reasons African Americans were lynched as was commonly paired with the 8-year statistic. Wells offers a preface before the table that shows the ten years of African American lynching victims. She explores how alleged Black offenders are

³⁹ It is not clear when Wells published *U.S. Atrocities*. According to Zackodnik (2005, footnote 5), it was either published in 1892 or 1894. Included at the end of the pamphlet is a “summary” that was not included in *Southern Horrors*.

nearly always caught, thus rendering the need for mobs to murder Black men and women as irrational.

Wells (19) then draws on a number of engagement resources to expand and then contract viewpoints about the operating logic of lynch law in the following passage:

But if this state of affairs did prevail, as the Rev. Thos. Dixon falsely declares it does, clearly the laws or those who enforce them are at fault. Hence, those who make such inoperative laws, or the officials who fail to do their duty, and not the criminals, should be lynched. But the reverse is true. The gaols, penitentiaries, and convict farms are filled with race criminals who are too poor and weak to avert such a fate.

Wells flips the majoritarian narrative around lynching as something to be found at fault with people accused of crimes and turns it on law enforcement. She does this first by entertaining the viewpoint that too many criminals are escaping justice by use of “if,” and nests within that move an acknowledgement of Thomas Dixon declaring this (and, inscribing a negative judgment of veracity through “falsely”). She then denies criminals as those deserving of lynching but those who write the laws and enforce them. This procession of engagement resources collect to signify, as Wells knows that the same people who write the laws and enforce them are the same people complaining about there being too much crime and how lynching is an understandable reaction to this. She then counters (“But, the reverse...”) this procession of hypotheticals and then offers the claim that “race criminals” fill up the “jails, penitentiaries, and convict farms” because they are too “poor and weak to avert such a fate.” Inscribing negative judgments of capacity and intensifying it, Wells wants to center the attention on the imprisoned as people to be sympathized with, which is another effort to counter a majoritarian narrative.

Despite the large amount of African Americans already imprisoned for various crimes, Wells counters this statement to show the table of the amount of Black lynching victims. Unlike previous uses of counterstory, this version is more hypothetical rather than something grounded in a specific case. Wells' rhetoric—her strategic use of AVT and of counterstory—was flexible in aiming to contextualize her statistics to create jarring breaks from what might be expected from a reader used to statistics written in a more abstract and dissociated style, leveraging emotion and embodiment by her rhetorical choices that foregrounded the victims (their names, what happened to them) and various hypocrisies.

4.5.5 Articles Taking Up Wells' Writing and Speeches

In this section, I want to highlight citations of Wells' use of this statistic in new statistical frames. I found five articles that cited Wells' use of this statistic: once from her Tremont Temple speech in February 1893 and *Our Day* printing of that speech in May 1893, and four times from a non-extant speech she gave at the National Colored Convention in Cincinnati, Ohio in November 1893⁴⁰. In all five cases, much of Wells' rhetorical approach was lost on communicating violence

⁴⁰ The *Southwestern Christian Advocate*, the *Daily Inter Ocean*, and the *Independent* were three of the publications here—all mentioned before as Republican periodicals and/or racially liberal to anti-racist standpoints. The *Indianapolis Journal* was a Republican newspaper (“About The Indianapolis Journal. [Volume] (Indianapolis [Ind.]) 1867-1904”) as was the *Wilmington Daily Republican* (“About The Wilmington daily Republican. (Wilmington, Del.) 1890-1902”).

at scale⁴¹ (e.g., strategic use of lexis to inscribe attitudes that refute majoritarian narratives of lynching, use of “ocular demonstration” by way of graphic descriptions of lynchings to “turn the stomach,” the use of features of AVT to humanize lynching victims and amplify effects of her rhetoric). In two of the five cases, there is nothing from Wells’ rhetoric that really remains beyond the specific citations of the figure—and what is there undermines Wells and lynching as an injustice. The three other cases had a range of possible influence from Wells.

A quick snippet of text in the November 30, 1893 edition of the *Indianapolis Journal* on page 4 does not reference Wells but does reference the conference and the quoted 8-year lynching statistic that is cited as Wells’ elsewhere. Despite the article taking a positive tone, it does undermine the truth to be derived from these figures: “The Journal has no ways of verifying these figures, but if they are even approximately correct they constitute a terrible arraignment of American civilization.” This concede + counter move sets up to help emphasize the inscribed negative appreciation in “terrible arraignment,” but it is interesting that the bit about verification needs to be noted at all. Logan (2007, 61) argues that Wells took great care to de-emphasize ethos, especially for white audiences, because of her status as an African American woman. Here is a good possibility that even when trying to take on a “rhetoric of objectivity,” as Logan puts it, she is undermined still.

In the December 6, 1893 edition of *The Wilmington Daily Republican* out of Delaware, the author of “Southern Lynchings” on page 2 is far more dismissive of Wells. The article begins with a citation of Wells (“According to statistics gathered by Miss Ida B. Wells there have been 728

⁴¹ Though the Cincinnati speech is non-extant, my reading of Wells’ use of this statistic on four separate occasions makes it probable, in my view, that she took at least some of the same rhetorical approaches in that speech.

negroes lynched by white mobs in ten years from 1882 to 1892”). The next sentence clearly marks the stance of the author: “It is not pretended that these negroes except in 82 cases, were put to death without provocation.” The stark denial to contract viewpoints behind “It is not pretended” and the choice of “pretended”—connoting childishness, perhaps a subtle shot at Wells’ ethos—invokes a negative judgment of capacity. Further, the author takes this to mean that lynch law is fair, invoking a positive judgment of propriety. Further, the author condemns lynching in the abstract (e.g., “While this wholesale butchery must be condemned) to concede before counting with “it would be well if the colored people should endeavor to live purer and better lives” to avoid such “brutality” visited upon them and that they should “learn to restraint their natural propensities.”

The other three instances are complimentary of Wells at the least or take on some of her rhetorical style at the best when constructing their statistical frames for the 8-year lynching statistic. In the November 29, 1893 edition of the *Daily Inter Ocean* on page 6 in “To Investigate Lynchings,” there are some elements of AVT are present that are similar to Wells’ approach:

From these figures it does not appear that rape is the only crime for which the negro is punished by Judge Lynch in the South. Here were 459 negroes lynched for other reasons and only 260, or about one-third of the number, charged with this crime. The Southern papers and the Southern men who have tried to excuse the white males, by the general charge with this crime. The Southern papers and the Southern men who have tried to excuse the white males, by the general charge that all negroes lynched have been guilty of one of the most fiendish crimes on record, can no longer deal in generalities. The intelligent men of the negro race have begun to investigate, and if they set about it in the right spirit they

can compel the Southern States to enforce the law against lynchers or stand convicted of winking at murder simply because of race prejudice.

Amplifying by copia to graduate by quantification, information is built and built. First, it does not appear that rape is the only reason, repeating what is plainly seen in the listing. Then, the numbers spelled out again (i.e., 459, 260, one-third) to further amplify. The repetition of the listing into 459 and “does not appear” into 260/one-third are markers of repetition that are similar to the emphasis on repetition valued in AVT, even if these repetitions are more grounded in content rather than sound.

However, what follows that is clearly marked by sound in the anaphora of “The Southern papers” to emphasize the force of this information, closing with the blunt denial that southerners can “no longer deal in generalities.” Anti-lynching activists are elevated as capable of fighting lynching, and the moral judgment invoked by “wink at murder” also takes on Wells’ move to use unusual lexis of “murder” to signify against majoritarian views of lynching as potentially acceptable.

An article by J.R. Slattery on page 5 in *The Independent* published in November of 1893 takes up Wells’ use of the 8-year statistic from her speech at Boston’s Tremont Temple in February of 1893 and its subsequent printing in *Our Day* in May 1893. Slattery is using this statistic to refute claims by lynching apologist Bishop Haygood who condemned the practice of lynching in the abstract only to counter this concession with sensationalist arguments about the surge of rapes committed by Black men. Haygood approvingly cites a statistic from the *Christian Advocate* that “Three hundred white women had been raped by Negroes within the preceding three months,” only to follow the citation by adding that he believes “the statement to be under rather than above the facts of the case.”

Slattery inscribes an attitude of appreciation-reaction-impact by calling the statement “amazingly wild” when set up against the statistics offered by Ida B. Wells. Slattery writes: “From the above figures, it is seen that 459 Negroes were lynched for other alleged crimes than rape, while 269—*i.e.* a trifle over a third—were strung up charged with that foul outrage.” Slattery expands viewpoints by endorsing (i.e., “seen”) and repeats the figure for alleged rapes and then translates the figure to repeat it again (i.e., “a trifle over a third”). Slattery repeats the figure a fourth time, saying that a “sober-minded statistician” (i.e., Wells) finds “but 269 charges in ten years” while these two preachers “do not hesitate to lay at the door of the Negro race 300 of such crimes in three months.” A fifth time the figure is repeated in the next sentence: “In other words, these reverend gentlemen would charge the Negroes with 12,000 rapes, where Miss Wells in her studies discovered only 269.” A lot of resources of graduation are used (e.g., “a trifle over,” “only,” “but 269,” “in ten years”) to diminish, over and over, the amount of 269 over ten years compared to the figure cited and amplified by Haygood.

The repetition, in itself, has some affinity with the AVT quality of tonal semantics and signifying through naming (e.g., “reverend gentleman”) that Wells also uses in her statistical frames. Slattery, as a reverend himself, likely is influenced by orality in a similar manner that some speakers of AVT are, and like fellow preachers (e.g., as we will see with Thomas Dixon and Bishop Tanner in the next section). Along these lines, Slattery’s rhetoric also has some affinity with sounding and call and response. Denise Troutman (1997, 33-34) writes that sounding is expression of extreme displeasure or anger at “a particular outcome deemed undeserved, unjust, or demeaning by talking loudly.” Sounding can also be combined with other modes of AVT discourse. Bonnie Williams-Farrier (2017), in her study of college student writing, notes that sounding, signifying, and call-response can be combined in the use of a series of rhetorical

questions. Having a number of questions pile up resemble the effect of sounding and the nature of the question as expecting a response resembles the effect of call-response, and in Williams-Farrier's example from a student text, this succession of rhetorical questions also indirectly calls out people who perpetuate racial myths.

Slattery presents a series of rhetorical questions with these qualities when he answers charges that mobs lynch people of color because they are temporarily insane due to their rage at the crime of rape:

And how will Bishop Haygood explain the lynching of the other 459 Negroes who were not charged with rape?

How about the 44 lynched for robbery ; the 87 for arson; the 27 charged with race-prejudice, whatever that may mean ; the 32 strung up without any reason alleged at all; the 13 for fighting with white men ; the 10 for making threats ; the 7 for rioting; the 5 for miscegenation, and the 4 for burglary?

Will lunacy cover all these lynchings?

The repetition flags invoked negative judgments of propriety, but the resources of AVT that these moves of graduation also enact have an emotional charge to them that is very much alive in Wells' writing as it is here in Slattery's. Sounding invokes an authorial anger that can assist in capturing attention of a reader, emphasizing the hypocrisy the anger is stirred against. Finally, especially as Wells does in the "summary" in *U.S. Atrocities*, Slattery uses counterstory in a way to reveal hypocrisy, posing to his interlocutors the scenario in which lynching victims might also be excused for insanity as the reverends he address argue should be the case for lynch mobs.

4.6 Circulation of the 8-Year Lynching Statistic in Lynching Apologist Statistical Framing

Statistics, as reliant on rhetoric, are subject to various purposes. This is why it should not be surprising that the same data Wells and others drew from to promote an anti-lynching argument were also used to defend or excuse lynch mobs. In addition to the article's influence on Wells, the June 1892 *Independent* article caught the attention of Reverend Thomas Dixon, Jr. Dixon was a Southern Baptist minister, a novelist that glorified the Ku Klux Klan (one of his novels, *The Clansman* was adapted into the film *The Birth of a Nation*), and a vehement lynching apologist⁴². Dixon took exception with the article and critiqued the statistics used by the author in an article I found published on page 2 of the April 1, 1893 edition of *The L'Anse Sentinel* out of Michigan and reprinted on page 7 in the May 1893 edition of the *Blackfoot News* out of Idaho⁴³.

Dixon positions himself in the article as against capital punishment and, thus, also lynching. He contextualizes lynching and capital punishment at the moment of 1893, showing the average numbers of lynching and legal executions: "We have in America on an average two hundred lynchings every year and about one hundred legal executions." By comparison, the one

⁴² Dixon cites the *Tribune*, but like Wells, he uses language that is nearly identical to the language used in the *Independent*. Early in the article, Dixon writes (**bolded** for same language as *Independent*): "It is asserted that, as a fact, the South is **yet in a state of partial barbarism**; that **it condones murder** and approves of lynching, which gratifies passion and saves the expense of courts and prisons." Later on, Dixon uses the same sentence on number of charges for lynching victims as what is used in the *Independent*, as well.

⁴³ The *L'Anse Sentinel* was a newspaper based out of L'Anse, a northwestern Michigan village near Lake Superior. The *Blackfoot News* was a Democratic newspaper in rural Idaho ("About Blackfoot News. (Blackfoot, Idaho) 1891-1902.").

hundred legal executions downscapes by quantification the flagged judgment of propriety, implying something is amiss in the justice system. Arguing about a broken justice system was a frequent move by lynching apologists, suggesting that if only the justice system more appropriately convicted criminals there would be no lynchings.

Another sentence follows that entertains a possible proportion in the south (“60 percent”) which then sets up this intensifying set of sentences: “This is an unmitigated disgrace. It is a disgrace to the South. It is a disgrace to the nation. It is a disgrace to humanity.” Disgrace inscribes an appreciation for lynchings as a negative reaction (reaction-quality denotes an affective response to an object—in this case, a reaction to lynching as a disgrace), and it is intensified in three ways: by lexis (i.e. unmitigated), the repetition used by the four sentences, and by the amplification by heightening lexis that invoke appreciation for social valuation (i.e., the South, the nation, humanity). As a preacher, it is unsurprising that markers of orality like this form of repetition are present, and it shares an affinity with Wells’ use, at times, of tonal semantics in her writing. Like his case against capital punishment, these moves help to set up a concession of points to the “other side” as someone who is against lynching in the abstract.

These moves, though, are then countered to set up an expository question to entertain another viewpoint, acknowledging possible validity in several viewpoints: “But the question to which we address ourselves is one that affects the attitude of the races. Is it true that the negro is lynched because he is a negro?” While the *Tribune* followed its expository question with its embarkment on statistical discourse, Dixon mirrored the *Independent* by contracting viewpoints with a denial: “I do not believe there is one word of truth in the statement. Negroes are not lynched

because of their color; they are lynched for crime.”⁴⁴ Here is the more overt pivot from the concession of lynching as bad in the abstract to lynching as *justifiable* because of a broken criminal justice system. The stronger denial sets us up for stronger evaluative language just like in the *Independent*, but it takes a very different direction.

After a quote about a dearth of sympathy for white female victims of rape from the same Bishop Fitzgerald that the *Independent* article attacked (which helps position Dixon as one of several proponents of this argument), Dixon offers the table of ten years of lynching, introducing the *Tribune* in this way: “A Republican newspaper in the West collected during the late Presidential campaign the statistics of lynching reported in the South for ten years, with the following result: [table of statistics for 1882-1891].” While this table of statistics does flag a negative judgment of propriety based on the earlier denunciations of lynching, the pivot toward a colorblind⁴⁵ argument just prior to this mention downscales this effect. As does the offering of

⁴⁴ The first sentence is arguably a proclaim-pronounce, as well as a denial, since it inserts an assertion from a first-person subject position as well as it denies other beliefs as valid overtly via negation of “not.” This is of little importance rhetorically, though, because both pronouncements and denials are contracting and not expanding heteroglossic modes of engagement.

⁴⁵ Most references to colorblind racism come from critical race theory’s orientation toward post-1960s civil rights discourse in which racism is accomplished more subtly and without overt appeals to biological inferiority, perhaps gesturing toward something less material like “culture.” However, as Ashley Bohrer (2018) points out, colorblind racism has existed prominently much earlier, as Bohrer traces it back to early modernity in the Spanish colonized Caribbean. Jim Crow is often thought of as diffuse with overt biological racism, but as Dixon’s and others’ rhetoric reveals in my corpus, it was often colorblind racist rhetoric that was used to discuss lynching—that people of all races were lynched because of the nature of the crime they committed. Another way of putting this argument: The lynch mobs just did not see color.

circumstantial information that undermines the credibility of the argument: the use of “Republican newspaper” rather than *Chicago Tribune* and the graduation by proximity of timing of “during the late Presidential campaign” that also invokes a negative judgment of veracity. For the latter, an argument circulating at this time about lynching only being discussed during a presidential election was used to cast doubt on the motive of discussing lynching, and thus, how serious a problem it actually was.

After the table, a verbatim reprint of the sentence on charges is taken from the June 1892 *Independent* article. Unlike in the *Independent* and in similar instances of listing the amounts of charges, there is no explicit comment on the disparity between the amount of lynching victims charged with rape and charged with other offenses. What is also interesting is that, right in the middle of this sentence, in both the April and May 1893 printings of this article in the two different newspapers, an image disrupts the full sentence, arguably distracting readers from giving full attention to it. Here is the image:



Figure 20. Lynch Mob Breaking into Jail in Thomas Dixon Article.

What is interesting to note in this image is that we only see the mob, not the victim. Based on the context so far, and especially the quote from Fitzgerald that asks for sympathy for the white women rape victims, the image of the man of great strength swinging a hammer might invoke a sense of justice rather than injustice. There are two other images in the full article, and only one of them contain a lynching victim. However, even there, the victim is on his knees praying before he is hanged (see Figure 21). Arguably, with the co-text here, that is another image that could be interpreted as a rightful punishment, as the man may not have asked for forgiveness without being punished by the mob. This makes possible the perverse interpretation of lynching as a just and holy mode of punishment.

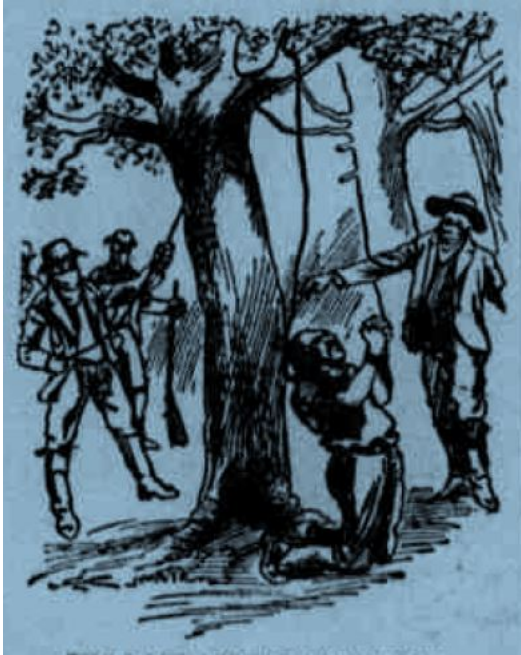


Figure 21. Lynching Victim Praying in Thomas Dixon Article.

Following the reprinted sentence from the *Independent* and the image disrupting it, there is a long passage that seeks to undermine how the data was collected and interpreted. As Dixon did earlier, and as the *Tribune* article did in its statistical frame that I analyzed, there is an opening gesture to expand by entertaining viewpoints, here using the modal verb “may” but it also downscales the veracity of the statistics through a softened focus via “approximation”: “These statistics may be taken as an approximation of the facts.” The next sentence contracts viewpoints, countering that “much allowance must be made for the time and purpose” of the collection of data, with “much” flagging a judgment of negative propriety on the part of the *Tribune* (i.e., presidential election). Dixon then goes through several qualms he has with several classifications of the reasons for lynching (i.e., race prejudice, quarrels, making threats) and inscribes attitudes that build in intensity in each succeeding sentence (much like the use of “it is a disgrace” earlier). Dixon calls the labeling of race prejudice an inscribed appreciation of “pure assumption,” the labeling of quarrels as inscribed appreciation of “manifestly absurd”, and the notion that ten people were

lynched for making threats “passes the belief of any sane person who knows the facts in Southern life” (here making an ethical appeal of who “really” knows what is going on in the south—the answer being a southerner, like Dixon). As a whole, each evaluation also amplifies by copia, piling up reasons why the collection of data was flawed, assisting the earlier claim about “time and purpose” of the collection.

Dixon builds to the end of the statistical frame with a counter (“however”) and a denial (“not because of their color”), to contract other possible ways to interpret the lynching statistics from the *Tribune*: “These statistics, however, are sufficient to indicate that men are lynched in the South not because of their color, but because of crime.” Inscribed is an appreciation of composition, that the statistics are “sufficient,” showing Dixon evaluating the statistics as evidence that lynching victims should be thought of as punished criminals. Without citing, Dixon again contracts possible viewpoints by endorsing (“It will be found”) the notion that “there are as many white men lynched, in proportion to the criminal population, as negroes.”⁴⁶ To amplify this statement further, Dixon closes the statistical frame with this: “According to these figures, in one year there were even more whites lynched than negroes.” The use of “even” signals a counter to expectations for the graduation by quantification of “more” whites lynched.

There are some similarities in regard to the rhetorical strategy of the *Tribune* article and the rhetorical strategy of Dixon here. Like the *Tribune*, Dixon uses sources of engagement early on to entertain multiple viewpoints. Dixon also concedes the point that lynching is a “disgrace,”

⁴⁶ It is difficult to trace exactly what statistics he is drawing from, but according to the 1890 census, this may not be far off from the truth. Of course, what is left out of such an analysis is the institutional racism of the time that imprisoned people of color and more general flaws of criminal justice in the 1890s.

and uses repeated graduation to flag this inscribed appreciation as particularly strong. This helps establish a concession that might make Dixon's argument more palatable to readers with more moderate positions compared to those holding more overtly anti-racist positions. However, a large focus of the statistical frame is to use appraisal resources and other rhetorical moves to undermine data collected and analyzed by the *Tribune* and to use what is there for a colorblind argument of equal justice no matter what the race.

Dixon also cites this statistic in a speech that was reprinted in newspapers, but he does so through citation of Benjamin Tucker Tanner, a bishop in the African Methodist Episcopal Church. Like Wells, Tanner uses AVT to supplement the statistic he cites. I found three printings of an article that addresses this speech, all from Democratic and/or Populist newspapers⁴⁷, where Dixon would have been an attractive figure to many readers of these periodicals. Dixon first acknowledges what he claims is said about the reason for lynchings, to then forcefully refute them: "To say that the south lynches negroes because they are black is infamous slander." Dixon wants to set up an outsider perspective by using the engagement resource of acknowledge via "To say" and then inscribes and invokes negative attitude to what those outsiders are saying (i.e., inscribes appreciation-reaction-quality assessing the claim as "infamous slander" and also invoking judgment-veracity by use of "slander").

⁴⁷ On page 6 of the March 9, 1893 edition of *The Stark County Democrat* out of Ohio, which was a Democratic paper ("About The Stark County Democrat. [volume] (Canton, Ohio) 1833-1912"); on page 8 of the March 11, 1893 edition of *The Progress* out of Louisiana, which was a "politically independent" newspaper run by a Democrat and Populist nominee for the House ("About The Progress. (Shreveport, La.) 1892-1900."); and on page 4 of the March 16, 1893 edition of *The Caucasian* out of North Carolina, which was a Democratic and Populist paper, but relatively racially liberal for that status (Hunt 2006).

Dixon then slows the attack on the outsiders, but countering with a colorblind argument that “But the slander does not excuse the horrible brutality of the fact that white and black are alike killed without trial, and sometimes with suspicion only as evidence.” Dixon takes on the rhetoric of many anti-lynching activists, but modifies it through appeals to a colorblind system of punishment, invoking a positive judgment of propriety with the word “alike.” This “fact” is used to preface another counter: “But amid all the sentimental mush recently dished up in the north about negro lynchings it is refreshing to read the following words of wisdom from Bishop Tanner.” Dixon again references outsiders, provoking a negative judgment of veracity and inscribing a negative appreciation of social valuation through “sentimental mush” to set up Tanner’s “refreshing...words of wisdom” about lynching.

This framing introduces Tanner’s quote that includes the statistic: “While it is true that within the past eight years 728 negroes have been thus barbarously treated, 378 whites met the same fate.” The inclusion of the aggregate number of white lynching victims is included to diminish the effect of the 728 figure (though, of course, the racial proportions of the national population would be important contextual information to interpret this comparison).⁴⁸ Tanner then engages in AVT modes of discourse, what Geneva Smitherman (1986, 142) calls tonal semantics of repetitions of word and syntax and narrative sequencing (Smitherman, 147) that help to graduate by force and thus flag invoked positive judgments of propriety. Tanner is quoted as saying that the “first ray of light” is that lynching is “not a question entirely of race,” which softens the focus on race to a colorblind phenomenon. The phrase “ray of light” is repeated to highlight that “only men

⁴⁸ In the original *Chicago Tribune* source for these figures, 378 is the figure for 10 years and not 8 years. Thus, the two figures are closer together in number than they should be in Tanner’s usage.

of disreputable characters who suffer, or characters supposed to be disreputable.” The repetition of “ray of light” provide amplifications by copia, of piling on reasons, here, as to why lynching should be thought of more naturally as part of American legal and punitive culture.

Tanner states a thesis that is then amplified by more tonal semantics but also through narrative sequencing: “The southern mob in its fury does not assail the good men of their race, but the supposed bad.” The engagement resource of denial is used to forcefully contract viewpoints that counter Tanner’s, and he uses inscribed judgements of propriety in the plain language of “good” and “bad” to underscore the justness of lynching. Tanner then is quoted as saying: “In its blind and satanic fury the southern mob passes not only by the colored teacher, but by the schoolhouse in which he teaches.” Through denouncing the mob with invoked negative judgment of propriety and inscribed negative affect via “blind and satanic fury,” Tanner uses what Martin and White (2005, 124-125) call a concede + counter pairing to help ingratiate an audience that may be resistant by showing some agreement with a construed reader before countering with a more full disagreement.

So, here, someone might respond, “well, of course a school teacher will not be murdered by the mob,” to show common ground between Tanner and themselves. This helps set up a possibly more agreeable interpretation to what follows: the mob also leaves the school alone. The very subdued language of “passes by” combined with the socially valuable institution of the school helps to invoke a positive judgment of propriety. The language and syntax here is repeated for a preacher/church, Masonic and Odd Fellow halls, “goodly homestead of well to do colored citizens” and it culminates with more repetition of “passes by”: “[the mob] passes by all these and only makes for a miserable wretch who is supposed to be guilty of rape, of murder, of robbery and of kindred crimes.” These hypothetical mobs and their activities help provide a narrative account of

how lynchings do *not* occur; that is, as Tanner says, only those who do the worst crimes are lynched. Tanner repeats the same argument of many lynching apologists, but his use of tonal semantics and narrative helps to offer appraisal resources to frame the statistic he gives by placing the focus on real human lives in a similar way that Wells does when she describes lynching victims.

However, with Wells, her effective use of real examples based on real reporting makes for more effective rhetoric, more ethical rhetoric, and more accurate rendering of motives of lynch mobs. Tanner then speaks for African Americans as a whole by heteroglossically expanding view points by acknowledging (albeit hypothetically) the following viewpoint: “the negro—especially those of the educated, well to do and religions class—sees this, and while he recognizes the enormity of the crime of lynching in common with others he does not feel called upon to take it to himself any more than do the whites when a white man is lynched. Why should he?” Another concede + counter pairing is used to concede that lynching is a problem (flagged by the graduation by quantification of “enormity”) to then focus the sentence’s weight on the contraction by denial of “he does not feel called upon to take it to himself any more than do the whites when a white man is lynched.” The amplification by comparison to white people turns toward colorblind appeals of what is natural, of lynching as natural. And that those who make a fuss about it are on the fringe of society. Tanner follows with a “Why should he?” to turn back on his audience, to again try to normalize the idea that there is no reason to be upset when lynchings occur.

This statistical frame helps Dixon’s overall argument that concedes that capital punishment in general is wrong, but that lynching is colorblind. It occurs because people do bad things, nothing more. Tanner, as a Black man, adds great ethos to his argument, and the statistic cited within Tanner’s speech is framed in terms of “normal” Black folks who aren’t—and shouldn’t—be too concerned with the practice. It is something untouched by race. By focusing on some elements of

these statistics and ignoring others while also reframing what lynching is (i.e., a colorblind administration of justice in place of a broken criminal justice system), it was easy for both Dixon and Tanner to use evaluative devices to serve colorblind arguments that diminish anti-racist critiques of lynching as a practice even while they both condemned lynching.

4.7 Conclusion

Matthew J. Newcomb (2010, 178), in analyzing student responses to the Rwandan genocide, argues that numbers can be “vulgar” due to their inability to measure suffering, and writes that “statistics of suffering are often used to try to create affective and emotional responses, yet they often fail.” Affect, or the “sense (not necessarily conscious) that something is good or bad,” has been found to become diminished as magnitude increases; what psychologist Paul Slovic (2007, 85; Frank, Slovic, and Vastfjall, 611) and his colleagues call “psychophysical numbing.” Slovic (2007, 84) theorizes that due to the way we evolved, we are more attuned to the “present, visible, immediate” aspects of our environment and thus, this “affective system did not evolve to help us respond to distant, mass [suffering].” Furthermore, “without affect, information lacks meaning and won’t be used in judgment and decision making” (Frank, Slovic, and Vastfjall, 2012, 611). Without some effort at channeling an audience’s affective response to counteract a statistic’s already-affective-diminishing status, a statistic is too easily abstracted out of any connection to the material human suffering it attempts to represent and advocate justice for.

This attention to affect in relation to mass suffering is where thinking about appraisal in statistical writing can be crucial—just how are people figured into a story that leverages emotions? In the *Tribune* and the statistical frames it influenced, lynching statistics are often tied to abstracted

victims, where the focus of the story is on a sectional battle to paint the south as backward, barbaric, etc. The victims of these lynchings are rarely present and the language is often a more elite, white discourse focused on scoring political points. That is not to say that it is *only* this, but only to say that this discourse is prominent in these papers. Here, what is reflected is what Theodore Porter (1995, 77) points to as the general mode of thinking for “many middle-class philanthropists and social workers [who] used statistics to learn about kinds of people whom they did not know, and often did not care to know, as persons.”

For the lynching apologists, this sort of game is played there, as well, in terms of scoring points in a sectional argument, just from the other side. And instead of a distanced-knowing of lynching victims in this game, it becomes a villainizing of Blackness. In my corpus, though, it is notable how there is much in common between the lynching apologists and Wells—her utilization of AVT, orality, and storytelling—to shed light on, in the case of lynching apologists, exaggerations of Republicans and the colorblind nature of a morally wrong, but understandable practice that compensates for a flawed justice system. For Wells, she uses counterstory and elements of AVT to center victims and to “turn the stomach” in the presence of what these numbers *materially* count.

Wells, and some people who took up Wells’ rhetoric, displays an admirable leveraging of emotion, embodiment, and counterstory that is grounded in her own investigative reporting, the reporting of others, and her own talents as a rhetor to produce a memorable, jarring, and purposefully disturbing statistical rhetoric that foregrounds victims and the hypocrisies of many arguments made to diminish the seriousness of lynch law. Writing about quantified violence always risks a psychic numbing, and Wells provides a good model for making sure victims are centered while also creating memorable, affective, and effective prose.

5.0 Framing Statistics in the Writing Classroom

A statistic has to come from a standpoint—it is framed a certain way, in a certain context, for certain purposes, and will be received in a range of ways depending on the construction of the text and audience. Throughout the case studies that I examined in the previous chapters, the choices a rhetor has in composing a statistic are reliant on the context in which the statistic appears and how that context frames a number to signal to audiences how to interpret statistical information—to include the results themselves, what is being measured, how it is being measured, and who is doing the measuring. This dynamism makes writing with statistics a slippery prospect as its ease of transmission inevitably leads to a range of rhetorical forms and thus consequences, which can cause a dissonance between perceptions of statistics as truth-objects and their reality as snapshots of knowledge that can only be partial.

This dissertation is one of minutia, comparing small acts of rhetoric against similar acts of rhetoric to say something about how writers signal evaluation of quantification to readers. It is a detailed consideration of how those small choices relate back to a larger story assembled from these choices. This, I believe, is a crucial consideration for any teacher: how does the local affect the global? These questions can be generative with students as they work on projects in the early stages and in revision. How do the small, fine details engage the bigger picture? Why this word and not that word? Does that say something about your argument? Why this semicolon to join these ideas together rather than apart in separate sentences—does this say something about the relationship between these ideas in the larger argument or narrative? Why a table and not a scatter plot? Why this shade of color and not that? Why use this design program and not that? There is a

relationship between those small choices and how they coordinate to make something greater than the sum of its parts.

In quantitative rhetoric, I have spent a lot of time thinking about how students might think in terms of the relationship between the small moments in communicating about quantified data and how they connect that to the big picture narratives and arguments they make in their writing. I designed a course called Writing with Data which takes as its premise the notion that generating data, quantifying it, writing about it, and the writer's (and other humans' and non-humans') own role in these processes are rhetorically dependent on one another—from becoming acquainted with a dataset (e.g., collecting/finding data, cleaning it, contextualizing, exploring) through shaping and reshaping prose and visualizations to tell stories about data for various purposes and audiences.

This chapter relays my experience designing and teaching Writing with Data, with special attention to small moments in my students' writing. Since so much of my dissertation is thinking about small, stylistic moves, and how those moves fit into a broader text and variety of semiotic modes, I am especially interested in paying attention to small moments in my students writing and how those moments aligned with goals of the three major assignments of the course. First, I explore the course design of and student writing produced by Writing with Data during Fall 2019. I then briefly reflect on what worked well in the course, what didn't go so well, and how I want to continue to revise the course. I then briefly conclude on how this experience has influenced my thinking on pedagogy and quantitative writing.

5.1 Writing with Data: Background and Course Design

Over the past decade, several scholars from writing studies, quantitative literacy, education, and other aligned fields have advocated for the importance of teaching writing and quantification together. First and foremost in the field of rhetoric and writing studies is Joanna Wolfe (2010, 2015), who has emphasized the need for first-year writing and technical communication teachers to bring quantification into the classroom more intentionally and to refrain from treating it like inartistic proof—as is often the case, Wolfe (2010) argues, in composition textbooks. Others have argued for integrating quantitative reasoning into WAC programs (Rutz and Grawe 2009); the usefulness of using mathematics and collaborating with mathematics teachers to create pedagogies that further civic engagement (Feigenbaum 2015); the value of integrating quantitative literacy and quantitative reasoning into technical communication classes (e.g., many technical writers will have to be intimately familiar with quantitative ways of knowing and, thus, ways of writing) (Colombini and Hum 2017); and the foregrounding of rhetoric and narrative in data and information visualization (Wolfe 2015; Pigg, Hannah, and Stone 2018; Stephens 2019). Also, many scholars in the field of quantitative literacy have claimed the importance of rhetoric or associated concepts: integrating writing and quantitative reasoning (Madison 2012); argumentation (Lutsky 2008; Grawe and Rutz, 2009; Grawe, Lutsky, and Tassava 2009); social justice (Hamman, Piercy, and Tunstall 2019); critical discourse analysis (Tunstall 2016), citizenship (Erickson 2016); and expository writing (Agnello 2018).

Aaron Beveridge (2017) argues that the increased impact of “data literacy” on multimodal writing demands means that students need to be better prepared to read and create data-driven arguments and data visualizations. Like Beveridge, I focused the course design on having students see that all stages of quantitative data analysis require both a statistical and rhetorical perspective.

Like Beveridge, I believe having a literacy in the messiness of working with data is equally important to cultivating a quantitative literacy—both in what we read and, increasingly, what professionals are asked to write require some familiarity with collecting, managing, and cleaning datasets. Thus, having students in writing classrooms think critically about generating and maintaining data is an important competency to develop alongside analysis of that data.

While Beveridge focuses on big data and on social media analysis more specifically in his course design of “Writing through Big Data,” my approach is broader in Writing with Data. Students had more choice in both the topic and in the method for analysis. In the early part of the semester, students do some work on invention to figure out the topic they want to write on, how a quantitative analysis would produce some generative writing for that topic, and search for publicly available data to clean up for analysis (or collect their own data). Throughout the semester, students do two major writing projects center on a public audience and a more technical audience. There are strengths and weaknesses to this approach. I wrote Python scripts they could use to manage, clean, analyze, and visualize their data; I also ran workshops and provided resources for other programs to manage and visualize data. One strength with this broader approach is that more student choice is involved as well as a greater diversity in the kinds of writing students do. One weakness is that I have less control as an instructor; students end up doing a lot of different kinds of work and analysis, which can be difficult to manage as students and teachers when we are doing work that requires developing a technical knowledge in tandem with the main function of the course (i.e., writing). As a public and professional writing course, though, I thought it was most appropriate to provide a wide range of kinds of analysis and genres students could work on, while still making it manageable (e.g., data journalism pieces as a model for public writing assignment).

Writing with Data is a course that ran for the first time during Fall 2019, part of Pitt's curriculum in the Public and Professional Writing (PPW) Program, a program housed in Pitt's English department where students can gain a certificate upon completion of 18 credits. Recently a major in PPW was instituted, where students are required to complete 33 credits in the major. This creation of a major necessitated some expansion of course options in PPW, and over the past few years, several new courses had been introduced into PPW, to include Writing with Data, a course focused on public and professional data-driven writing. I designed the course for approval in the department in Fall 2018 and taught it for the first time during Fall 2019.

A large focus of the class was to have students see that rhetoric and quantification were integrated processes, that the following are all dependent on rhetoric: data collection and categorization, decisions made when analyzing and calculating, choices about sharing information about what you collected and how you analyzed it, and how words/sentences/arguments are chosen and arranged to express and interpret those results. Here is the course description:

This course is designed to allow students to engage with data in their writing and learn how to effectively write with numbers. Throughout the semester, we will work with a dataset of your choosing and develop two pieces reliant on quantification for both lay and specialized audiences. Through these writing projects, reflective writing assignments, and through various classroom activities, we will learn about how to find data to use for our writing, how to plan effective utilization of this data, how to responsibly and effectively use word choice and syntax to convey quantified material, how to organize arguments and narratives reliant on data for various rhetorical situations, and how to incorporate data visualization for purposes of understanding and persuasion.

There is no need to know anything about statistics; throughout the term we will learn how mathematical encounters with writing can be engaging, exciting, and something we can work on together. We will be going over a handful of statistical concepts in the second half of the course so we can write about them, but the emphasis here will ultimately be on proficiency for the purposes of a given concept's use in writing.

By the end of the course, the hope is you'll be more adept in these literate practices. Getting comfortable working with data as a writer can help set you up for success in future PPW courses, courses across different majors at Pitt, in your writing as a professional, and as a more discerning user and producer of knowledge as a global citizen.

The course had five units. Unit 1 was about finding/collecting, learning about, cleaning, and contextualizing data. For the first few weeks, we looked at different datasets as a class and on our own to think about different types of data (e.g., discrete, continuous, categorical, ordinal, qualitative), how to connect research questions and exigencies to the appropriate data, assessing advantages and limitations to data by understanding how it was collected and managed, how to clean and organize data to prepare it for analysis, etc. This unit laid the ground work for having a critical orientation toward the data we were working with for the rest of the semester. The first reading we did for the course was [chapter 5 of the draft version of *Data Feminism*, "The Numbers Don't Speak for Themselves,"](#) which focused on keeping in mind the context in which data are collected, managed, represented, and communicated. The chapter had a lot of great examples of people using datasets in ways that overclaim or decontextualize data that could be actively harmful. Donna Haraway's maxim that knowledge is always situated was a guiding lens for this chapter, the whole book, and for our class as well—that there are always limitations and ethical obligations with data. A lens we use, the way we put things, the hidden information behind the ways we write

with data—these are critical concerns for quantitative writers and ones we tried to maintain throughout the semester and with respect to all of the statistical framing students did in the semester.

In a sense, this means the conventional move in many academic papers: something like “please note the limitations to your method for analysis.” However, it also meant being explicit about goals, thinking carefully about how information was collected, who did the collecting, the words we used to call things this name vs. that name, how those names do and do not represent possible arguments or stories we could create. Beyond formal academic ethical conventions, these are also can be deeply political considerations. For example, in the chapter, there is an anecdote about the Global Database of Events, Language, and Tone (GDELT), which is a big data project focused on recording events, typically centered around conflict, that happen each day. One problem with it, however, is that these events are recorded via *media reports*, and what could happen (despite efforts to control this), is that there would be many duplicates. For instance, *FiveThirtyEight* used GDELT in an article on the rise of daily kidnappings in Nigeria—but because GDELT used media reports as a proxy for “events,” these numbers were greatly distorted based on a widely-covered news story from April 2014 about Boko Haram kidnapping 276 young women. Thus, what is meant by context when we think about the stories we tell with numbers is to say that who is measuring, how they are measuring, and what they are measuring *matters*. What we do with language and other symbols to reflect this has many ethical complications.

Units 2, 3, and 4 focused on writing about data of our choosing for different purposes, different audiences, and different genres; Unit 5 focused on data visualization. In Unit 2, we explored writing about data for public audiences. We started this unit by looking at data journalism pieces as models, but we also considered stylistic features of writing like amplification, use of

examples, etc. as ways to generate interest and make quantitative writing accessible. Unit 3 was about communicating complex information to various audiences. We explored analyzing multiple variables and sub-categories of data, probability, the sampling distribution, confidence intervals, hypothesis testing and statistical significance, and Pearson's correlation coefficient in relation to communicating those concepts and results via these techniques to both experts and non-experts. One thing we really focused on here was what information to include, what to leave out, and how to make an effort to explain complex information to a lay audience in ways to build goodwill. Unit 4 was focused on writing for experts primarily through the IMRaD (Introduction, Methods, Results, and Discussion) structure to think about the locations and conventions of communicating quantitatively (e.g., how do you talk about data in a methods section vs. a results section vs. a discussion section?). Finally, in Unit 5 was about data visualization through both traditional and non-traditional methods.

Following Crystal Broch Colombini and Sue Hum (2017), I designed units and assignments with the following in mind: declarative knowledge to develop a basic understanding of certain statistical concepts (e.g., what is a scatterplot? What is the importance of a sampling distribution in inferential statistics? What kinds of data are there?), procedural knowledge (i.e., the integration of rhetoric and quantitative literacy—the main purpose of the course), and reflection (i.e., having students pause to see themselves as working with quantification and rhetoric and what that means in respect to their learning). This design was supported by low stakes “journals” that engaged concepts and readings we were working on in class, major writing assignment drafts, and reflective writing.

Throughout, we did a lot of reflective writing in the spirit of Julie Lindquist and Bump Halbritter's (2019) model of learning narratives throughout the term so students can periodically

revisit their thinking from an initial “pre-flection” in the style of a literacy narrative before a final assignment asks them to use this writing and other writing from the term to talk about their goals, how they progressed, what they want to keep working on, etc. These learning narratives were part of an ongoing, scaffolded series of narrativized reflections that helped students document learning and later draw from such documentation to reflect on learning. In the first learning narrative, students reflected about their relationship to learning about math and writing/reading throughout their lives. The next two learning narratives asked students to offer up evidence in their writing and their experience composing that writing to see if the things they stated in the first learning narrative still held true, to think about what they were learning, and to think about what they valued so far. The final reflective document was the experiential-learning document (ELD), which was a larger reflective project at the end of the term that asked students to more extensively revisit goals they had set in the first learning narrative, revisit previous thinking in previous reflections, and to use their writing throughout the term as evidence for what they learned and valued about the integration of numeracy and literacy.

This trajectory of units and emphasis on reflective writing was to give students a chance to have a critical orientation toward the data they were working with, write about it in different contexts, and to consider the range of complexities involved in working with a “technology of distance” such as quantification. Figuring out the limits of what we can say (or can’t say) with numbers, how to do that in an interesting way (especially for public writing), how to do that in a useful way (especially for technical writing), and how to use the different rhetorical affordances we have to navigate these challenges (e.g., stylistic tools, visualization tools, organizational tools) was the main thrust of the course. In the next section, I write about my pedagogy of *copia*, not necessarily in the sense of amplification in the way I used this term throughout analyses of my

case studies and in the introduction to the dissertation, but in terms of how Erasmus meant it as a form of rhetorical play—that is, to write about something many times to build rhetorical flexibility.

5.2 Lessons, Activities, Learning Goals: Starting Small

A general pedagogical interest of mine, but one I felt was especially helpful for quantitative writing, was to start small. It was to try out writing a few sentences or paragraphs about a number in ways that asked students to think about these themes: limitations, making numbers interesting, making them accessible, making them useful, and the ways in which quantification and rhetoric meet on a small scale helps to produce knowledge on a grander scale. The goal is to have students *involved* in the statistics they write, to not see them as “stable-as-fact” (e.g., the first-year writing paper where a statistic functions much like a “quote drop”). Because students can sometimes think of statistics as something to “add” to writing (like a direct quote), starting there with students (i.e., the small moments in their writing) and homing in on how those small moments can have big changes can be pedagogically useful.

Studying the circulation of statistics has made me think a lot about *iterations* of statistics—how they change in new contexts and how those new contexts entangle those statistics with other symbols and meanings that necessitate a wide range of rhetorical possibilities. As iterations, thinking of quantitative rhetoric as drafts within classroom activities as well as within student writing was a tactic I used to help students see how rhetoric and quantification were integrated practices. This orientation has made me think more and more about Erasmus’s pedagogy of *copia*—that is, training students to use an abundance of both words and ideas. Patricia Bizzell and Bruce Herzberg (2001, 583) note that while Erasmus catalogs many stylistic devices, his driving

purpose is not to simply have an index of options to choose between, but to “encourage a superabundant verbal play...that is designed to increase fluency of both words and ideas—the two are mutually generative.” The goal is to make students rhetorically flexible, and, thus, to make them flexible thinkers. If we need words for ideas, then the more ways we can use words to support our ideas, the better off we are for thinking.

By studying circulation, I have been able to look at many ways different writers thought about numbers and tried to express what they thought about them in a variety of contexts. This research has prompted me to consider how I might engage students in a similar verbal (and visual) play of “superabundance” in activities and projects as a way to see the integration of rhetoric and quantification, but also as a way for them to flexibly write as they move from draft to draft. I designed lessons and activities that had an aim toward a pedagogy of quantitative *copia*, and thinking toward building rhetorical flexibility when using numbers that could help students compose and revise their statistical frames in deliberate, explicitly evaluative, and persuasive ways.

Throughout the semester we did in-class activities and homework assignments (e.g., journals) that focused on writing and re-writing statistical information in multiple ways and for multiple purposes. [Early in the semester, we talked about how there can be multiple ways to write about a statistic, with many of them being ethically sound](#)—the only difference is that a writer might want to signal different kinds of interpretations or stories about that number. Students took a statistic about recycled plastic (i.e., 9% of all plastic produced has been recycled) from [Geyer, Jambeck, and Lavender Law \(2017\)](#), reviewed the article, and were tasked with writing a lead paragraph for a news article in pairs. Then, all groups had to pair with another group to compare versions and (though we did not have time) to revise a third version based on aspects they liked

from each. Another example of a writing activity of *copia* is a homework assignment students had to complete after reading Jeanne Fahnestock's (2011) chapter on amplification in *Rhetorical Style*. Students were asked to choose a method of amplification and locate it at work in their previous writing. They then were asked to amplify it "higher" or diminish it "lower" to create a second version to expand their flexibility as quantitative writers in terms of amplification. In class, we compared what we did and offered feedback to each other on what we liked about these different versions and why.

We also did similar activities where students engaged in multiple writings and rewritings of the "same" statistical information in respect to making quantitative comparisons (e.g., rank, percentage increase/decrease, difference, ratio—rewriting a paragraph about a baseball player's recent season to incorporate each type of comparison), to communicate about complex information (e.g., statistical significance as "most" technical and as "least" technical in a homework assignment), intuitive ways to talk about probability (e.g., communicating the same single-event probability using a ratio vs. using a percentage), and how data can be written about differently depending on the section they appear in in an IMRaD paper (i.e., analysis group activity of comparing language and framing of data in different sections). In many of these activities, the common thread was to get students to write about the same thing in a variety of different ways or to look at many similar texts and work together to think about the rhetorical and ethical consequences of those differences in respect to the "same" information. By ensuring this variety, students were getting practice in considering different approaches for different situations and different ways to evaluate and frame numbers in those situations. Statistics were less a stable object and more of a messily entangled object with other objects in any text—something they would get

practice in as they revised and as they wrote between rhetorical situations in the scientific/technical writing assignment and in the data visualization assignment.

This approach was also relevant to visual modes of communicating with numbers. The data visualization unit emphasized going from language to visuals and to use multiple versions of a visual to think about the different ways you might emphasize certain information in statistical writing. For instance, we compared a table in an article about baseball teams to a prose version as a way to think about the advantages and disadvantages tables have in research articles in terms of how they can be used in a text. We also did an activity where students were given a data “scenario” (e.g., rainy days in a year) and were asked to think up as many charts as they could that would be useful for that scenario as well as the advantages and disadvantages that chart can have for telling specific kinds of stories and signaling specific kinds of interpretations. And, finally, [after reading a chapter from the draft of *Data Feminism* on objectivity and the value of leveraging emotion in data visualizations](#), we returned to the earlier activity about the statistic of “9% of all plastic produced has been recycled” in order to turn their alphanumeric versions of that statistic into a data visualization that leverage emotions in impactful ways.

All this is to say, we spent a lot of time during the semester engaging different aspects of quantitative writing through multiple iterations or “drafts” of a statistic in order to emphasize the rhetorical flexibility of statistical frames that can help to tell different kinds of stories and signal different kinds of interpretations about numbers. Students got to see that, as a technology of distance, this did not only mean that people see numbers as something objective and distant from human interference—but that their distance from us as objects to criticize, something that has to be interpreted and necessitates interpreting! Thus, we have to do things with numbers. And we can do many things with them as writers when we think about them in terms of rhetoric, in terms of

statistical framing, in terms of signaling interpretations, and so on. In what follows, I describe each major assignment of the course, the learning goals for the assignment, and offer up some student examples to illustrate what I thought were some signs of some good rhetorical thinking in statistical frames from students.

5.2.1 Public Writing Assignment

This course centered on public and professional writing and, thus, was centered around two major writing projects: a public writing project and a technical writing project. The first project was focused on a public audience, which we defined as anything that was primarily aimed at entertaining or informing non-experts. The model for this assignment was a data journalism piece, like you would find in publications like *FiveThirtyEight*, *BuzzFeed News*, *USA Today*, *The Athletic*, or other news or blog publications that use data to craft stories addressing public interests. The goals for the assignment were to have students be explicit about their data (where it came from, what its limitations were), to use rhetorical resources to make it interesting and accessible to a public audience (e.g., use of examples, amplification, pathetic and ethical appeals, using headers and other design choices, choice of calculative expressions like a ratio vs. a percentage), and to integrate visualizations to help explanation and persuasion. Students submitted a proposal, a first draft, and then a final draft that was accompanied with a learning narrative. Figure 22 goes into a bit more detail on this in terms of a rubric.

Rubric

Score	Criteria	Explanation
/5	Scope	The draft is at least 1,000 words in length.
/60	Global	There's something interesting and engaging here, yet you also don't overpromise what the data show. You are persuasive, you teach rather than just impart information.
/40	Org.	The piece is navigable and easy enough to follow for a broad audience. Good attention to design, accessibility, and the order of the story/argument are present.
/40	Local	The tone is appropriate, there are moments that are stylistically pleasurable in your sentences, the writing is coherent in a way that is still exciting.
/10	Data Origin	You talk about origins of data, its limitations, and not just how it was analyzed.
/20	Genre/Pub.	The piece follows recognizable genre conventions and is recognizable for a certain type of publication (e.g., <i>New York Times</i> , as a brochure for a certain non-profit)
/20	Visual	Your visual helps to aid understanding of the data you explore. It does not impede understanding or add an unnecessary redundancy. Likewise, the text around the visual complements the visual.
/5	Title	Your narrative should have a title (not "Public Writing Project").
/200		

Figure 22. Public Writing Project Rubric.

While students primarily took data journalism pieces as their models, a few used other public genres like brochures and public-facing reports if it made more sense for their interests and imagined rhetorical situations. Students wrote about a lot of exciting subjects like cancel culture, professional hockey player contracts, the increased price of EpiPens, bike rental usage, song genre and length, water access, and the distribution of school grant money. I want to look at three examples from student writing where statistical framing helped to meet the goals of the assignment. The first two pieces of student writing use examples to amplify a part of their argument and the third piece of student writing revises a statistical frame to make a stronger pathetic appeal that helps to ground *what* is being measured in more concrete terms. Since the public writing

assignment was focused on keeping statistics interesting and also accessible, I saw these as effective moves on the part of these students.

Jim⁴⁹ converts a number in order to amplify it and make it more accessible in his blog post about the impact of refined sugar on common U.S. dietary choices, linking these nutritional characteristics to poor health outcomes. I want to highlight one moment where Jim takes the recommended serving size of sugar from the USDA. Here is the text below:

With a recommended serving size of 3 teaspoons for women and 6 for men daily, Americans nearly tripled this amount by consuming almost 18 teaspoons of sugar per day. This equates to nearly 4,281 teaspoons of excess sugar consumed a year, or 48 pounds of extra sugar. That is an extra 192 chocolate cakes consumed by one person a year. Sugar has run rampant into almost all foods eaten but is extremely prevalent in drinks and snack foods of today. One 12-ounce soda holds as much sugar as one orange, 16 strawberries, and 2 plums combined. If people elected to substitute even a can of Coke a day for these alternative snacks, not only would you quench your thirst through the juices in the fruit, but you would also exceed your daily fruit intake by a whole cup. (“Jim” 2019, “TOO MUCH SUGAR, Sugar...,” 2)

Jim converts the average teaspoons of sugar per day into per year and then again to pounds instead of teaspoons, to graduate by quantification and amplify by copia. The amplification by copia continues as Jim focuses on snackfood, converting to chocolate cakes and cans of soda, conceding and countering with the fruit comparison. He accomplishes several things: he makes the serving size more accessible by putting it in a variety of terms, he amplifies the point he is making by using

⁴⁹ This is a pseudonym. All names of students are changed in this chapter to protect anonymity.

quantification to give a sense of the outsized amounts of sugar that the mean sugar consumption would represent, and he pivots to amplify by comparison in order to redirect a common habit to a healthier alternative (again using quantification to do so).

In his second learning narrative of the semester, Jim (2019, “Writing with Jim: Chapter 2,” 4) reflected on this moment in his writing, noting that, “To make a good argument an author does not simply just use the numbers presented in a data set to form an argument around”—instead, there are “many ways” a number can be “altered so that it solidifies the underlying theme of the paper.” In terms of the calculation conversions from recommended teaspoons of sugar all the way through comparing the amount of sugar in soft drinks and fruits, Jim (“Writing with Jim: Chapter 2,” 4) explains he had to take “multiple steps” to express this statistic in a way that best supported his argument: finding the recommended maximum of sugar consumption, multiplying it for a year, and then converting it into recognizable forms for his audience. Jim reflects that even though these were simple calculations, it took much more time to do this composing than simply lifting a statistic from the USDA guidelines and writing it right in. In other words: rhetoric was a huge part of his calculating procedure when considering the many ways he might write this statistic (or, this statistical frame).

Shannon (2019, “What’s With All the Controversy Over the Consumption of Meat?”) uses an example to introduce a counterargument to help show an additional benefit (financial cost) in addition to an ethical one with a new calculation in a piece also about nutrition. Shannon’s piece is a healthy-lifestyle blog post that compares the nutritional value of meat from animals farmed through mass-farming practices compared to meat from animals that are wild or raised with arguably more humane practices (e.g., grass-fed, free-range, cage-free). The paper looks into the increase in terms like “grass-fed” and “cage-free” over the past few years as a response of the meat

industry to increased awareness of animal rights activism, veganism/vegetarianism, and other cultural touchstones of the past few decades that have taken a more a critical perspective on the farming and slaughter of animals raised for meat consumption. Shannon then considers how another motivating factor in helping to better conditions for animals would be to explore health benefits of consuming more ethically sourced meat. By looking at the USDA’s National Nutrient Database, Shannon was able to compare different nutritional information between different kinds of meat (i.e., what she calls “enhanced” and “non-enhanced” meats to distinguish between less ethical and more “naturally”/ethically sourced meat) to find that vitamins and minerals like iron, B12, and zinc were more prevalent in more ethically sourced meat. Near the end of this piece, I want to highlight differences between drafts.

Here is the closing paragraph in both drafts of the paper that takes into consideration a statistical analysis of nutritional differences (moments of appraisal that I want to highlight are bolded):

Table 7. Shannon’s Two Statistical Frame Passages.

Shannon, Draft 1	Shannon, Draft 2
<p>In conclusion, if you want to cut back on meat sources for any number of reasons, I would recommend consuming white meats with the occasional red meat coming from the game category. I think the averages provided indicate that “grass fed”, “hormone free” and “cage free” do provide differences in the quality of meat. Look out for those sorts</p>	<p>In conclusion, it is very important to pay attention to labels when selecting the meat types to purchase. Search for keywords like “cage free”, “antibiotic free” and “free range.” Not only do they provide you with the greatest nutritional values, but they also remove that unwanted ethical dilemma. And I know, you may be saying to yourself that the enhanced</p>

<p>of labels and make sure to include leafy greens and legumes to pick up the rest of your daily needs for vitamins and minerals. Meat like anything else, is good in moderation and is a great source of protein for your body. Just be conscientious in understanding that all meat is not created equally, and it is important to pay attention to labels and read the fine print when selecting one best for you. (Shannon, “Carcinogen? Health Essential? The Truth About Meat,” 4)</p>	<p>meats are cheaper but think about it another way. If you save as much \$4 on enhanced meat that costs \$3/lb and consider it in the case of daily iron needs, then you would have to spend \$75 more to meet the same daily nutritional target. (Shannon, “What’s With All the Controversy Over the Consumption of Meat?”, 5)</p>
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In the first draft, Shannon has a paragraph that gives out advice based on her statistical analysis of the different kinds of meat she looks at. The writer talks generally about paying attention to labels along with some more generic dietary advice. In bold are moments of appraisal where Shannon pronounces (e.g., “I would recommend...”) in order to take on a sort of an advising tone. It is useful information based on the analysis she conducts, but it is also kind of forgettable and, perhaps, might be better as a bulleted list since it reads as a series of points of advice. In the revision, the statistical frame is memorable through a concrete example that a health-conscious audience might respond to. The writer anticipates concerns over money, and counters with an example about how those savings only result in large nutritional loss only to be made up by a significant financial cost. This writer uses quantitative rhetoric in this example to supplement the communication of an evaluation of statistical analysis that is dependent on that same analysis.

In her reflective writing, Shannon (2019, “Learning Narrative 2,” 2) shows how she was being intentional in her revision to use examples to make her analysis more relatable. Shannon reflects in her second learning narrative that she thought a lot about the importance of composing statistical information in ways that her targeted audience could understand more directly. In her first draft, Shannon highlights how she spent the time to make more concrete a “100-gram serving” as the standard measure for comparison by equating it to a “chicken breast or a small cut of steak.” However, in the second draft, Shannon wanted to do this sort of move more often, which led to the revision with the example of the amount of iron in more humanely sourced meat vs. unethically sourced meat and the financial cost. Shannon reflects that this example helped her do a number of things:

1. Helped convert examples from grams to pounds, which are a more familiar unit of measurement for her audience
2. Creates a more “relatable” argument in terms of grocery shopping
3. Amplifies why purchasing more ethically sourced meat is right through the financial argument for the “everyday consumer”

There are problems with the revision. For instance, is the ethical dilemma definitively “removed”? And, could you not just eat iron-rich grains and vegetables to ensure you are not relying too much on enhanced meat to get those nutrients? Also, it is a little difficult to read and might be a bit more accessible if she takes another sentence to explain the differences in price per pound on their own rather than in terms of money saved (e.g., just plainly writing \$3 per pound vs. \$7 per pound). Finally, it would be a good gesture to acknowledge people who just would not be able to afford more ethically sourced meat. Still, I was impressed with how Shannon drew from a goal she had in composing statistics in the early draft from a simple move of offering an example

to make a foreign measurement more concrete and expanded that rhetorical goal into something more layered and sophisticated as this revision of one of her concluding paragraphs. The detailed example put a fine point in elevating this conclusion in ways that were more relatable readers who might be concerned about financial cost.

The final piece of student writing I want to look at focuses on *pathos*. One aspect of public writing that I wanted students to think about was how to get people to care about numbers, how to get them emotionally charged about them in a way that still made an accurate depiction of a viable interpretation of those numbers. Wolfe (2010) notes the core importance of *pathos* for writing with numbers, as do D’Ignazio and Klein (2020) about the importance of leveraging emotion to make numbers memorable and impactful. Matt revises his opening paragraph for a blog post about changing weather patterns in Pittsburgh as a way to think about the urgency of global warming. In the first draft of the blog post, Matt sets the exigence for taking global warming more seriously, laying out the reasons and dangers for current trends in climate change but he also loses that urgency because the statistic is written in the muted tone in a typical school assignment where a writer reports out a number. By changing words and syntax, the number is framed much more toward an emotional response, inscribing appreciations of reaction and quality to help create a sense of urgency. See Table 8 for a side-by-side comparison (the bolding is to show key differences in appraisal).

Table 8. Comparison of Matt’s First Paragraphs in the First and Second Draft.

Matt, Draft 1	Matt, Draft 2
Climate change has become an evident issue in recent years. Greenhouse gases such as carbon dioxide hold heat from the sun inside the	Climate change has become an evident issue in recent years. Greenhouse gases such as carbon dioxide hold heat from the sun inside the

<p>atmosphere, keeping our planet warm. But increase in the use of fossil fuels, deforestation, and the amount of livestock releases more Greenhouse gases than in the past. As emissions increase, so does the amount of heat held in the atmosphere. This increases the Earth's temperature, leading to more melting snow and ice, warmer oceans, more evaporation, and changing conditions for plants and animals. If we continue to release carbon dioxide at the same rate, the temperature will increase 8.1 degrees Fahrenheit (F), by 2100, which could cause 16% of the species on Earth to go extinct. (Matt, "Public writing draft," 1)</p>	<p>atmosphere, keeping our planet warm. We have become our own enemy, as increase in the use of fossil fuels, deforestation, and the amount of livestock releases more Greenhouse gases than in the past. These emissions trap unwanted heat inside the atmosphere, turning the planet into a sauna, melting snow and ice, warming oceans, constantly evaporating water, and tearing away plants and animals' habitats. <u>If we continue to release carbon dioxide at the same rate, the temperature will increase by more than 8 degrees Fahrenheit (F), by 2100, destroying 16% of the species on Earth.</u> (Matt, "Our Climate is Changing," 1)</p>
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In the first draft, Matt does a good job of summarizing in broad strokes how greenhouse gases contribute to warming the planet and how continued human behavior exacerbates this problem before ending the paragraph with the statistical material if this behavior continues: the temperature will go up 8.1 degrees Fahrenheit leading to 16% of species going extinct. It is a good move to use Fahrenheit rather than Celsius (which is commonly used in writing on global warming, since scientific discourse uses Celsius) considering the U.S. audience, and the contrast between 8.1 degrees and 16% species going extinct does a good job graduating via the contrast from the

expand-entertain of “could lead...” However, especially as a lead paragraph in a public-facing piece, a sense of urgency is muted a bit.

In the revision, Matt focuses on leveraging emotion more, which makes a lot of sense since Matt is trying to establish the exigence for his readers to pay serious attention to this problem. In his final reflective project, Matt (2019, “Experiential-Learning Document,” 2) notes that it is valuable to use emotion because it can subtly help an argument reach a reader more strongly and make them feel more part of the issue being discussed. In the revision, Matt incorporates some intentional word choice that makes global warming seem more urgent (see bolding). Matt loses the hedging with “destroying” instead of “which could cause” to describe the possible outcomes of an 8 degree increase in global temperature, which is a notable different with an ethical concern about communicating about uncertainty, but otherwise these are very good substitutions of word choice: calling humanity “our own enemy” inscribing a negative judgment of propriety, graduating by the more intense word choice of “sauna” to invoke something more embodied and dangerous, and the violent imagery of “tearing away” which invokes a moral wrong and implies a negative judgment of propriety by this graduated word choice. There is a very thoughtful move here to capture interest early with more forceful resources of appraisal that make pathetic appeals.

5.2.2 Scientific/Technical Writing Assignment

The second major writing project was the scientific/technical writing project. This focused on expert audiences, with the primary model being the IMRaD (intro, methods, results, and discussion) report in which students would be writing for a company, non-profit, or for an undergraduate research journal. Some students also wrote grant proposals and a marketing proposal, if that better aligned with their interests and imagined rhetorical situation. Students wrote

about the same topic they did for the public writing assignment, or wrote on new topics, such as the relationship between trucking regulations and trucker fatalities, sexism in online movie review systems like IMDb and Rotten Tomatoes, e-cigarette use in teenagers, rising sea levels and actuarial science, and access to lacrosse for children and teenagers, among other topics. As part of this assignment, students were asked to incorporate what I called an “advanced calculation” as well as a small “mini-public genre,” like a short blog post or a tweet-thread to show their abilities to shift between audiences in how they communicate complex quantitative information.

In Units 3 and 4, we learned and practiced working with “advanced calculations”: analyzing datasets across many variables and sub-categories (e.g., analyses of age as well as gender identity, looking at different age-groups rather than all ages together), calculating a confidence interval, doing hypothesis tests, and doing Pearson’s correlation coefficient. We then used writing in journal assignments and classroom activities to practice writing about these techniques in novel ways to see where we could use writing to understand and communicate complex statistical techniques (e.g., write about and *explain* statistical significance for both lay and expert audiences and explain why you made the changes you did). After that, in Unit 4, we shifted more toward meeting something akin to genre expectations: what do expert audiences generally want when reading about quantitative information? (e.g., the data used, how they were collected, what techniques were done to analyze, how they could replicate).

The goals for the assignment were focused on meeting these expectations, understanding how to communicate about (more) complex quantitative information, and adjusting rhetorical strategies when shifting between audiences. More specifically, the goals were to have: students get used to the sort of expectations expert audiences have for quantitative information: explanation of how the data were collected and how an analysis was conducted to the point where it could be

replicated, explanation of affordances and limitations of the data collection and analysis, following genre expectations for writing about different kinds of calculations and data, and shifting between writing for experts and non-experts when writing about complex quantitative information. We went over models for IMRaD organized papers in class extensively and went briefly over some mini-public genres, as well: blog posts, press release, and tweet threads. See Figure 23 for the rubric used.

Rubric

Score	Criteria	Explanation
/5	Scope	The draft is at least 2,000 words in length.
/60	Global	You are persuasive, yet you also don't overpromise what the data show. The claims are clear, there is sufficient evidence, the claims and evidence are clearly linked.
/40	Org.	The piece is navigable and the organization is logically sound. Good attention to design, accessibility, and the order of the argument are present.
/40	Local	The tone is appropriate, there are moments that are stylistically pleasurable in your sentences, the writing is coherent, and you are clear.
/10	Data Origin	You talk about origins of data, its limitations, and not just how it was analyzed.
/10	Genre/Pub.	The piece follows recognizable genre conventions and is recognizable for a certain type of specialized audience (e.g., technical report, academic paper, grant proposal, audience is engineers, audience is government agency)
/20	"Mini"-text	The mini-revision or mini-public-genre shows a good understanding of navigating different rhetorical choices for technical information for a different rhetorical situation. The revision is well-integrated into the text or the genre chosen follows recognizable genre conventions.
/10	Visual	Your visual helps to aid understanding of the data you explore. It does not impede understanding or add an unnecessary redundancy. Likewise, the text around the visual complements the visual.
/5	Title	Your narrative should have a title (not "Technical Writing Project").
/200		

Figure 23. Rubric for Scientific/Technical Writing Project.

I want to focus on the part of the assignment about the rhetorical flexibility of moving between technical and public genres, since this dissertation focuses mostly on public texts. I'll highlight one example of student writing that I thought was successful, since they used the same statistic in three different contexts—twice in her marketing proposal and once in a press release.

Clare wrote a unique scientific/technical piece in that it was a marketing proposal for a non-profit named *A Call to Men*, which specializes in educating men on positive orientations toward masculinity. The proposal was about a campaign for *A Call to Men* that Clare named “Let Them Follow In Your Footsteps.” This campaign would be a mix of targeted social media advertisements for men and transit signage likely to be seen by fathers commuting to work, with all ads driven by language supported by research about reducing harmful stereotypes about men seeking help for mental health. Clare (2019, “How Much Data is Too Much Data?”, 1) notes in her learning narrative corresponding to this project that she wanted to think about how data informing advertising decisions was used both behind the scenes and in the public. In this piece, she saw “telling a father that it is likely that his son is concerned for his mental health [as] a powerful message fueled by data, which is what I wanted to accomplish in this most recent project.”

Clare has different sub-sections under a sort of literature review section (e.g., “Recognizing and reacting to negative emotions”) where she looks at relevant research that would support the rhetorical choices of her campaign plan and individual ads. I want to take a moment to look at how Clare wrote a statistical frame in one of these sections and how she repurposed it for another section in the report for ad copy. Here is that statistical frame in the research section that is about connecting proportions of fathers and young men struggling with feelings of loneliness and isolation:

Negative emotions and lack of emotional intelligence are two factors that often lead to the more extreme struggles that people can have with caring for their mental health, maintaining relationships, and behaving violently. According to the survey, 39 percent of fathers admit to sometimes or often having feelings of loneliness and/or isolation. This number spikes even higher in young men, up to 56 percent. This is just one example of an emotional struggle of fathers that seems to be growing through the generations. (Clare, 2019, "Let Them Follow In Your Footsteps: A Marketing Proposal to A Call To Men," 3)

Clare takes on a subdued tone often found in scientific discourse, but there are markers of appraisal like "spikes even higher," and the following sentence with "just one example" to flag judgments of normality and appreciations of reaction.

Later in the proposal, Clare (7) uses this statistic to craft the following example language for an advertisement: "39 percent of fathers admit to feeling lonely or isolated. Your sons are thinking about their mental health, too, but won't admit it. Seek help, and they will follow #InYourFootsteps." Fewer graduation resources appear that soften this language (e.g., "sometimes or often") compared to the original and the parallelism violated by the engagement resource of "but" and the move of denial (i.e., "won't admit it") sets up really nicely the call to action at the end to set an example in a succinct fashion. This is great attention to the different purposes here: explanation vs. influencing difficult actions.

Clare also uses this statistic in the press release along with other statistics taken elsewhere that also are framed in an explanatory fashion, but her moves to rearrange information in succinct way beneficial for the genre of the press release. Here is the text from the press release citing this number:

A Call To Men also wanted to acknowledge the struggles that fathers have with their mental health — 39 percent of fathers admit feeling lonely or isolated, yet only 3.2 percent have reported seeking therapy or counseling. Plus, when fathers with symptoms of depression were presented with the options to go to therapy or not go to therapy, researchers correctly predicted that they would be unlikely to go to therapy. This comes from a study published in the American Journal of Men’s Health. (Clare, “‘In Your Footsteps,’ A New Initiative from A Call To Men,” 8)

The contrast signaled by “yet only” between 39 percent and 3.2 percent is a contrast in amount but the repetition of the “3” also nicely maintains a continuity by repetition. This becomes amplified by the statistics on the predictive model. This all helps to set up an acknowledgement of difficulties to help support other material in the press release (and also in the report) to put these difficulties in conversation with similar but sometimes more intense issues going on with younger men. Packaging these statistics more closely together makes them more “copyable,” which is fitting for a press release, since the goal is to create something easily lifted into the structure of a news article. Clare made some interesting choices in appraisal resources to reorganized statistical information in ways suitable for new genres and contexts. She built statistical frames through multiple iterations across and within genres that are not merely plopped in there as stable “statistics” moving here and there, but are reformatted and rearranged in ways well-suited for their context and within the ecologies of meaning and rhetoric they are surrounded by.

5.2.3 Data Visualization Assignment

In both the public writing assignment and the scientific/technical writing assignment, students were asked to include at least one visual (e.g., histogram, line graph), since data visualizations can be so crucial for understanding the dataset as well as the available arguments and narratives involved in data analysis. It wasn't until Unit 5 where we explored in greater detail the functions, affordances, and limits of traditional data visualizations like various types of bar charts, line charts, tables, scatter plots, etc. We also spent more time on how non-traditional visual practices could create more accessible narratives/arguments about data and also leverage emotion and embodiment to help make a number memorable, following the work of D'Ignazio and Klein (2020) in *Data Feminism*. Using color, images, interactivity (e.g., through the data visualization software Tableau that we used in class) as well as animation were discussed in order to make sure students were not limiting themselves to only the minimalist ideal of Edward Tufte's (1983) low "data-ink" ratio (i.e., reduce perceived visual redundancies to make the quantitative information stand out most prominently).

The data visualization assignment asked students to revisit either the public or scientific/technical project and to revise an earlier visual or create and add a new one based on what they had learned from our data visualization unit on non-traditional forms of visualization and our workshop with the data visualization software Tableau. I wanted students to reconsider earlier visualizations or create new ones based on getting more practice at doing traditional and non-traditional visualizations in Unit 5. And, further, to make sure they were using text and/or the image itself to rectify any possible misleading arguments that the visualization might leave a reader with (e.g., not being explicit enough about what the relationship between variables might mean without proper contextualizing). See below for the rubric for this assignment.

Rubric

Score	Criteria	Explanation
/40	Global	The DV adds to the argument or story being told overall and the argument within the DV uses visual resources in clear and/or creative ways to make something persuasive and memorable. The DV might, but does not have to, leverage emotions of readers in order to be persuasive and memorable. The DV might, but does not have to, utilize a minimalist design that serves to show a relationship in an underscored fashion...but it does so in ways that DO NOT presume a totalizing standpoint that neglects that context of the data it draws from (either by doing so within the figure or in the text that surrounds it)
/30	Org.	The DV is navigable and the organization is logically sound. Good attention to design, accessibility, and the order of the argument are present.
/10	Self-contained	There is an element of self-containment—perhaps not totally, but the DV can stand on its own enough for a reader to get the gist of the argument that is being made.
/10	Text	The added or revised text complements the visual in ways the visual cannot do itself, the pattern/organization/analysis of the DV mirrors what is going on in the text.
/5	Process Note	I'll use this mainly to supplement the other categories, but I'll grade the Process Note itself in terms of a clear effort to put it together: there is a strand of logic linking claims and evidence, you point to specific elements of making the DV and do not write too generally about it, there is organization of your thoughts on paper rather than thoughts randomly displayed as they came to you while writing without revision
/5	Title	Your DV should have a specific title that explains the relationship, data, variables, etc. to a point where it is distinguishable from other figures/tables in your project.
/100		

Figure 24. Rubric for Data Visualization Assignment.

I want to look to look at one example of how a student used co-text (e.g., examples, explanations) and color to help frame statistical information. Dante revised a data visualization from his “mini-public” genre portion of the scientific/technical writing project, using concrete examples and color to make distinctions that helped make salient the impact of climate change on rising sea levels for homes. Dante wrote a short blog post for GEICO’s customer blog to talk about

the predicted sea rise levels according to scholarship from actuarial science as a way to write to a lay audience about where to consider buying a home in respect to global warming's effect on possible flood and storm damage to that home. Below is the text and visualization from the first draft:

Like a lot of others, you may dream of buying such a place in the Southeast Atlantic, perhaps somewhere on the Gulf Coast.

Unfortunately, in addition to a 3-car garage and a deck, you may want to consider just exactly *where* you're buying. Why? Data provided by the Actuaries Climate Index, or ACI, has shown in past years that sea levels continue to steadily rise with time. Looking at this relationship between sea level and time, a report by the Society of Actuaries created a model that will accurately calculate sea levels of the future. Here's what the model projects for sea levels into the future: (Dante 2019, "Checklist for your Dream Beach House: Great Views, A Pool... and Higher Ground?," 10)

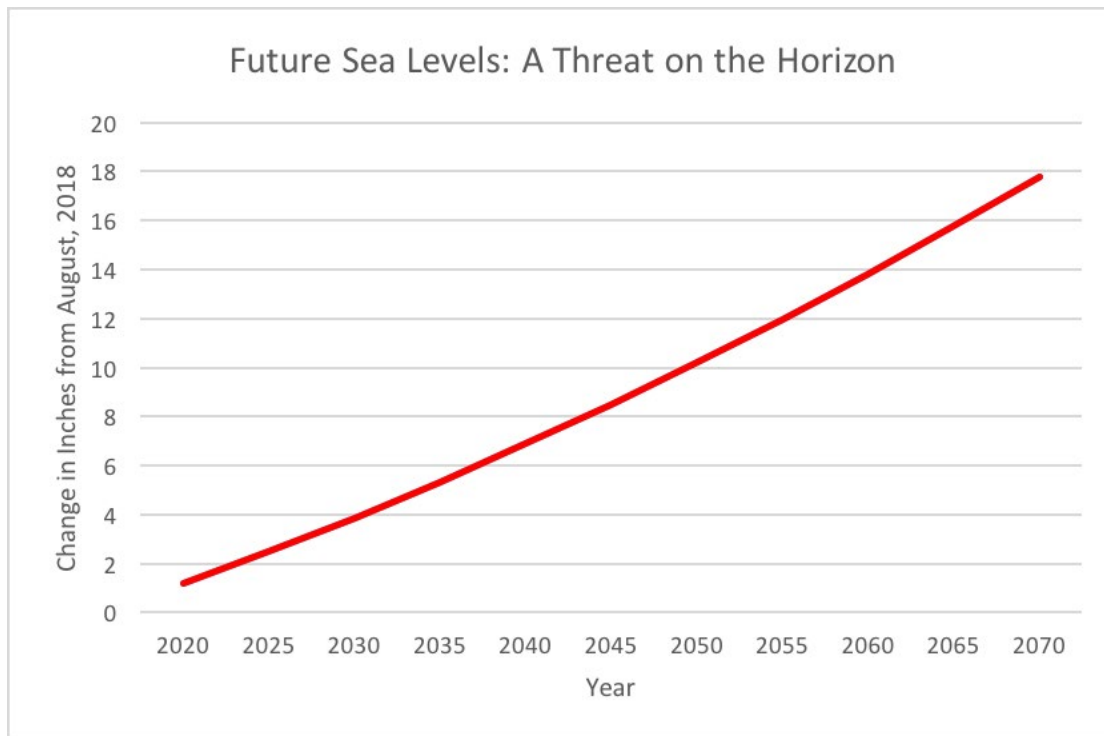


Figure 25. First Draft of Dante’s Data Visualization.

And here is the text that follows the chart:

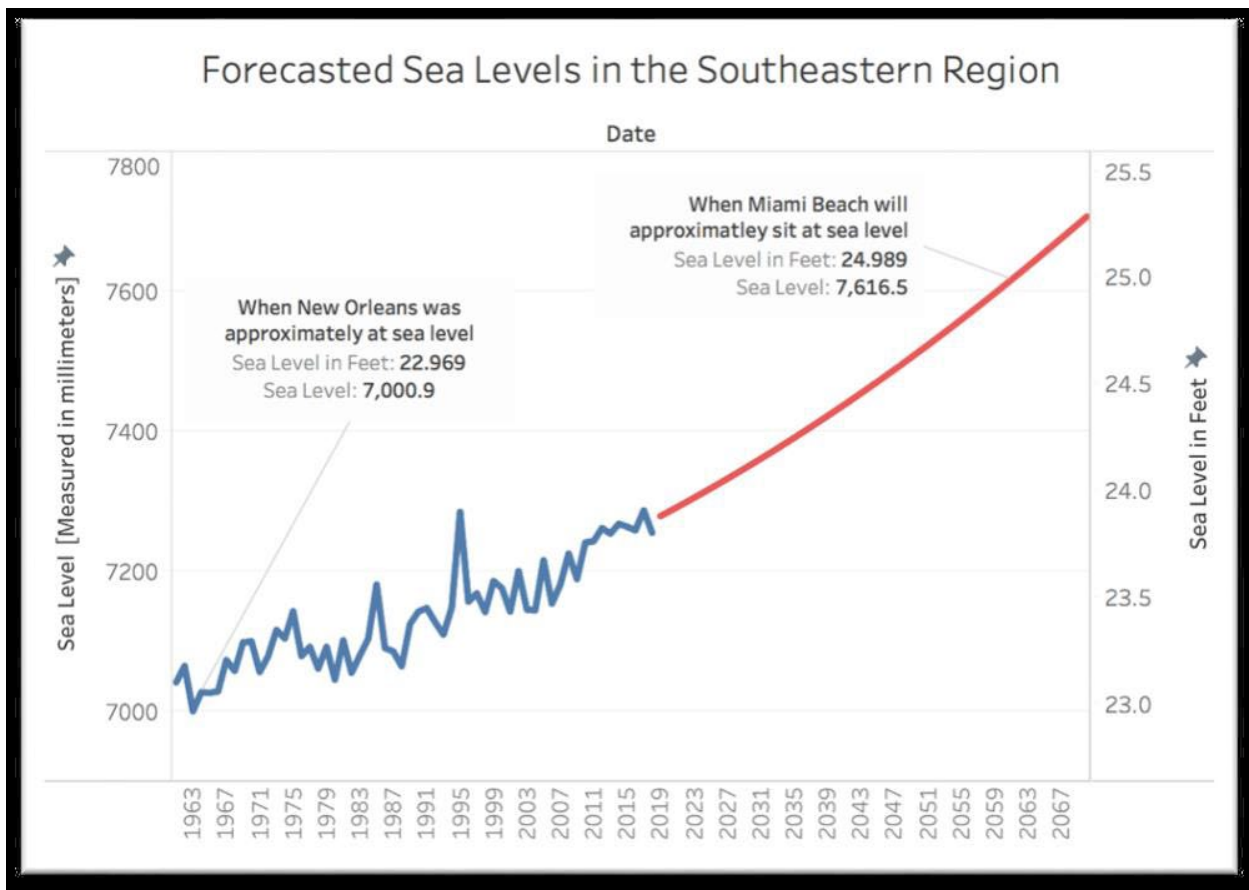
If current trends in the rise of sea level continue into the future, sea levels could raise about a foot higher by the year 2055, and a foot and half higher by the year 2070. (10)

Dante expands through the entertainment engagement resource using the modal verb “may” and the rhetorical question to show there are many options, but he wants to get his readers to consider the best options. He also expands using the endorse resource by appealing to the data from the ACI showing a predicted increase in sea level through 2070. Following the visualization, Dante continues to entertain by putting it in terms of feet from 2055 and 2070 to make it a bit more concrete. I think this is a good effort here, to start, but I agree with Dante’s instinct to revise the visualization as it is fairly plain and not easy, on its own, to interpret.

In Dante’s (2019, “Process Note,” 1) process note, he wrote that he felt this visual was deceiving because it only included the forecast value rather than the forecast values + the historical

sea level values. Having just the forecast values makes it difficult to know how meaningful the forecasted rise in sea levels is. To rectify this, Dante used historical data from the 1960s through the present, used examples of US cities, used color, and used different units of measurement to make the visual more meaningful and accessible to an audience that may be less familiar or comfortable with forecasting visualization conventions from actuarial science. What’s more, the text helps contextualize this visual in a nicely integrated fashion. See below:

Data provided by the Actuaries Climate Index, or ACI, has shown sea levels have historically been rising, as pictured by the line in blue below:



Legend

- Forecasted Sea Levels
- Historical Sea Levels

Figure 26. Dante’s Revised Data Visualization.

As Wolfe (2015) notes, the rhetoric behind data visualizations are heavily dependent on the work that comes much earlier than simply choices in color, the type of chart, or other design features. The choices made at the level of analysis can have a big impact on the sort of visualization that is produced and its rhetorical characteristics. Dante makes a good rhetorical choice at the level of the data selected.

The choice to have the visual use historical sea levels is a great move to further graduate by quantification and flag an appreciation of reaction, worrying readers that might be skeptical of a “fictional” model—what is evident here is that this trend has been on record for many decades. The use of color also helps graduate by intensity, with the color starkly contrasting the past from the future along with the reference points of cities helping to maintain this parallelism. The choice of Miami against New Orleans is also a good one, as New Orleans is a city well known to have flooding issues, so providing a well-known coastal city as analogous helps to show that flooding (and thus high insurance premiums) will show the range of the ongoing issue.

The text that follows this visualization also makes some evaluative choices that differ from the revision in terms of stronger language but also in ways that pair nicely with the visual to amplify it further. Here is the text that follows, below:

Using this information from the past, a report by the Society of Actuaries was able to create a model equation to forecast future sea levels which is displayed by the red line above. If current trends in the rise of sea levels continue into the future, it is clear that sea levels could raise about a foot higher by the year 2055, and a foot and half higher by the year 2070, putting several regions **in potential danger**. As one can see from the visual, the city of New Orleans already sits **well below** present sea level— the model shows that this area will **continue to sink further** below sea level. Looking into the future years on the graph,

the area surrounding Miami may eventually face **some of the same issues as New Orleans if sea levels continue to rise in the same manner as the past.** (Dante December 2019, “Checklist for your Dream Beach House: Great Views, A Pool... and Higher Ground?,” 10)

I bolded some of the key changes that signal interpretations to make in tandem with the data visualization. For a public piece, it is fairly subdued but still has clear markers of evaluation. The use of “potential danger” is softened by “potential,” but the choice of danger helps make clear that this is something that should cause a negative appreciation of reaction. There is also a subtle building of intensity from the bolded “well below” all the way to “same issues as New Orleans.” The graduation by mass emphasizes that New Orleans is very low in terms of sea level, which is graduated even more by the endorsement of “this model shows that this area will continue to sink further below sea level.” Closing the paragraph on Miami brings in the engagement resource of entertain via “if,” but the graduation that preceded in respect to New Orleans becomes mapped onto Miami to make the parallelism between New Orleans and Miami more explicit here (and amplifying further through that explicitness in the text). The combination of visual and verbal elements in the revision helps to more strongly frame the statistical information in terms of a concrete story, rooted in the past, of specific U.S. cities. This builds a bigger emotional connection to the possible hazardous effects of global warming by putting visualizing the relationship shown here in more concrete ways via existing cities readers would be familiar with.

5.3 Lessons Learned, Issues, and Possible Revisions for Next Time

The big take-aways from the course were that there is not Best Way to communicate quantitatively in a hyper-specific mode, but that one should approach quantification humbly, to not overpromise, to ethically consider what is being measured, and to align how they communicate their evaluation and framing of a number with the context of the story or argument they are making. Finding the sweet spot between being transparent while still guiding your reader toward the ways to think about your statistics that you are advocating for—to not just have “show all the work” but to have something narrow enough to be meaningful.

The thing I was most proud of while teaching this class is that we started to realize together the need to avoid a “show your work” mentality of writing with numbers and to think explicitly about creative ways to communicate to a (specific) audience about the way we want our audiences to interpret the numbers we share in quantitative writing. There were two ways I want to explain this idea of “show your work,” because in a very general way, it can be a very good thing for writers to do (i.e., we should explain how we arrived at the conclusions we arrived at, it is helpful to try to be transparent and share with readers how you arrived at your conclusion). However, I noticed two things happening early on in the semester and also early on in the science/technical writing units. First, students did not always think to spend a lot of time adjusting the rhetoric in and around the numbers they used. This speaks to the “drop-quote” nature of statistics at times. That is, a writerly attitude that a writer just drops it in to their writing and moves on without a more thoughtful engagement with how to integrate that number—found or created from elsewhere—into the surrounding text of their argument or narrative. This “drop-quote” nature of statistics is reminiscent of a statistic as inartistic proof, as existing prior to rhetoric.

Second, some students came to realize in their reflections and show in their successive drafts that they got too caught up in a writing-to-learn mode (which is fine!) and not-so-much in a writing-to-communicate mode. That is, they were wrapped up in getting it “right” and less so in trying to persuade, entertain, etc. with the numbers they cited and calculated. As one student put it in their reflection, up to their time in Writing with Data, their “only experience with data sets or excel was simply in doing calculations for other classes. With that experience, there was no real need to then write about the data, and absolutely no need to make the presentation of it interesting. The purpose was just to get results and correct answers.” As the semester went on, we tried to find the sweet spot between being transparent while still guiding your reader toward the ways to think about your statistics that you are advocating for—to not just have “show all the work” but to have something narrow enough to be meaningful. As revealed in the first learning narratives, many students associated quantitative analysis with being “correct,” which is something that is not so black in white in statistics and in statistical writing. Finding that balance, between “showing your work” and finding a narrow focus on how to frame a statistic that is reasonably appropriate for a given context—this was the hard work of a semester’s work in confronting how numeracy and literacy can work together.

As the semester went on, students were asked to more explicitly confront a melding of literacies—to think about how writing gives differing perspectives to the numbers students created and cited. Writing in multiple ways and for multiple situations (in both activities and assignments) helped students see that there is not necessarily one Best Way to make meaning and communicate quantitatively in a hyper-specific mode. But, there are more or less ethical ways of communicating with numbers (e.g., providing proper context to the analysis, being honest about limitations, being

careful not to overpromise what the analysis reveals) and it is important to consider how to align an evaluation of a number within an ecology of meanings in a given text.

There are several ways I would like to revise this course: more scaffolding, more attention to data preparation, and adjusting assignments to be more clear. Overall, there could be more scaffolding and small-scale support throughout the course. For instance, though we had a data visualization unit, this only came at the end of the semester. Before that, I only did one brief workshop and provided a list of resources for making visualizations with Excel. Allowing more time to help students develop visualizations prior to the data visualization unit would have helped some students a lot more prior to that final unit of the course. I also found that it was hard to always check the statistical analysis of every single element of student writing in the course. I often caught potential issues and worked with students 1-on-1, but that was both more work for me and, ultimately, for students, too, if I caught an issue too late. I'd like to rectify that by doing more earlier in assignments where students work together in peer groups to share and work through their analysis (e.g., students walking through each step of their analysis and asking for feedback from two other students). One conundrum from issues with analysis is that there were some great writing students did that just simply got the math wrong. I'd like to mitigate that by subjecting their analyses to more review earlier in their drafting.

As I designed the course, I knew I wanted to spend a lot of time with students on finding and contextualizing their datasets. We spent the first two weeks of the course on this. However, I do think students could have used a little more time or structure on this. I had them write a series of journal responses that investigated their datasets in a preliminary way, but I think want to try to do something like a small assignment called a "dataset biography," where they explore the history of the dataset: who made it, all possible information on how data were collected, explaining

differences between variables, etc. Getting intimately familiar with their data would help their writing when they are trying to think about limitations to their analysis and also help them avoid issues of overstating what they can claim in their writing. I could make room for this extra assignment by assigning less reflective writing. I learned as the semester went on that this felt like overkill to some students, and I might eliminate one of the four reflective papers, or, perhaps, shorten up the middle two by a few hundred words.

Finally, I also think I would change the framing for the scientific/technical writing assignment to avoid the “advanced calculation” language. I think this intimidated students and stressed them out too much. I was really just looking for them to write about something more complicated than a simple frequency count or percentage—they did not have to, say, calculate inferential statistics on their own. One of the goals of the assignment was to give them practice trying to communicate complex, non-intuitive information to varied audiences; I need to spend more time working on how to practice doing that kind of writing rather than just showing models and I need to be clearer up front about what is an “advanced calculation” for the purposes of the assignment (and just change that language all together).

5.4 Conclusion: Copious Statistics Across Time and Space

In addition to Erasmus’s pedagogy of *copia*, I would like to conclude with two other approaches to rhetoric as a way to conclude this chapter and this dissertation. We are very (maybe too) familiar with Aristotle’s (1991, 1355a) definition of rhetoric as “an ability, in each case, to see the available means of persuasion.” One of the driving lessons of this dissertation is that, as a technology of distance, statistics are too easily thought of as something untouched by rhetoric, but

any instance of a statistic is an instance that a writer made choices, and those choices could have been different, leading to different possibilities in interpretations made by different kinds of readers, and thus different possibilities of persuading. Statistics are not stable facts but are dynamic rhetorical fragments that will be changed in many ways by the writers and contexts they visit. A quantitative writer should approach their writing like any writer: carefully noting what options exist, what options should not be taken, and choosing from a range of good-to-better options.

Though less familiar, but still influential in writing pedagogy, Ann E. Berthoff's (1981, 71) valuing of ambiguity, on the "shifting character of meaning and the role of perspective and context," led to her emphasis on asking not questions like "What do you mean here?" when commenting on student papers, but, instead, questions like "How does it change your meaning if you put it this way?" or "What do you make of passage *A* in the light of passage *B*?" In other words, constantly reading and re-reading the writing we make should lead us to think often about alternatives not just in terms of the changes we make in a vacuum but how those changes interact with an ecology of meanings throughout an entire text. Statistics, as concrete-yet-hopelessly-entangled-rhetorical-objects, travel far but can only be new iterations as they are never exactly the same because of these ecologies they surround themselves with.

Studying the circulation of statistics in these case studies and reading my students' drafts of different statistics from *Writing with Data* has left me with the notion that a quantitative analysis is a practice that has to be interpreted, but that act itself, as a writer and reader, is infinitely complex. Interpretations can be multiple, there are always many ways to look at results of a statistical analysis. Deciding on any one (or more) interpretation for ourselves takes language and other rhetorical mediums to make meaning. Berthoff (42-43) writes that it is crucial for teachers and students to see language as an instrument rather than a tool, one that shows we are not "gods

who have perfect knowledge,” but, instead, “powerful creatures who can describe and define; argue and tell stories, encouraging, persuading, entertaining: *rhetoric* is what we have instead of *omniscience*.” Berthoff sees reading and writing as concerned with making meaning, not finding a “message” already there; it is to allow for interpretations ready for consideration, ongoing contemplation, and dialogue. Evaluation (in my case, using appraisal as an instrument to think with in respect to evaluation), first and foremost, helps orient us more toward thinking about what a number might mean and how we might then try to think toward persuasion in a final draft. Practicing a pedagogy of *copia* when teaching quantitative writing can help us see the many stories we can tell about numbers but remembering a pedagogy of *copia* as we read and write numbers in all domains of our lives can help us become more attentive quantitative rhetors. Language and other semiotic modes can be an instrument to help us think with numbers as we think about what they might (and might not) mean.

6.0 Metaphors and Statistics: Distance, Frames, Tendrils

This dissertation is driven by what a statistic is, how it exists in texts, and what it does—what service it provides to that text. The tendrils of a number extend beyond the number itself in terms of making meaning and persuading, reaching out to a few words away to much further (e.g., a few paragraphs away in a news article, a few articles away in a newspaper, a few segments away in a documentary). I study this question from a narrower perspective of public texts (i.e., where writers have the task of explaining what the statistic’s relevance is to lay audiences’ material conditions for living) and in terms of how the statistic changes as it circulates to see a range of ways it might be composed. Throughout the case studies that I examine, the choices a rhetor has in composing a statistic are reliant on the context in which the statistic appears and how that context frames a number to signal to audiences how to interpret statistical information—to include the results themselves, what is being measured, how it is being measured, and who is doing the measuring. Statistics, as fragments of text, seem to travel well. Yet, they also aren’t ever quite the same. They are a “technology of distance” because they promise trust—supposedly, they are the result of a system, a sort of machine, and are not muddled by human error of some kind like so many other kinds of knowledge. This helps ensure that they travel well and far. This is the common perception behind the function of statistics, but, in reality, of course they are touched by humans. Not only in how they are made in the sense of Latour’s cascades but because they need language and rhetoric to make meaning out of them. They need interpretation.

In my analysis, I used the concept of framing from a variety of disciplines to try to address this contradiction between traveling well and changing often. While useful as a heuristic, the central metaphor of “the frame” in framing is problematic to describe a statistic. It cannot be

captured, in its entirety, in any sort of neat rectangular way. A statistic is always in excess. As I explored in the first chapter, Latour shows how a statistic is a cascade of collapsing information and materiality: a census interviewer filling out a form, tabulating forms into a dataset, creating calculations from this dataset, and so on. So much, necessarily, has to be left out in order to make what we might call a “statistic”—and, even more so, when we try to put it in writing for a public audience. A statistic, in its entirety of material and informational essence cannot be captured and forced into existence, especially for public genres like a news article or a blog post where space is limited. The “frame” consists of rhetoric from an interested standpoint. If you can’t capture the excess, what do you capture?

Rhetoric stands in for this excess. The statistical frame is a necessary move rhetors make in public writing to try to signal how to evaluate statistical information, since assumptions carried forward in such writing are such that readers cannot be expected to fully know the extended material reality involved in the cascade of information that sustains and creates a statistic (and, for that matter, journalists and other public writers might not know this cascade much either). Another metaphor I use are that statistics have “tendrils.” These frames are not “neat” like the kind that capture a photograph, but they are a lot messier and nonlinear—they extend backward and forward in a text (and beyond) to say something about the results, how they were obtained, who got them, and what they are about. In the case studies I examined, statistical frames came to have certain commonalities that extended both near and far in a text: amplification to highlight a significance of scale, expanding and contracting viewpoints about a number through engagement resources, arrangement of a text in ways that support different kinds of ethical appeals, and foregrounding social processes and humanizing elements of what a statistic represents.

Amplification is a natural fit for what statistics tend to do in public texts. A number has to mean something in relation to its size and how writers want their readers to evaluate it. In all three case studies, all sorts of methods were used through word choice, syntax, and images. For instance, word choice itself in main verbs like “outweighs” and modifiers like “far” in this example amplify a sense of how significant a numeric relationship might be: “Cigarette smoking is causally related to lung cancer in men; the magnitude of the effect of cigarette smoking far outweighs all other.” Syntax, especially by series construction, can also amplify numbers. For example, Cohen (2016) writes “538 is currently predicting a 65 percent chance of a Clinton victory, while HuffPost’s Natalie Jackson and Adam Hooper are projecting a 98 percent chance,[1] and Sam Wang at Princeton Electoral Consortium is predicting a >99 percent chance.[2]” The amplification happens here by contrast, with very little in the way of word choice used to amplify the number. Images might also contribute to amplification. The image of the stacked bar graph amplifies by *copia* when the blue of Clinton’s probability overwhelms the red of Trump’s probability, pushing it out and increasing the presence of blue.

Engagement resources also played a big role in assigning evaluation of numbers across case studies, especially when making ethical appeals about how the number was created or who helped create the number. For instance, Frank McGee in the NBC special from the second chapter says that “Many medical researchers agree with this conclusion [that cigarette smoking was a “major cause” of lung cancer, among other maladies], but some raised grave questions as to why this is so.” Throughout many of the texts in the chapter on smoking and the chapter on electoral politics, moves like this occurred where engagement resources like the counter (here, the conjunction “but” leading into “grave questions”) are used to introduce other viewpoints or dismiss

other viewpoints. In this example, it is the “fair balance” trap that helps introduce doubt, something that was very much an outcome that the tobacco industry wanted to happen.

There were also instances where engagement resources were also used to make a sort of amplifying or diminishing effect. For instance, in the May 1892 *Chicago Tribune* article from chapter four, an entertain move does just this: “Of 728 negroes lynched during the last eight years 269 were lynched for rape, or because they were charged with that offense, or in some cases were only suspected.” With the final two clauses, the number 269 is diminished in terms of quantity but amplified in terms of injustice (i.e., “charged” might mean innocent, “suspected” might mean unfairly targeted).

Engagement resources also can play a role in hedging. In chapter three, this is especially apparent in Nate Silver’s writing and people responding to his writing. Silver’s style has a back-and-forth rhythm to it because he qualifies so much of what he writes while still using pretty confident statements during different parts of those rhythms. Many cultural critics read this style as self-serving, as having it both ways: I’m right if this happens, and I’m right if that happens, and so on (see, especially, Milbank from chapter three). While engagement resources are used to hedge in useful ways (and hedging is important in statistical analysis that is inherently reliant on uncertainty), chapter three shows how using engagement resources to evaluate numbers for an audience might be best utilized when using the best terms. Ellenberg’s shift from “right or wrong” to “better or worse” shows how such a style as Silver’s and other forecasters might use engagement resources that hedge in ways that more explicitly identify what a given statistic might mean on their own terms, rather than terms that are most familiar (i.e., “right or wrong”).

Use of engagement resources often had a relation to ethical appeals involving the “how” and “who” of statistics, but this is also seen in more macro versions of arrangement than the micro-

syntactical moves in the use of localized engagement. Beyond the immediate proximity to a number, the tendrils of the statistical frame could extend outward quite a bit, especially in terms of how the number was calculated, who was doing the calculating, and what was being measured. Arrangement of sentences, paragraphs, entire texts, and so on especially helped to make ethical appeals that could have a direct impact on how interpretations of a statistic were signaled. How the segments of the news specials in chapter two were arranged to give background on the committee or to provide expert commentary had very different effects on inscribing or invoking positive or negative judgments of capacity, veracity, and propriety. Likewise, in the newspapers, how different kinds of design layouts of articles were used helped promote doubt about the lung cancer/smoking correlation or strengthen a certainty that it was legitimate. In chapters three and four, the ways in which Nate Silver, Ida B. Wells, the *Chicago Tribune*, or *FiveThirtyEight* were inscribed or invoked with attitudes helped build claims of competence, incompetence, morality, immorality, and so on in ways that helped signal to readers the kinds of people and processes used to create the numbers described.

Finally, though in the minority, sometimes statistical frames helped to humanize a statistic by being more forthright about the social processes and material reality involved in how the statistic came into existence. In the second chapter, *Smoking and Health* took time to explain how causality was determined for the correlation between lung cancer and cigarette smoking in men and this sometimes circulated in some ways to the press, about how there was an ongoing process to determine what the correlation meant and how this was known. Additionally, some newspapers, and the CBS news special in particular, gave plenty of background on the committee that wrote *Smoking and Health* as a way to show the humans involved in organizing and assembling the research that went into writing the report and evaluating causality. In the third chapter, efforts by

Ellenberg, Regan, and Levitz are more invested in the *FiveThirtyEight* probability as an intellectual project and how it can help them learn something about electoral politics in the U.S. These explorations of methodology for lay audiences don't necessarily explain every detail, but they do let the audience in on the processes involved in constructing, in inventing a statistic. That it is a social process, that it is full of rhetoric in terms of what Perreault's (2013, 15-17) exploration of the CUSP model does where: the social dimension of scientific work is foregrounded, expertise is seen as multiple, room for criticism or description of limitations is provided, and there is recognition of the various public orientations toward the scientific topic (e.g., establishing goodwill by not condescending toward audience).

Humanizing statistics is not just describing that there are social processes involved in creating a statistic from data collection on up. As Wells shows in chapter four, dwelling on *what* a statistic measures can remind readers that the number comes from somewhere—that there is context for that data prior to collection. In Wells' case, the number came from specific people who were murdered by white supremacists and Wells used her rhetorical abilities to keep these victims at the foreground. Not necessarily in gory detail, though she did that at times; but, instead, through a specific and bare assertions of who these people were, what happened to them, and who did it. These micro-stories helped to make the statistic more visceral, to help readers imagine what that scale of violence meant at the individual level and how that scaled up in horror rather than in an abstract notion of injustice. But even in more subtle ways, like how writers like Warner in chapter three calls for a relation to probability as one of action (something that Black, 2018, explores in terms of performance) helps to ground statistics as something real, happening, alive. Something to *do* and act upon.

Studying these case studies has left me with the following about ethical composition of statistical frames for public audiences:

1. Inviting audiences into the process of how the statistic was created
2. Foregrounding the materiality of what the statistic measures
3. Acknowledging uncertainty but being forthright about what is meaningful about the statistic

As was the case with causality in the second chapter and exploring methodology in the third chapter, some version of a CUSP approach where writers invite audiences into how a number comes into existence and the sorts of questions that might be associated with any given meaning ascribed to it helps to signal to the reader that they are a partner in interpretation rather than solely a receiver on it. Even if the number is never completely explained and the writer does have an explicit standpoint on what the number means (see #3), the effort toward some version of transparency extends goodwill toward the audience. It shows that there is a respect for an audience and displays a good faith gesture toward using numbers as ways to think about the world rather than overpower an audience into submission. It avoids the trap that Brian Resnick (2016) describes of political canvassers where “in a typical canvassing conversation, a person knocks on the door and spews statistics and facts to convince you to vote for a ballot measure. Those interactions are at best instantly forgettable and at worst incredibly annoying.” The goal in this invitation is not to let the numbers “speak for themselves,” but rather to show how you got to the number in some fashion.

Second, as is the case especially with Wells and as I write about in the conclusion of chapter four, foregrounding the material reality that the statistic originates from avoids the abstracting effect, the psychic numbing that might occur when numbers function as a technology of distance

that promises an avoidance of a human touch. Making clear that humans were touched to make that number can help remind and motivate action. It is too easy to get caught in the abstraction of numbers and making moves as a writer to counteract this possibility, as Wells does with her counterstories, can help resist that effect.

Third, using amplification and other rhetorical methods to be explicit about what a statistic means can help avoid a missed opportunity to ensure that the audience comes away from their reading experience with a tangible sense of what stands out about your interpretation of your data. In *Data Feminism*, D'Ignazio and Klein (2020, 164-68) point out that it is a failure in communication if we do not name what we see in our interpretations because of some fuzzy idea of neutrality and letting readers draw their own conclusions (as if they have perfect access to an essential version of what the data say that is beyond any symbolic representation). They use an example of a data visualization about mental health diagnoses in jails according to race; since the disparity between white people receiving diagnoses in jail is very large compared to people of color, "Racism in Jail" is likely a better title than "Mental Health in Jail."

In my teaching, I want to continue to pursue these and other possible ways of considering how to ethically compose statistical frames in these three ways, using some of the methods that I found in my case studies: Amplification, managing multivocality through engagement resources and arrangement, and foregrounding the social processes and materiality of statistics. While I did explore these methods in *Writing with Data* to some degree, I do think I could do more on that third item, which I think is most directly related to the elements of ethical statistical writing I describe above. In the previous chapter, I mentioned that I wanted to do more scaffolding to get students more familiar with their dataset, and, thus, more acquainted with the material reality of its construction in order to set them up better to account for the context in which the statistics they

write were created. But, more broadly, I hope to work with students on how any statistic is part of a larger text, that it is not something to be inserted or taken out with relative ease. That is a task where the object is to see statistics as not a drop-quote, but something everyone should always play a very invested and intentional role in writing. A statistic, as a statistical frame, is often omnipresent in a text.

In my continued research on this subject in rhetorical theory, criticism, and pedagogy, I want to build more centrally on rhetoric that incorporates multiple voices that can be that built into interpretations of statistics in ways that are *not* a contest to uncritically show “fair balance” or to, more cynically, undermine good faith research into hard questions. I am interested in how statistical writing can be more pedagogical, in a sense of inviting audiences to see how statistics are artistic proof in a *positive* way (not as a way to consider them as “lies”). Thus, making room for the voice of the audience through their interaction with the text, in the spirit of Perreault’s CUSP approach. In other words, making an effort to show some of the machinery below the hood of the statistic and inviting the reader to engage. Finally, this also includes the significant ethical components of representing *what* and *who* is measured. Following D’Ignazio and Klein in their third chapter of *Data Feminism* on elevating emotion and embodiment, I’m interested in thinking about and teaching statistical framing that does not only acknowledge contexts or limitations but honors them. Statistics as instruments to think with are not about “reasoning” purely, but can (and in some cases, should) be a full, visceral experience. How can we do work like Wells and others where statistics are more embodied in ways that might counter the “numbing” effect of numbers conveying human suffering? This, too, is question of voices: how is the statistic made, who does it relate to, what does it mean in respect to real, material consequences in the world?

These are important questions for statistical writing today, to imagine new possibilities but also to become more productively acquainted with how this writing tends to have common sorts of frames. Many of the same arguments grounded in quantity explored in chapters two and four are familiar today. Use of arrangement and engagement to create false balance for the safety of smoking is reminiscent of the accrual of doubt surrounding global warming or using masks to prevent the spread of COVID-19 in 2020. Similarly, lynching apologists' condemnation of lynching in the abstract but suggesting it was a colorblind issue that was understandable because of the alleged acts of misdeeds committed by lynching victims shares much with dismissals of the scale of police brutality and extrajudicial murders of Black people and other people of color in the U.S. today. Though I am writing this prior to the point in which there will be much buzz around election forecasting for 2020, we will probably again note a strained interaction between various journalists and cultural critics with statistics of probability as a performance of right or wrong. What do statistics *mean*? In ordinary language, we talk of "statistics" like we talk of "facts": something hard, immutable, entirely knowable. This study of statistics circulating as statistical frames, of course, refutes such an orientation toward a statistic as such. Statistics move and they necessarily change. But, they might change in familiar ways, as these familiar notes between history and contemporary framing of statistics show (and, what I assume, will be familiar as November 2020 gets closer).

Making statistical writing more ethically sound can be paired with getting to know the familiar statistical frames that we always tend to find in public discourse. Pairing an ethical approach toward statistical writing while anticipating the sorts of rhetoric most typically encountered can combine into a better way forward for quantitative writers interested in being, to

adapt from Quintilian, not just the good person speaking well, but a good person speaking and calculating well.

Bibliography

- “99.9% vs 66.9%.” 2016. *Bark Bark Woof Woof* (blog). November 7, 2016. <https://barkbarkwoofwoof.com/2016/11/99-9-vs-66-9/>.
- Abelson, Robert P. 1995. *Statistics as Principled Argument*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- “About Blackfoot News. (Blackfoot, Idaho) 1891-1902.” n.d. Chronicling America: Library of Congress. <https://chroniclingamerica.loc.gov/lccn/sn88056017/>.
- “About The Cleveland Leader. [Volume] (Cleveland [Ohio]) 1865-1865.” n.d. Chronicling America: Library of Congress. <https://chroniclingamerica.loc.gov/lccn/sn83035144/>.
- “About The Indianapolis Journal. [Volume] (Indianapolis [Ind.]) 1867-1904.” n.d. Chronicling America: Library of Congress. <https://chroniclingamerica.loc.gov/lccn/sn82015679/>.
- “About The Progress. (Shreveport, La.) 1892-1900.” n.d. Chronicling America: Library of Congress. <https://chroniclingamerica.loc.gov/lccn/sn88064460/>.
- “About The Stark County Democrat. [Volume] (Canton, Ohio) 1833-1912.” n.d. Chronicling America: Library of Congress. <https://chroniclingamerica.loc.gov/lccn/sn84028490/>.
- “About The Wilmington Daily Republican. (Wilmington, Del.) 1890-1902.” n.d. Chronicling America: Library of Congress. <https://chroniclingamerica.loc.gov/lccn/sn88053055/>.
- Agar, Jon. 2019. “What Is Technology?: Technology: Critical History of a Concept, by Eric Schatzberg.” *Annals of Science*, October, 1–6. <https://doi.org/10.1080/00033790.2019.1672788>.

- Agnello, Ellen, and University of Connecticut. 2018. "Why Are We Doing Math in English Class? Building Quantitative Literacy to Improve Expository Text Comprehension." *Numeracy* 11 (2). <https://doi.org/10.5038/1936-4660.11.2.4>.
- Ahmed, Sara. 2015. *The Cultural Politics of Emotion: Second Edition*. New York: Routledge.
- Alexander, Michelle. 2012. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. New York: The New Press.
- "American Cancer Society Chief Urges Action." 1964. *Santa Cruz Sentinel*, January 12, 1964, 3. *Elephind.com*.
- Aristotle. 2007. *On Rhetoric: A Theory of Civic Discourse*, trans. George A. Kennedy. New York: Oxford University Press.
- . 1991. *On Rhetoric: A Theory of Civic Discourse*, trans. George A. Kennedy. New York: Oxford University Press.
- August, Anita. 2014. "Shaping Presence: Ida B. Wells' 1892 Testimony of the 'Untold Story' at New York's Lyric Hall." *Peitho Journal* 16 (2): 145-167.
- Baldry, Anthony, Thibault, Paul J. 2006. *Multimodal Transcription and Text Analysis: A Multimedia Toolkit and Coursebook*. London: equinox.
- Bayne-Jones, Stanhope, Walter J. Burdette, William G. Cochran, Emmanuel Farber, Louis F. Fieser, Jacob Furth, John B. Hickam, Charles LeMaistre, Leonard M. Schuman, and Maurice H. Seevers. 1964. *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service*. Public Health Service Publication 1103. Washington, D.C.: U.S. Government Printing Office.
- Beveridge, Aaron. 2017. "Writing through Big Data." *Composition Forum* 37.

“A Bishop Disgraces Himself.” 1892. *The Daily Inter Ocean*. June 5, 1892, 15. *Gale’s 19th Century Newspapers*.

“A Bishop Disgraces Himself.” 1892. *The Elevator*. June 18, 1892, 3. *Chronicling America*.

NOTE: a reprint of the above.

“A Bishop Disgraces Himself.” 1892. *Southwestern Christian Advocate*. June 9, 1892, 4. *Gale’s 19th Century Newspapers*. NOTE: a reprint of the above.

“Arguments Shaping Up on Smoking.” 1964. *Pittsburgh Post-Gazette*. January 13, 1964, 1; 5. *ProQuest*.

“Bishop Fitzgerald on Lynching.” 1892. *The Independent*. June 2, 1892, 13. *ProQuest American Periodicals*.

Bennett, James B. 2011. “‘Until This Curse of Polygamy Is Wiped Out’: Black Methodists, White Mormons, and Constructions of Racial Identity in the Late Nineteenth Century.” *Religion and American Culture: A Journal of Interpretation* 21 (2): 167–94. <https://doi.org/10.1525/rac.2011.21.2.167>.

Berkenkotter, Carol. 1989. “The Legacy of Positivism in Empirical Composition Research.” *JAC* 9 (1/2): 69-82.

Bernstein, Phil. 2016. “How to Get Your Email Opened: A Brilliant Political Example: Election Day Edition.” “Doctor” *Phil Bernstein* (blog). November 8, 2016. <https://philbernstein.com/how-to-get-your-email-opened-a-brilliant-political-example/>.

Berthoff, Ann E. 1981. *The Making of Meaning: Metaphors, Models, and Maxims for Writing Teachers*. Montclair, NJ: Boynton/Cook Publishers, Inc.

Bizzell, Patricia, and Bruce Herzberg. 2001. *The Rhetorical Tradition: Readings From Classical Times to the Present*. Second edition. Boston: Bedford/St. Martin’s.

- Black, Taylor. 2018. "The Numbers Don't Lie: Performing Facts and Futures in FiveThirtyEight's Probabilistic Forecasting." *Theatre Journal* 70 (4): 519–38. <https://doi.org/10.1353/tj.2018.0100>.
- Bohrer, Ashley J. 2018. "Color-Blind Racism in Early Modernity: Race, Colonization, and Capitalism in the Work of Francisco de Vitoria." *The Journal of Speculative Philosophy* 32 (3): 388. <https://doi.org/10.5325/jspecphil.32.3.0388>.
- Bonilla-Silva, Eduardo. 2003. *Racism Without Racists: Color-Blind Racism and the Persistence of Racial Inequality in America*. Lanham, MD: Rowman & Littlefield.
- Brandt, Allan M. 2007. *The Cigarette Century: The Rise, Fall, and Deadly Persistence of the Product That Defined America*. New York: Basic Books.
- Brody, Ben. 2016. "One Day out, Clinton Focuses on Ground Game, Trump on Enthusiasm." *The Daily Egyptian*, November 7, 2016. <https://dailyegyptian.com/61836/national/one-day-out-clinton-focuses-on-ground-game-trump-on-enthusiasm/>.
- Burke, Kenneth. 1966. *Language as Symbolic Action*. Berkeley: University of California.
- Byler, David. 2016. "Poll Position: Where Clinton, Trump Stand on Election Eve." *RealClear Politics*, November 7, 2016. https://www.realclearpolitics.com/articles/2016/11/07/poll_position_where_clinton_trump_stand_on_election_eve_132270.html.
- Campbell, Karlyn Kohrs. 1986. "Style and Content in the Rhetoric of Early Afro-American Feminists." *Quarterly Journal of Speech* 72, 434-445.
- "Cancer Group Calls for 6 Actions." 1964. *The Sun-Telegram*, January 12, 1964, 2.

- Caple, Helen, and John S. Knox. 2012. "Online News Galleries, Photojournalism and the Photo Essay." *Visual Communication* 11 (2): 207–36.
<https://doi.org/10.1177/1470357211434032>.
- Carey, Frank. 1964. "Cigarettes Called Grave Hazard: Remedial Action Urged by Medical Scientists." *The Sun-Telegram*, January 12, 1964, 1. *Elephind.com*
- . 1964. "Cigarettes Can Kill, U.S. Reports: Cancer Link Cited; Remedial Action Urged." *Santa Cruz Sentinel*, January 12, 1964, 1. *Elephind.com*.
- Chen, Yumen. 2010. "Exploring Dialogic Engagement with Readers in Multimodal EFL Textbooks in China." *Visual Communication* 9 (4): 485–506.
<https://doi.org/10.1177/1470357210382186>.
- "Cigaret Action Forecast." 1964. *The Desert Sun*. January 13, 1964, 1. *Elephind.com*
- "Cigarette Smoking Cited as Main Cause of Deadly Lung Cancer: Highlights of Report." 1964. *The Washington Post*, January 12, 1964, A1. *ProQuest*.
- Clare. 2019. "Let Them Follow In Your Footsteps: A Marketing Proposal to A Call To Men." November 24, 2019.
- . 2019. "Introducing "'In Your Footsteps,' A New Initiative from A Call To Men." November 24, 2019.
- . 2019. "How Much Data is Too Much Data?" November 24, 2019.
- "Clinton vs. Trump: The 5 States to Watch Tonight Most Closely." 2016. *heavy*. November 8, 2016. <https://heavy.com/news/2016/11/clinton-vs-trump-2016-presidential-polls-by-state-battleground-today-election-day-results-maps-hillary-voting-florida-ohio-pennsylvania-nevada-north-carolina/>.

- Cohen, Evan. 2016. "What's Wrong With 538?" *HuffPost*, November 8, 2016. https://www.huffpost.com/entry/whats-wrong-with-538_b_581ffe18e4b0334571e09e74.
- Cohen, Patricia Cline. 1982. *A Calculating People: The Spread of Numeracy in Early America*. Chicago: University of Chicago Press.
- Colombini, Crystal Broch, and Sue Hum. 2017. "Integrating Quantitative Literacy into Technical Writing Instruction." *Technical Communication Quarterly* 26 (4): 379–94. <https://doi.org/10.1080/10572252.2017.1382259>.
- Cordell, Ryan. 2015. "Reprinting, Circulation, and the Network Author in Antebellum Newspapers." *American Literary History* 27 (3): 417–445.
- D'Ignazio, Catherine, and Lauren F. Klein. 2020. *Data Feminism*. Cambridge, Mass.: MIT Press.
- . 2018, draft. *Data Feminism*. Cambridge: MIT Press. <https://bookbook.pubpub.org/data-feminism>
- Dahl, Trine. 2015. "Contested Science in the Media: Linguistic Traces of News Writers' Framing Activity." *Written Communication*. 32 (1): 39-65.
- Dante. 2019. "Checklist for your Dream Beach House: Great Views, A Pool... and Higher Ground?" November 7, 2019.
- . 2019. "Checklist for your Dream Beach House: Great Views, A Pool... and Higher Ground?" December 8, 2019.
- . 2019. "Process Note." December 8, 2019.
- Darby, Megan. 2016. "Silent but Deadly: The Trump Effect on COP22." *Climate Home News*, November 8, 2016. <https://www.climatechangenews.com/2016/11/08/silent-but-deadly-the-trump-effect-on-cop22/>.

- Dearing, James W. 1995. "Newspaper Coverage of Maverick Science: Creating Controversy through Balancing." *Public Understanding of Science* 4 (4): 341–61. <https://doi.org/10.1088/0963-6625/4/4/002>.
- Delgado, Richard. 1989. "Storytelling for Oppositionists and Others: A Plea for Narrative." *Michigan Law Review* 87 (8): 2411. <https://doi.org/10.2307/1289308>.
- Desjardins, Jeff. 2016. "AMERICA VOTES: 10 Key Charts Show What Could Happen Today." *Visual Capitalist* (blog). November 8, 2016. <https://www.visualcapitalist.com/america-votes-10-key-charts-maps/>.
- Dixon, Thomas, Jr. 1893. "The Unwritten Law: Lynching as it is Done in the South." *L'Anse Sentinel*. April 1, 1893, 2. *Chronicling America*.
- 1893. "The Unwritten Law: Lynching as it is Done in the South." *Blackfoot News*. May 13, 1893, 7. NOTE: reprint of the above.
- Don. 2016. "2016 Election." *Don's Notes* (blog). November 7, 2016. <https://donsnotes.com/politics/2016-election.html>.
- Doolittle, Jerry. 1964. "More Research Still Needed, Says Industry." *The Washington Post*, January 12, 1964, A1. *ProQuest*.
- Dray, Philip. 2002. *At the Hands of Persons Unknown*. New York: The Modern Library.
- DuVernay, Ava. 2016. *13th*. Dir. Ava DuVernay. Released October 7, 2016, *Netflix*, 100 minutes.
- Economou, Dorothy. 2009. "Photos in the News: Appraisal Analysis of Visual Semiosis and Verbal-Visual Intersemiosis." Sydney, Australia: University of Sydney.
- "Election 2016: What the Others Are Saying?" 2016. *Oraculum Blog* (blog). November 7, 2016. <https://oraculum.eu/election-2016-others-saying/>.

- Ellenberg, Jordan. 2016. "Who Will Be America's Next Top Modeler?" *Slate*, November 7, 2016. <https://slate.com/news-and-politics/2016/11/how-will-we-know-if-nate-silver-was-right.html>.
- Ellwanger, Adam. 2017. "Reinventing *Doxa* : Public Opinion Polling as Deliberative Discourse." *Argumentation and Advocacy* 53 (3): 181–98. <https://doi.org/10.1080/00028533.2017.1337330>.
- Entman, Robert M. 1993. "Framing: Toward Clarification of a Fractured Paradigm." *Journal of Communication* 43 (4): 51-58.
- Entman, Robert M., Jörg Matthes, and Lynn Pellicano. 2009. "Nature, Sources, and Effects of News Framing." In *The Handbook of Journalism Studies*, eds. Karin Wahl-Jorgensen and Thomas Hanitzsch, 175-189. New York: Routledge.
- Epstein, Joshua M. 2008. "Why Model?" *Journal of Artificial Societies and Social Simulation* 11 (4). <http://jasss.soc.surrey.ac.uk/11/4/12.html.bak>.
- Erasmus, Desiderius. 1963. *On Copia of Words and Ideas*. Trans. D.B. King and H.D. Rix. Milwaukee: Marquette University Press.
- Erickson, Ander, and University of Michigan - Ann Arbor. 2016. "Rethinking the Numerate Citizen: Quantitative Literacy and Public Issues." *Numeracy* 9 (2). <https://doi.org/10.5038/1936-4660.9.2.4>.
- "Expert Urges Effort Toward Teen Smokers." 1964. *Santa Cruz Sentinel*, January 12, 1964, 3. *Elephind.com*.
- Fahnestock, Jeanne. 1986. Accommodating Science: The Rhetorical Life of Scientific Facts. *Written Communication* 3 (3): 275-296.

- . 2011. *Rhetorical Style: The Uses of Language in Persuasion*. New York: Oxford University Press.
- Feigenbaum, Paul. 2015. "Rhetoric, Mathematics, and the Pedagogies We Want: Empowering Youth Access to Twenty-First Century Literacies." *College English* 77 (5): 429-449.
- Feng, William Dezheng. 2017. "Metonymy and Visual Representation: Towards a Social Semiotic Framework of Visual Metonymy." *Visual Communication* 16 (4): 441–66. <https://doi.org/10.1177/1470357217717142>.
- Feng, Dezheng, and Kay L. O'Halloran. 2013. "The Multimodal Representation of Emotion in Film: Integrating Cognitive and Semiotic Approaches." *Semiotica* 2013 (197). <https://doi.org/10.1515/sem-2013-0082>.
- Feng, Dezheng, and Peter Wignell. 2011. "Intertextual Voices and Engagement in TV Advertisements." *Visual Communication* 10 (4): 565–88. <https://doi.org/10.1177/1470357211415788>.
- Fields, Nicole. 2003. "Chasing Ernst L Wynder: 40 Years of Philip Morris' Efforts to Influence a Leading Scientist." *Journal of Epidemiology & Community Health* 57 (8): 571–78. <https://doi.org/10.1136/jech.57.8.571>.
- "Find Cigarettes Are Responsible For Lung Cancer." 1964. *The Daily Banner*. January 13, 1964, 1. *Elephind.com*
- Finucane, Martin and John Hilliard. "This Statistic Is Giving People a Glimmer of Hope about the Massachusetts Coronavirus Pandemic." *The Boston Globe*. May 4, 2020. Accessed May 20, 2020. <https://www.bostonglobe.com/2020/05/04/nation/this-stat-is-giving-people-glimmer-hope-about-mass-coronavirus-pandemic/>.

- First Annual Report of the Board of Managers of the Prison Discipline Society, Boston, June 2, 1826, Fourth Edition. 1827. Google Books. Boston. T.R. Marvin Publishers.*
- Fishback, W.M. 1894. "Fishback on Lynchings." *The Galveston Daily News*. August 10, 1894, 2. *Gale 19th Century Newspapers*.
- Fisher, R.A. 1958. "Cigarettes, Cancer, and Statistics." *The Centennial Review* 2: 151–66.
- Frank, David A., Paul Slovic, and Daniel Vastfjall. 2011. "'Statistics Don't Bleed': Rhetorical Psychology, Presence, and Psychic Numbing in Genocide Pedagogy." *JAC* 31 (3/4): 609-624.
- Fuoli, Matteo. 2015. "A Step-Wise Method for Annotating APPRAISAL." *Functions of Language* 25 (2), 229-258.
- "The Future Nation: It is to be Strong in Law, Truth, and Righteousness." 1893. *The Stark County Democrat*. March 9, 1893, 6. *Chronicling America*.
- "The Future Nation: It is to be Strong in Law, Truth, and Righteousness." 1893. *The Progress*. March 11, 1893, 8. *Chronicling America*. NOTE: reprint of the above.
- "The Future Nation: It is to be Strong in Law, Truth, and Righteousness." *The Caucasian*. 1893. March 16, 1893, 4. NOTE: reprint of the above.
- Gamson, William A., and Andre Modigliani. 1987. "The Changing Culture of Affirmative Action." In *Research in Political Sociology*, eds. R.G. Braungart and M.M. Braungart, 137-177. Greenwich: JAI Press.
- Garrigan, Sarah. 2016. "The Last Election Data Roundup of 2016." *Level at Northeastern University* (blog). November 7, 2016. <https://www.northeastern.edu/levelblog/2016/11/07/the-last-election-data-roundup-of-2016/>.

- Geyer, Roland, Jenna R. Jambeck, and Kara Lavender Law. 2017. "Production, Use, and Fate of All Plastics Ever Made." *Science Advances* 3 (7): e1700782. <https://doi.org/10.1126/sciadv.1700782>.
- Gigerenzer, Gerd, Ralph Hertwig, Eva van den Broek, Barbara Fasolo, and Konstantinos V. Katsikopoulos. 2005. "'A 30% Chance of Rain Tomorrow': How Does the Public Understand Probabilistic Weather Forecasts?" *Risk Analysis* 25 (3): 623–29. <https://doi.org/10.1111/j.1539-6924.2005.00608.x>.
- Gitelman, Lisa, and Virginia Jackson. 2013. "Introduction." In *"Raw Data" is an Oxymoron*, ed. Lisa Gitelman, 1-14. Cambridge, MA: Massachusetts Institute of Technology.
- Giddings, Paula J. 2008. *Ida: A Sword Among Lions: Ida B. Wells and the Campaign Against Lynching*. New York: HarperCollins.
- Giffen, Robert. 1892. "On International Statistical Comparisons." *Economic Journal* 2 (6): 209–238.
- Gillespie, Patrick. "U.S. Economy Added 2 Million Jobs in 2017." *CNN Money*, January 5, 2018. Accessed August 25, 2019. <https://money.cnn.com/2018/01/05/news/economy/december-2017-jobs-report/index.html>
- Goddu, Teresa A. "The Antislavery Almanac and the Discourse of Numeracy." *Book History* 12: 129-155.
- Goldberg, Nieca. 2002. *Women Are Not Small Men: Life-Saving Strategies for Preventing and Healing Heart Disease in Women*. New York: Ballantine Books.
- "Government May Combat Smoking 'Menace.'" 1964. *Madera Tribune*. January 13, 1964, 1. *Elephind.com*

- Grawe, Nathan, Neil Lutsky, and Christopher Tassava. 2010. "A Rubric for Assessing Quantitative Reasoning in Written Arguments." *Numeracy* 3 (1). <https://doi.org/10.5038/1936-4660.3.1.3>.
- Grawe, Nathan, and Carol Rutz. 2009. "Integration with Writing Programs: A Strategy for Quantitative Reasoning Program Development." *Numeracy* 2 (2). <https://doi.org/10.5038/1936-4660.2.2.2>.
- Grim, Ryan. 2016. "Nate Silver Is Unskewing Polls — All Of Them — In Trump's Direction." *HuffPost*, November 5, 2016. https://www.huffpost.com/entry/nate-silver-election-forecast_n_581e1c33e4b0d9ce6fbc6f7f?ncid=engmodushpimg00000004.
- Gross, Alan and Ray Dearin. 2003. *Chaim Perelman*. Albany: State University of New York Press.
- Halliday, M. A. K. 1978. *Language as Social Semiotic: The Social Interpretation of Language and Meaning*. London: Edward Arnold.
- Hamman, Kira, Victor Piercey, and Samuel Tunstall. 2019. "Numeracy and Social Justice: A Wide, Deep, and Longstanding Intersection." *Numeracy* 12 (1). <https://doi.org/10.5038/1936-4660.12.1.2>.
- Han, Eunsun Celeste. 2016. "Making a Black Pacific: African Americans and the Formation of Transpacific Community Networks, 1865–1872." *The Journal of African American History* 101 (1–2): 23–48. <https://doi.org/10.5323/jafriamerhist.101.1-2.0023>.
- Haraway, Donna. 1988. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14 (3): 575-599.
- Hartelius, E. Johanna. 2011. *The Rhetoric of Expertise*. Lanham: Lexington Books.
- Haseltine, Nate. 1964. "Surgeon General Sees Government Acting Promptly." *The Washington Post*, January 12, 1964, A1; A19. *ProQuest*.

- “High Time U.S. Acted, Says Noted Lung MD.” 1964. *Pittsburgh Post-Gazette*, January 13, 1964, 5. *ProQuest*.
- “Here’s the Who’s Who of the Smoking and Health Committee.” 1964. *The Washington Post*, January 12, 1964, A19. *ProQuest*.
- Hill, Austin Bradford. 1965. “The Environment and Disease: Association or Causation?” *Proceedings of the Royal Society of Medicine* 58 (5): 295–300.
- Hood, Susan and J.R. Martin. 2007. “Invoking Attitude: The Play of Graduation in Appraising Discourse.” In *Continuing Discourse on Language: A Functional Perspective, Vol. 2*, eds. Ruqaiya Hasan, Christian M.I.M. Matthiessen, and Jonathan J. Webster, 740-764. Sheffield: Equinox Publishing.
- Hungerford. 1964. “The Thinker.” *Pittsburgh Post-Gazette*, January 13, 1964, 10. *ProQuest*.
- Hunt, James L. 2006. “Caucasian.” In *Encyclopedia of North Carolina*, edited by William S. Powell. <https://www.ncpedia.org/caucasian>.
- Jim. 2019. “TOO MUCH SUGAR, Sugar...” October 17, 2019.
- . 2019. “Writing with Jim: Chapter 2.” October 17, 2019.
- “Judge Lynch at Work: The Victims of the Mob—How the Colored Man Has Suffered in the South.” 1891. *The Chicago Tribune*. January 1, 1891, 11. *Newspapers.com*.
- Jones, Alan. 1964. “Cancer Statistics Just Apply To The Other Guy.” *Santa Cruz Sentinel*, January 12, 1964, 3. *Elephind.com*.
- Kahneman, Daniel, and Amos Tversky. 1984. “Choices, Values, Frames.” *American Psychologist* 39 (4): 341-350.
- Kendi, Ibram X. 2016. *Stamped from the Beginning: The Definitive History of Racist Ideas in America*. New York: Nation Books.

- Knoblauch, A. Abby. 2012. "Bodies of Knowledge: Definitions, Delineations, and Implications of Embodied Writing in the Academy." *Composition Studies* 40 (2): 50-65.
- Kuypers, Jim A. 2009. "Framing Analysis." In *Rhetorical Criticism: Perspectives in Action*, ed. Jim A. Kuypers, 181-203. Lanham: Lexington Books.
- . 2010. "Framing Analysis from a Rhetorical Perspective." In *Doing News Framing Analysis: Empirical and Theoretical Perspectives*, eds. Paul D'Angelo and Jim A. Kuypers, 286-311. New York: Routledge.
- Latour, Bruno. 1987. *Science in Action*. Cambridge: Harvard University Press.
- Lee, Peter. "Lies, Damned Lies and Statistics." Accessed June 14, 2018. <https://www.york.ac.uk/depts/math/histstat/lies.htm>.
- Levitz, Eric. 2016. "Why Nate Silver's Forecast (Probably) Overstates Trump's Chances." *Intelligencer*, November 7, 2016. <https://nymag.com/intelligencer/2016/11/nate-silvers-forecast-probably-overstates-trumps-chances.html>.
- Lindquist, Julie, and Bump Halbritter. 2019. "Documenting and Discovering Learning: Reimagining the Work of the Literacy Narrative." *College Composition and Communication* 70 (3): 413-445.
- Logan, Shirley Wilson. 2007. "Ida B. Wells, 'Lynch Law in All Its Phases' (13 February 1893)." *Voices of Democracy* 2: 50-65.
- . 1999. *We Are Coming: The Persuasive Discourse of Nineteenth-century Black Women*. Carbondale: Southern Illinois University Press.
- Lutsky, Neil. 2008. "Arguing with Numbers: Teaching Quantitative Reasoning through Argument and Writing." In *Calculation vs. Context*. 59-74.

“Lynch Law in the South.” 1892. *Morning Oregonian*. June 8, 1892, 4. *Gale’s 19th Century Newspapers*.

“Lynch Law in the South.” 1892. *The Chicago Tribune*. May 20, 1892, 4. *Newspapers.com*.

NOTE: this in the previous entries are different articles and not a reprint.

“Lynching the Negro.” 1893. *Southwestern Christian Advocate*. December 21, 1893. *Gale 19th Century Newspapers*.

Macken-Horarik, Mary. 2004. “Interacting with the Multimodal Text: Reflections on Image and Verbiage in Art Express.” *Visual Communication* 3 (1): 5–26.
<https://doi.org/10.1177/1470357204039596>.

Madison, Bernard. 2012. “If Only Math Majors Could Write...” *Numeracy* 5 (1).
<https://doi.org/10.5038/1936-4660.5.1.6>.

Manovich, Lev. 2001. *The Language of New Media*. Cambridge, MA: Massachusetts Institute of Technology.

Martin, J.R. and P.R.R. White. 2005. *The Language of Evaluation: Appraisal in English*. New York: Palgrave Macmillan.

Martin, Jim. 2001. “Fair Trade: Negotiating Meaning in Multimodal Texts.” In *The Semiotics of Writing: Transdisciplinary Perspectives on the Technology of Writing*, ed. Patrick Coppock, 311–37. Turnhout: Brepols.

Martinez, Aja Y. 2014. “Critical Race Theory: Its Origins, History, and Importance to the Discourses and Rhetorics of Race.” *Frame* 27 (2): 9–27.

Matt. 2019. “Our Climate is Changing.” October 17, 2019.

---. 2019. “Public writing draft.” September 23, 2019.

---. 2019. “ELD.” December 13, 2019.

- Milbank, Dana. 2016. "No Matter Who Wins the Presidential Election, Nate Silver Was Right." *The Washington Post*, November 8, 2016. https://www.washingtonpost.com/opinions/no-matter-who-wins-the-presidential-election-nate-silver-was-right/2016/11/08/540825dc-a5eb-11e6-ba59-a7d93165c6d4_story.html.
- Mott, Frank Luther. 1957. *A History of American Magazines: 1885-1905*. Cambridge, Mass.: Harvard University Press.
- Muhammad, Khalil Gibran. 2011. *The Condemnation of Blackness: Race, Crime, and the Making of Modern Urban America*. Cambridge: Harvard University Press.
- NBC Presents *Smoking and Health*. 1964. News special. NBC. https://www.youtube.com/watch?v=LxMxHQOSN_Q.
- Newcomb, Matthew J. 2010. "Feeling the Vulgarity of Numbers: The Rwandan Genocide and the Classroom as a Site of Response to Suffering." *JAC* 30 (1-2): 175-213.
- Oddo, John. 2013. "Discourse-Based Methods Across Texts and Semiotic Modes: Three Tools for Micro-Rhetorical Analysis." *Written Communication*. 30 (3): 236-275.
- . 2014. *Intertextuality and the 24-Hour News Cycle: A Day in the Rhetorical Life of Colin Powell's U.N. Address*. East Lansing: Michigan State University Press.
- Ore, Ersula J. 2019. *Lynching: Violence, Rhetoric, and American Identity*. Oxford, Mississippi: University Press of Mississippi.
- Perelman, Chaim and Lucie Olbrechts-Tyteca. 1969. *The New Rhetoric: A Treatise on Argumentation*. Notre Dame: University of Notre Dame Press.
- Perreault, Sarah Tinker. 2013. *Communicating Popular Science: From Deficit to Democracy*. New York: Palgrave Macmillan.

- Pigg, Stacey, Missy Hannah, and Melissa Stone. 2018. "Teaching Information Design That Emphasizes Data: Revisiting Professional Writing Outcomes and Assignments." In *Proceedings of the 36th ACM International Conference on the Design of Communication*, 1–7. Milwaukee WI USA: ACM. <https://doi.org/10.1145/3233756.3233957>.
- Porter, Theodore M. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press.
- Potter, Jonathan, Margaret Wetherell, and Andrew Chitty. 1991. "Quantification Rhetoric—Cancer on Television." *Discourse & Society* 2 (3): 333–365.
- Proctor, Robert N. 2012. *Golden Holocaust: Origins of the Cigarette Catastrophe and the Case for Abolition*. Berkeley: University of California Press.
- Prokop, Andrew. 2016. "The Final Polls Point to a Hillary Clinton Win. Will They Be Right?" *Vox*, November 8, 2016. <https://www.vox.com/policy-and-politics/2016/11/8/13559960/polls-hillary-trump-2016>.
- Quintilian. 1920. *Institutio Oratoria*. Trans. H.E. Butler. http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Quintilian/Institutio_Oratoria/home.html
- Regan, KW. 2016. "Unskewing the Election." *Gödel's Lost Letter and P=NP* (blog). November 8, 2016. <https://rjlipton.wordpress.com/2016/11/08/unskewing-the-election/>.
- "Report Not Convincing To a Scientist at Yale." 1964. *The New York Times*, January 12, 1964, 65. *ProQuest*.
- "Report Should Be Aimed At Teen-Agers, Cline Says." *The Sun-Telegram*, January 12, 1964, 2. *Elephind.com*.

- Resnick, Brian. 2016. "These Scientists Can Prove it's Possible to Reduce Prejudice." *Vox*. April 8. <https://www.vox.com/2016/4/7/11380974/reduce-prejudice-science-transgender>.
- Rhodan, Maya, and David Johnson. 2016. "Here Are 7 Electoral College Predictions for Tuesday." *Time*, November 8, 2016. <https://time.com/4561625/electoral-college-predictions/>.
- Rich, Diana. 2016. "2016 Election Dashboard." *Mekko Graphics Blog* (blog). November 7, 2016. <https://www.mekkoanalytics.com/2016-election-dashboard/>.
- Roeh, Itzhak, and Saul Feldman. 1984. "The Rhetoric of Numbers in Front-page Journalism: How Numbers Contribute to the Melodramatic in the Popular Press." *Text* 4 (4): 347-368.
- Royster, Jacqueline Jones. 1997 *Southern Horrors and Other Writings: The Anti-Lynching Campaign of Ida B. Wells, 1892-1900*. Boston: Bedford/St. Martin's.
- 2000. *Traces of a Scream: Literacy and Social Change Among African American Women*. Pittsburgh: University of Pittsburgh Press.
- Rutz, Carol, and Nathan D Grawe. 2009. "Pairing WAC and Quantitative Reasoning through Portfolio Assessment and Faculty Development." *Across the Disciplines* 6. https://wac.colostate.edu/atd/assessment/rutz_grawe.cfm.
- "Santa Cruzans Reactions to U.S. Smoking Report." 1964. *Santa Cruz Sentinel*, January 12, 1964, 1. *Elephind.com*.
- Santos, Martin de. 2009. "Fact-Totems and the Statistical Imagination: The Public Life of a Statistic in Argentina 2001." *Sociological Theory* 27 (4): 466-89.
- "The Scientific Panel." 1964. *Santa Cruz Sentinel*, January 12, 1964. *Elephind.com*.
- Scott, Harvey Whitefield. 1890. *History of Portland, Oregon: With Illustrations and Biographical Sketches of Prominent Citizens and Pioneers*. Syracuse, NY: D. Mason & Co.
- Shaler, N.S. 1884. "The Negro Problem." *Atlantic Monthly*. November 1884, 696-709.

Shannon. 2019. "Carcinogen? Health Essential? The Truth About Meat." September 23, 2019.

---. 2019. "Learning Narrative 2." October 17, 2019.

---. 2019. "What's With All the Controversy Over the Consumption of Meat?" October 17, 2019.

Silver, Nate. 2016. "Election Update: Clinton Gains, And The Polls Magically Converge."

FiveThirtyEight, November 7, 2016. <https://fivethirtyeight.com/features/election-update-clinton-gains-and-the-polls-magically-converge/>.

---. 2016. "Final Election Update: There's A Wide Range Of Outcomes, And Most Of Them Come

Up Clinton." *FiveThirtyEight*, November 8, 2016.

<https://fivethirtyeight.com/features/final-election-update-theres-a-wide-range-of-outcomes-and-most-of-them-come-up-clinton/>.

---. 2016. "A User's Guide To FiveThirtyEight's 2016 General Election Forecast."

FiveThirtyEight, June 29, 2016. <https://fivethirtyeight.com/features/a-users-guide-to-fivethirtyeights-2016-general-election-forecast/>.

Silver, Nate, Jennifer Kanjana, Dhrumil Mehta, Jay Boice, Aaron Bycoffe, Matthew Conlen,

Reuben Fischer-Baum, et al. 2016. "FiveThirtyEight Election Forecast: Who Will Win the Presidency?" *FiveThirtyEight*. <https://projects.fivethirtyeight.com/2016-election-forecast/>.

"Sketches of Members of Government Study Panel." 1964. *The New York Times*, January 12, 1964, 65. *ProQuest*.

Slattery, J.R. 1893. "The South in the Saddle." *The Independent*. November 16, 1893, 5. *ProQuest American Periodicals*.

Slovic, Paul. 2007. "'If I look at the mass I will never act': Psychic Numbing and Genocide."

Judgment and Decision Making 2 (2): 79-95.

- Slovic, Paul, David Zions, Andrew Keane Woods, Ryan Goodman, and Derek Jinks. 2012. "Psychic Numbing and Mass Atrocity." In *The Behavioral Foundations of Public Policy*, ed. Eldar Shafir, 126-142. Princeton: Princeton University Press.
- Smitherman, Geneva. 1986. *Talkin and Testifyin: The Language of Black America*. Detroit: Wayne State University Press.
- Smoking: "A Health Hazard of Sufficient Importance." 1964. News special. CBS. https://www.youtube.com/watch?v=ggQEaUlw_S0.
- "Smoking and Health." 1964. *The Washington Post*, January 12, 1964, E6. *ProQuest*.
- "The Smoking Report." 1964. *The New York Times*, January 12, 1964, E12. *ProQuest*.
- "Smoking Won't Be Abolished." 1964. *The Sun-Telegram*. January 12, 1964, 2. *Elephind.com*.
- Solberg, Janine. 2012. "Googling the Archive: Digital Tools and the Practice of History." *Advances in the History of Rhetoric* 15 (1): 53–76. <https://doi.org/10.1080/15362426.2012.657052>.
- Somers, Dale A. 1974. "Black and White in New Orleans: A Study in Urban Race Relations, 1865-1900." *The Journal of Southern History* 40 (1): 19. <https://doi.org/10.2307/2206055>.
- "Southern Lynching." 1892. *The Daily Inter Ocean*. May 28, 1892, 10. *Gale 19th Century Newspapers*.
- "Southern Lynchings." 1893. *The Wilmington Daily Republican*. December 6, 1893, 2. *Chronicling America*.
- Spivak, Jonathan. 1964. "Government to Act Cautiously on Smoking Report; Local Drives to Center on Schools and Legislatures." *The Wall Street Journal*, January 13, 1964, 3. *ProQuest*.

- “Statistics laid before a convention...” 1893. *The Indianapolis Journal*. November 30, 1893, 4. *Chronicling America*.
- Stephens, Sonia H. 2019. “A Narrative Approach to Interactive Information Visualization in the Digital Humanities Classroom.” *Arts and Humanities in Higher Education* 18 (4): 416–29. <https://doi.org/10.1177/1474022218759632>.
- “Stocks Push Upwards in First 1964 Week.” *The Washington Post*. 1964. January 12, 1964, M12. *ProQuest*.
- Sullivan, Walter. 1964. “Cigarettes Peril Health U.S. Report Concludes; ‘Remedial Action’ Urged: Cancer Link Cited: Smoking Is Also Found ‘Important’ Cause of Bronchitis.” *The New York Times*, January 12, 1964, 1; 65. *ProQuest*.
- “Summary and Conclusions of U.S. Report on Links Between Smoking and Health.” 1964. *The New York Times*, January 12, 1964, 64-65. *ProQuest*.
- Tan, Sabine. 2010. “Modelling Engagement in a Web-Based Advertising Campaign.” *Visual Communication* 9 (1): 91–115. <https://doi.org/10.1177/1470357209352949>.
- Thibodeau, Paul S., and Lera Boroditsky. 2011. “Metaphors We Think With: The Role of Metaphor in Reasoning.” *Plos One* 6 (2): 1-11.
- “To Investigate Lynchings.” 1893. *The Daily Inter Ocean*. November 29, 1893, 6. *Gale 19th Century Newspapers*.
- “Tobacco Institute Says: Report Not Final Chapter.” 1964. *The Sun-Telegram*, January 12, 1964, 1. *Elephind.com*.
- “Tobacco Men Confident Report Will Have No Lasting Effect.” 1964. *The Sun-Telegram*. January 13, 1964, 2. *Elephind.com*.

- Troutman, Denise. 1997. "Whose Voice Is It Anyway? Marked Features in the Writing of Black English Speakers." In *Writing in Multicultural Settings*, edited by Carol Severino, Juan C. Guerra, and Johnella E. Butler, 27–39. New York: Modern Language Association of America.
- Tufte, Edward. 1983. *The Visual Display of Quantitative Information*. Cheshire, Connecticut: Graphic Press.
- Tunstall, Samuel, and Michigan State University. 2016. "Words Matter: Discourse and Numeracy." *Numeracy* 9 (2). <https://doi.org/10.5038/1936-4660.9.2.5>.
- Udland, Myles. "Job Gains Disappoint, Unemployment Holds at 17-year Low." *Yahoo! Finance*, January 5, 2018. Accessed August 25, 2019. <https://finance.yahoo.com/news/us-jobs-report-december-2017-130157235.html>
- Unsworth, Len. 2015. "Persuasive Narratives: Evaluative Images in Picture Books and Animated Movies." *Visual Communication* 14 (1): 73–96. <https://doi.org/10.1177/1470357214541762>.
- Waldrep, Christopher. 2002. *The Many Faces of Judge Lynch: Extralegal Violence and Punishment in America*. New York: Palgrave Macmillan.
- Warner, John. 2016. "Probability Isn't Destiny." *InsideHigherEd: Just Visiting* (blog). November 7, 2016. <https://www.insidehighered.com/blogs/just-visiting/probability-isnt-destiny>.
- Weindling, Jacob. 2016. "Nate Silver's Rationale on Trump Is Inherently Misguided." *Paste*, November 7, 2016. <https://www.pastemagazine.com/politics/nate-silver/nate-silvers-rationale-on-trump-is-not-unfounded-b/>.
- Wells, Ida B. 1970. *Crusade for Justice: The Autobiography of Ida B. Wells*. Edited by Alfreda M. Duster. Chicago: The University of Chicago Press.

- . "Lynch Law." 1893. In *The Reason Why the Colored American is not in the World's Columbian Exposition: The Afro-American's Contribution to Columbian Literature*, eds. Frederick Douglass and Ida B. Wells. Chicago: Ida B. Wells.
- . "Lynch Law in All Its Phases – February, 13, 1893." 1893. *Iowa State University Archives of Women's Political Communication*. <https://awpc.cattcenter.iastate.edu/2017/03/09/lynch-law-in-all-its-phases-february-13-1893/>
- . 1895. *A Red Record*. In *Southern Horrors and Other Writings: The Anti-Lynching Campaign of Ida B. Wells, 1892-1900*, ed. Jacqueline Jones Royster, 73-157. Boston: Bedford/St. Martin's.
- . 1892. *Southern Horrors: Lynch Law in All Its Phases*. In *Southern Horrors and Other Writings: The Anti-Lynching Campaign of Ida B. Wells, 1892-1900*, ed. Jacqueline Jones Royster, 49-72. Boston: Bedford/St. Martin's.
- . 1892 or 1894. "Summary." *United States Atrocities*. London: "Lux" Newspaper and Publishing Co. 19-28.
- Westcott, Lucy. 2016. "Presidential Election Polls for November 7, 2016." *Newsweek*, November 7, 2016. <https://www.newsweek.com/polls-presidential-election-trump-clinton-november-7-2016-517857>.
- Westwood, Sean, Solomon Messing, and Yphthach Lelkes. 2020. "Projecting Confidence: How the Probabilistic Horse Race Confuses and Demobilizes the Public." February 29, 2020. Accessed April 15, 2020. <https://www.dartmouth.edu/~seanjwestwood/>
- Williams-Farrier, Bonnie J. 2017. "'Talkin'bout Good & Bad' Pedagogies: Code-Switching vs. Comparative Rhetorical Approaches." *College Composition and Communication* 69 (2): 230-259.

- Wines, Frederick Howard. 1891. "Convicts in Penitentiaries: 1890." Department of the Interior: Census Office.
- Wohlsen, Marcus. 2016. "I Just Want Nate Silver to Tell Me It's All Going to Be Fine." *WIRED*, October 16, 2016. <https://www.wired.com/2016/10/just-want-nate-silver-tell-everythings-going-fine/>.
- Wolfe, Joanna. 2010. "Rhetorical Numbers: A Case for Quantitative Writing in the Composition Classroom." *College Composition and Communication* 61 (3): 452–475.
- . 2015. "Teaching Students to Focus on the Data in Data Visualization." *Journal of Business and Technical Communication* 29 (3): 344–59. <https://doi.org/10.1177/1050651915573944>.
- Wood, Amy Louise. 2009. *Lynching and Spectacle: Witnessing Racial Violence in America, 1890-1940*. Chapel Hill: The University of North Carolina Press.
- Zackodnik, Teresa. 2005. "Ida B. Wells and 'American Atrocities' in Britain." *Women's International Forum* 28: 259-273.