

The Waters of Casablanca: On Political Misinformation

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Abstract

Misinformation is a sadly but deservedly prominent sort of political cognition these days. But separating it from knowledge, ignorance, and mere (less confident) belief poses conceptual and operational challenges. This paper considers the issues involved. Conceptually, the questions include the definitional boundaries between misinformation, knowledge, ignorance, and mere belief and what propositions can be accounted true or false and thus be possible objects of misinformation. Operationally, we trace the relationships between correct, incorrect, and DK responses, on the one hand, and knowledge, misinformation, ignorance, and mere belief, on the other. We suggest a simple device for identifying misinformation in the responses to appropriately designed “misinformation questions.” Using data from several original surveys, we examine the prevalence of misinformation and its correlations with party and ideology, among other variables.

In an oft-quoted scene from the movie *Casablanca*, the protagonist Rick claims, when asked by his frienemy Captain Renault, to have come to Casablanca “for the waters.” When Renault responds, “The waters? What waters? We’re in the desert,” Rick shrugs, “I was misinformed.” Of course Rick was merely engaging in witty evasion, but suppose, for analogy’s sake, that he had actually had a condition that would have been improved by curative waters located elsewhere but worsened by the aridity of Casablanca. If he had merely known nothing of these possibilities and therefore gone nowhere, he would have incurred some opportunity cost, but if he had in fact come to Casablanca for the waters, he would actually have been worsening his health, overlaying the opportunity cost with real cost. To take his lines at face value, this, in this scenario, would have been Rick’s case. He did not simply know nothing about Casablanca or the location of curative waters; he believed Casablanca to have them. He was misinformed.

This paper is about misinformation. A first step is to disambiguate the term. Like “information,” “misinformation” can refer either to communication (residing in messages) or to cognition (residing inside the head). The former may engender or sustain the latter, but they are not the same thing. Rick, on his account, was told there were curative waters in Casablanca (a message containing misinformation) and chose to believe it (thus coming to hold that misinformation). Here we focus on inside-the-head misinformation, while pointing to misinformation in messages as one of its sources.

A good deal of misinformation, these days, concerns politics. The airwaves, print media, and internet are densely inhabited by politicians, commentators, and “journalists” assiduously promoting this falsehood or that, and large fractions of the public appear to have swallowed some. According to media reports, many Americans have believed that Saddam Hussein was involved in the 9-11 attacks, that former President Obama is a Muslim, that the Affordable Care

Act (a.k.a. “Obamacare”) involved “death panels,” and that millions of illegal immigrants voted in the 2016 presidential election (Pew Research Center 2009, Nyhan 2010, xxxx). The percentages believing such falsehoods are generally overstated (see Luskin, Sood, and Park 2018 and below) but nonzero enough to be troubling.

The consequences may be more complex and contingent than may appear at first blush. Controlling for values, interests, and other dispositions, the misinformed and the ignorant can be expected to behave differently, and in pursuit of different preferences. In ways, the misinformed may actually resemble the knowledgeable more than the ignorant. Both misinformation and knowledge provide cognitive anchoring, making attitudes more stable. Both also help motivate voting and other forms of participation. In these ways, being misinformed may arguably be “better” than being ignorant.

In the critically important way suggested by the *Casablanca* excerpt, however, it may be worse. For both the individual citizen and the democratic system, the greatest single benefit of political knowledge may lie in its helping people approach their *authentic* policy and electoral preferences—definitionally, those they would have with unlimited information and unlimited opportunity and ability to process it; axiomatically, given that definition, those best serving their individual values and interests. Both ignorance and misinformation, on the other hand, can be expected to leave many people some appreciable distance from their authentic preferences, through either an absence of direction in the one case or misdirection in the other.

Which can be expected to lead people further astray is unclear and almost certainly contingent. It surely depends on who consumes what media; on who processes what information how; on the conditioning roles of prior cognition, political dispositions, and personality traits, among other things; and on how these conditioning variables may be correlated with values and

interests. Misinformation may sometimes be accepted precisely because it comports with one's values and interests. It may suppress nuance and heighten fervor, without necessarily luring people away from their authentic preferences. People may reach the right conclusions for the wrong reasons. If Casablanca had been good for Rick's health for reasons other than its aridity, he might have made a good choice despite his mistaken belief in its having waters. Similarly, someone who "knew" only of the Affordable Care Act that it featured "death panels" might well still have opposed it if he or she knew all (and only) the facts. Misinformation may sometimes make it *easier* to reach authentic preferences.

For democracy, the key questions are of *net error*. Averaging across individuals, does a given piece of misinformation about Policy *X* lead people toward or away from authentic preferences about it? If away, does it lead them further away than does mere ignorance? The answer probably varies with the misinformation, the policy, and the circumstances, but it seems fair to suspect that misinformation must often induce significant net error—and often more of it than does mere ignorance. People knowing next to nothing about the health care debate may nonetheless opine about the legislation, and those opinions may differ, in either direction, from their authentic attitudes. But the errors, under most conditions, seem likely to be *relatively* symmetric and countervailing. Some who "should" favor the legislation oppose it; some who "should" oppose it favor it.¹ By contrast, the erroneous belief that the legislation involves "death panels" seems likelier to work preponderantly in one direction, leading more of those who should favor it to oppose it than vice versa.

Here we consider the conceptualization, measurement, incidence, and correlates of political misinformation. In the way of conceptualization, we urge distinguishing misinformation from knowledge, ignorance, and "mere belief" and existing from fresh misinformation (learned

and inferred in the process of responding to the questionnaire). In the process, we also attempt to chart and bound misinformation's domain, noting that not all empirical propositions can be reasonably characterized as misinformation when believed or disbelieved. In the way of measurement, we argue that the questions conventionally used to gauge misinformation yield too many substantive (either correct or incorrect) responses and too few DKs—partly and most fundamentally because their multiple-choice format is inapt. To get a clearer sense of how many and what sorts of people are misinformed about what and about the consequences for their political attitudes and behaviors, we need more clearly drawn definitions and more discriminating measures. Thus we propose a new measure we see as a distinct improvement, applying it to data from several original online surveys to examine the frequency of misinformation and its correlations with aspects of political engagement and political orientation.

Misinformation versus Other Belief States

Misinformation is a species of belief—a cognitive representation of an empirical proposition linking objects to attributes, objects to other objects, or attributes to other attributes. But not just any belief. It is not something you suspect, kind of think, or are inclined to believe. It is something you *believe*. And it is not something that is true or neither true nor false. It is *false*. In fine, *misinformation* is a confidently held belief in an empirical proposition that is false. Its opposite, in a way, is knowledge—a confidently held belief in an empirical proposition that is true. But all beliefs are either knowledge or misinformation. Some concern propositions whose truth value is debatable (and may, in some cases, forever remain so). Others are unconfidently held. Someone who believes that Barack Obama is a Muslim is incorrect, but is *misinformed* only if he or she confidently believes it, just as someone who believes that the federal budget deficit increased during Barack Obama's presidency is correct, but *knows* it only if he or she

confidently believes it. Less confidently held beliefs, whether correct or incorrect, are *mere belief*. But misinformation, knowledge, and mere (correct or incorrect) belief are not the only, as we shall call them, *belief states*. A final, and probably the most common, belief state is *ignorance*: the absence of relevant belief. We trust these distinctions are clear but suspect they can stand some elaboration.

Existing versus Measurement-Induced Belief

Misinformation, like knowledge and mere belief, is a matter of existing, previously stored cognition—what the respondent already believes before starting the questionnaire. But questionnaires are reactive instruments. Respondents may learn, gleaning the answers to subsequent questions from the informational crumbs afforded by prior ones. They may make fresh inferences, sometimes correct, sometimes incorrect, using *other*, already-held pieces of knowledge or misinformation. A respondent who knows that Massachusetts is a heavily Democratic state may *infer*, when asked to supply the party affiliation of Senator *X* from Massachusetts, that Senator *X* is Democrat. The inference is correct but does not represent knowledge if *X* is Ed Markey and would have been incorrect but not represent misinformation if *X*, a few years ago, was Scott Brown. What the respondent *knows* is simply that Massachusetts is a heavily Democratic state. The response regarding Senator *X*'s party affiliation is stereotypic inference. If retained, such learning or inference may subsequently become knowledge (if correct) or misinformation (if incorrect). But that is not what we are interested in measuring—not if we wish to gauge the extent of knowledge or misinformation, how it arises, and what it affects in the real world. This reactivity may be more of an issue for measuring knowledge than for measuring misinformation, to the extent that most of the fresh learning and inference is correct. But it is, in either case, a critical caution to note.

Belief versus Disbelief, Invention versus Denial

Belief subsumes *disbelief* (believing a proposition to be false). Knowledge includes both confident belief in truths and confident disbelief in falsehoods. Someone who confidently disbelieves claims that several million illegal aliens voted in the 2016 presidential election knows something, even lacking any confident belief about exactly how many did vote. Symmetrically, misinformation includes both confident belief in falsehoods and confident disbelief in truths. The latter is *denial*—a matter of confidently rejecting uncongenial facts (as those denying that the earth’s climate is dramatically changing have been doing). The former is *invention*—a matter of confidently adopting congenial fictions (as those believing that several million illegal immigrants voted in the 2016 U.S. presidential election are doing).

Both denial and invention are forever tempting. In varying degree, we all strain toward consistency, while also trying to minimize effort (less “cognitive misers” than “cognitive slackers”). It is often easier to deny uncongenial facts than to interpret them away or argue around them (by marshaling other, more congenial facts or fictions) and to invent congenial fictions than to research the facts (which may or may not be congenial). Of course, this is especially so for uncongenial facts being publicly and energetically denied, or congenial fictions being publicly and energetically promoted, by prominent politicians or media sources, as has been the case with respect to Iraq’s supposed involvement in the 9-11 attacks, the ACA’s inclusion of death panels, the reality of climate change, and the millions of illegal immigrants supposedly voting in the 2016 presidential election.

Descriptive versus Causal Propositions

Just as in social science, of which political cognition (the phenomena, as distinct from the field of study) is, in part, a barefoot version, empirical propositions may be either *descriptive*

(verbal characterizations of what are essentially means, variances, or correlations) or *causal* (verbal characterizations of one variable's effect on another: how much, on average, and holding everything else constant, a given increase in the one can be expected, under given conditions, to increase or decrease the other). A belief that most illegal immigrants have a criminal record or, on the other side of the debate, that most countries automatically award citizenship to anyone born within their borders is descriptive (and its holder misinformed). A belief that greenhouse gases have played an important part in producing climate change is causal (and its holder knowledgeable). One that a border fence can never reduce illegal border crossings is causal (and its holder misinformed; see Israel).²

What Is True?

For a belief to count as knowledge, the empirical proposition it represents must be true. For it to count as misinformation, the empirical proposition it represents must be false. But then we must say what is true and what is false. This can be clear sailing. Some empirical propositions are plainly true or false. That the ACA was passed by Congress and signed into law is true; that it was struck down in its entirety by the U.S. Supreme Court is false. Descriptive propositions like these are likelier than causal ones to be unambiguously true or false.

But other propositions, even some descriptive ones, are harder calls. For one thing, all humanly defined "truths" contain a smaller or larger dose of social construction. Propositions consensually taken to be true in one time and place may not be in others, and, in any given time and place, the truth of any given proposition may be more or less debated. Postmodern intellectualizing aside, social construction does pervasively strain toward realism. The social environment often penalizes erroneous beliefs. Atlantans believing their city is Chicago may baffle and ultimately repel conversational partners and, for that matter, perplex and frustrate themselves

when they try to find their way to the Art Institute or other Chicago landmarks. The physical environment can impose still harsher penalties. People not believing in gravity and acting on that disbelief risk Darwin Awards.³

So on what basis can we say that this proposition is true, and that one false? Truths may tend to be more widely believed than falsehoods, but we should hardly want to define truth as a matter of popular belief. The truth is what it is, however rarely credited. God knows what is true, but we mortals need a yardstick. Perhaps the most reasonable one, and the one we typically if unthinkingly use is the existence of a sufficient consensus of untainted expert opinion. By untainted, we mean that there should be some discounting for blatant self-interest, as on the part of experts in the employ of stake-holding interests.

But what do we make of the evolution of knowledge—in effect, of the occasionally shifting balance of expert opinion? It is no accident that virtually everyone, especially the experts, now believes the earth to be (approximately) round, but there was a time when virtually everyone believed it to be flat. How should responses to a hypothetical medieval knowledge question about the earth’s shape have been scored? With “flat” as correct? That, in any case, is how they would have been scored. In practice, we can only hold people to a high mortal standard—to the expert opinion of the day.

Debatable Propositions

The truth-value of some, indeed many empirical propositions is less certain. That the State of Texas allows the death penalty for certain classes of homicide is a fact. To believe otherwise is to be misinformed. That the death penalty deters (or fails to deter) homicide, however, is debatable. This is what Luskin, Fishkin, and Jowell (2002) term an “empirical premise,” highlighting its role in the rough, often faulty syllogisms of political argument, while relying on the

distinction between “empirical premises” and “facts” to indicate debatability. Here, we shall refer instead to “debatable propositions,” to highlight their uncertain truth-value. One may either accept or reject a debatable proposition without being, on that count, either or knowledgeable or misinformed. Causal propositions, as this example suggests, are especially likely to be debatable.

So how undebatable does a proposition have to be before we count it as fact, and someone who denies it or believes something inconsistent with it as misinformed? Some of the most important empirical propositions are somewhat-to-highly debatable. We shall very likely wish to ask about them but must consider how to interpret the results. Are the beliefs in keeping with a proposition that is probably but uncertainly true knowledge? Are those at odds with it misinformation? Or is any belief about it neither knowledge nor misinformation, because the truth of the matter is uncertain? We need not require absolutely certain truth or falseness for a take a proposition as sufficiently undebatable to be the object of knowledge, ignorance, or misinformation. But it cannot exceed some hard-to-specify threshold of debatability. The domain of both misinformation and knowledge is propositions that are either plainly true or plainly false. Other propositions, of which there are a great many, can only be the object of mere belief or ignorance.

Political Entanglements

Sadly, not everything that is undebatable is undebated. But categorizing such propositions as true or false risks embroiling us who study misinformation in the very debates motivating and affected by it. But what is the alternative? To take an important example, is the occurrence of global climate change a fact? That greenhouse gas production has been contributing to it? Neither proposition is quite as indisputable as the existence of the death penalty in Texas. Again, a reasonable standard is the degree of consensus in the relevant expert—here, scientific—

community. But how much is needed? To require 100% would be to misunderstand the nature of science and to ignore important scientific knowledge. But where exactly to draw the line? Probably 60%, even 70%, is too low. But what about 80%? 90%? One could survey relevant experts to estimate the percentage, but since any threshold is arbitrary, perhaps the best a scholar do is to be clear about what is being taken as factual to leave it to readers to accept or reject the argument and results as they see fit. In the case of climate change, we see the scientific consensus as being overwhelming enough (north of 98%, according to surveys) to regard its occurrence and its being at least partly caused by greenhouse gas production as matters of fact and those rejecting those propositions as misinformed (in denial).

In the 1950s, the debate over the carcinogenicity of cigarettes stood more or less where the climate change debate in the U.S. does now, except that there were rather more dissenting studies, sponsored by the tobacco industry. Should we have refrained then from regarding those denying that cigarette smoking (probabilistically) causes cancer as misinformed? We think not. People on one or both sides of many debates will insist on denying uncongenial facts or maintaining congenial fictions. Are we to ignore some of the most widespread and potentially most consequential pieces of misinformation simply because some interests insist on promoting them, and some people therefore on believing them?

The problem is compounded to the extent that the dissemination and acceptance of misinformation are unevenly distributed, more prevalent on one side than the other. It is politically entangling enough to point equally to misinformation on both sides, since each may regard only the other's misinformation as wrong. It is still more so to point to misinformation preponderantly on one side. Doing so may seem like taking sides but is not. A prevalence of misinformed

bad arguments does not imply the unavailability of better ones or the inauthenticity of the preference motivating the misinformation. There were good reasons, depending on one's values and interests, for opposing the ACA. They just did not include its establishing "death panels." That was misinformation. And if one side is producing and consuming distinctly more misinformation than the other, that is something we cannot ignore if we wish to understand the dynamics of the debate.

Sources and Processes

How is misinformation transmitted and absorbed? A great deal of misinformation clearly comes from the media or other people. Some may be implicit and relatively nonpartisan. The saturation of local news by stories about crime, especially violent crime, coupled with the profusion of crime dramas on TV and in the cinema, may leave many people thinking the rates of crime, especially violent crime, much higher than they are. But much mediated misinformation appears to have partisan origins or a sharp partisan edge. The misrepresentations in Fox News and from Rush Limbaugh are hardly random (as evidenced by Fox viewers' beliefs; see Kull et al. 2003, Kull 2004, Berinsky 2009). Those from the evening op-ed shows on MSNBC, if perhaps somewhat less pervasive and somewhat less severe, are also non-random, tilted in the opposite direction.

Other misinformation is homespun, the residue of more exogenous inferences. People naturally fill gaps in their impressions of the political landscape—and do so from hedonic and consistency-maximizing as well as error-minimizing impulses. Many such inferences are idiosyncratic, although others may be widely shared. Some conservatives/Republicans may have genuinely believed Barack Obama to be a Muslim, based on his name, his complexion, his father's background, or perhaps even some of his policy views, even without having encountered

that assertion from acquaintances or media sources. Some people may genuinely believe that greenhouse gases cause respiratory problems (an incorrect response option in a question we have asked), having taken aboard the idea that greenhouse gases are somehow bad and knowing that the air we breathe contains gases. Plausibly, the first of these pieces of misinformation may sometimes be homespun; probably, the second almost always is. What makes nontrivial fractions of the public believe them is, partly in the first case and entirely or almost entirely in the second, is that they are plausible inferences, possibly stored in existing belief, from other scraps of information or misinformation.

As this suggests, several psychological processes may leave misinformation. The most obvious are *affective consistency*, leading to *motivated misinformation*, consistent with policy, partisan, or ideological preferences; *stereotypic processing*, leading to misinformation consistent with commonly perceived patterns (even when the case at hand is actually an exception); and *default credulousness*, referring to the tendency to believe what we hear, absent explicit contradiction or grounds for skepticism. The first, a species of wishful thinking, may lead some Democrats/Republicans to think unemployment or inflation increased under a Republican/Democratic administration, even when it did not. The second may lead some people of whatever partisan affiliation to think that the deficit increased under a Democratic administration or that military spending increased under a Republican one, even when it did not. And the third may lead some people, regardless of partisanship, to accept un- or at least insufficiently contradicted assertions, for example that Michael Dukakis, as Governor of Massachusetts, was heavily responsible for the pollution of Boston Harbor. A given piece of misinformation may have roots in none, any one, any two, or all three of these processes.

Topics

The *topics* of political misinformation, knowledge, belief, and ignorance are numerous—far too numerous to be exhaustively, indeed more than very fractionally, addressed by survey measurements. Among the sorts of topics most commonly addressed are (a) the *identities* of political figures (what offices or positions they hold), (b) their *biographies* (what religion they follow, whether and how they served in the military, etc.), (c) *policy-relevant facts* (causal or descriptive propositions that may alter the subjective utilities associated with given policy alternatives), including those concerning *existing statutes* (what they do or do not already allow or require), (d) *policy or ideological locations* (of political figures, parties, or other organizations), (e) *party control* (as of Houses of Congress), (f) *objective performance* (under incumbent politicians or parties with respect to such quantitative indicators as inflation, unemployment, or casualties), and (g) *government structures and constitutional provisions* (e.g., the number of seats and length of terms in the U.S. Senate or the contents of the Bill of Rights).

Some of these categories should see more misinformation than others. The misinformation-richer topics figure to be those where relevant stereotypes are particularly common, the urge to maintain affective consistency is particularly strong, or the environment is particularly rife with misinformation. It is hard to see that the identities of political figures, the details of government structures or constitutional provisions, or the party control of given branches of government should excite much misinformation. Policy locations may see a bit more. Individual Democrats/Republicans may be stereotyped as being to the left/right of where they may actually be (though in these days of increasingly homogeneous parties, there may not be much room for error). Not many Democrats are comforted by seeing Republicans as being anything but right-of-center, nor many Republicans comforted by seeing Democrats as being anything but left-of-center, although extremists on either side may occasionally see less extreme parties or politicians

on their own side as being in the center or even on the other side. But the misinformation-richest topics figure to concern biographies, policy-relevant facts, and objective performance, the first and third because they elicit a high level of stereotyping, and all three because they spark affective consistency seeking and are frequent topics of politicians and commentators spreading misinformation.

Measurement

The measurement of misinformation, like that of knowledge, revolves around the relationship between survey responses and the information states producing them. Questions aimed at detecting knowledge are frequently termed “knowledge items.” Let us term those aimed at detecting misinformation “misinformation items.” Like knowledge items, they have a correct answer and one or more incorrect ones. Like knowledge items, they are typically closed-ended, specifically multiple choice, including binary true/false items as a special case. What distinguishes them from knowledge items is that the interest lies at least as much in the incorrect response options as in the correct one and that the former are usually written to embody pieces of misinformation presumed to be widely held, usually because heavily promoted. Misinformation items hunt where the ducks are thought to be.

Occasionally, a respondent who knows the right answer or “knows” a wrong one (is misinformed) may nonetheless say DK. But this is rare (Luskin and Bullock 2011, Sturgis xxxx). Thus the principal trick, in measuring both knowledge and misinformation, is to sift the correct responses reflecting actual knowledge from lucky guesses and shrewd inferences and the incorrect responses reflecting actual misinformation from unlucky guesses and misguided inferences. Sufficiently well designed items should do much of this sifting for us by largely inhibiting guessing and inference. That, unfortunately, is exactly what most knowledge and misinformation

items do not do.

The Trouble with Multiple Choice

One reason lies with the multiple-choice format. Consider a typical multiple-choice misinformation item, of C response categories. It may or may not have an explicit DK response option, but in any case there will typically be at least a few volunteered DK responses. The *information states* underlying the responses are misinformation (M), knowledge (K), mere belief (B), and ignorance (I)—all matters of stored cognition, present (M, K, B) or absent (I); correct (K and sometimes B) or incorrect (M and sometimes B); and confidently (M, K) or unconfidently held (B). Alas, we never see these information states. All we actually see are the responses—for multiple choice items, of three types: correct (c), incorrect (i), or “don’t know” (d). The *response production function* is the function mapping these response types onto the information states. We assume that $K \rightarrow c$ or occasionally d , that $M \rightarrow i$, or occasionally d , that $B \rightarrow c, i$, or d , and that $I \rightarrow c, i$, or d .

Several mechanisms play a role in this function. For knowledge (K) or misinformation (M), the possibilities are *plain speaking* (simply giving the correct/incorrect response one believes to be true), *withholding* (saying DK instead), and *misrepresentation* (deliberately giving a correct/incorrect response, despite confidently believing in an incorrect/correct one). Withholding—resulting from bored or timid respondents or failed retrieval—figures to be relatively rare (as the evidence regarding DK versus correct responses in Luskin and Bullock 2011 and Sturgis xxxx suggests), misrepresentation—resulting from mischievous respondents or trick questions—to be vanishingly so. That is why we say above that K and M only occasionally $\rightarrow d$ and assume away the possibility that $M \rightarrow c$ or $K \rightarrow i$. For ignorance (I), the possibilities are *plain speaking* (simply admitting that one doesn’t know), *guessing* (choosing a substantive response—possibly

correct, possibly incorrect) at random, and *inference* (making an educated or miseducated guess from *other* pieces of knowledge or misinformation). For belief, the possibilities are inference (choosing the most confidently believed-in response option or using other pieces of knowledge or misinformation) or guessing (when no response option is more confidently believed-in than any other). The summary Table 1 arrays response types against information states, indicating the mechanisms involved.

By guessing we mean blind guessing: a random draw of response, typically but not necessarily from a uniform distribution. It is a matter of mentally flipping a possibly multi-sided, typically fair coin. Guessing is simpler and easier than inference, which requires more prior, if only tangential cognition and more reasoning. Some responses, however, may reflect both. A respondent inclined to disbelieve two of four response options but knowing nothing about the other two will infer that one of those latter two must be correct, then guess as between them.

In sum, any given response type reflects a mix of information states. Taken at face value, a correct response suggests knowledge, a DK response ignorance, and an incorrect response misinformation. But respondents find the impulse to guess or infer answers to knowledge and misinformation questions hard to resist. Thus not every response that looks like knowledge—or misinformation—is what it seems. A good many correct responses stem from lucky guessing or shrewd inference, a good many incorrect responses from unlucky guessing or misguided inference (and a few DK responses from withheld knowledge or misinformation).

To Make Matters Worse

Other reasons most misinformation items are not very good at inhibiting guessing and inference lie in other aspects of how they are framed and phrased.

Question Format. For any given information state, the conditional probabilities with

which the possible mechanisms kick in, and with which the possible responses therefore occur, depends partly on the question's format. One important formatting dimension is whether the question is open- or closed-ended. Withholding appears to be much rarer, and blind guessing and fresh inference much more common, on closed-ended items (Luskin and Bullock 2005, 2011; Luskin and Sood 2012), where the provision of response categories makes blind guessing effortless, and the information in the response categories facilitates inference.⁴ Both correct and incorrect answers are therefore more numerous, and DK responses less numerous.⁵

Open- and closed-ended questions also differ in the elicitation of partially correct responses. A closed-ended question asks only which of a menu of predefined statements, constructed so as to be either true (in one case) or false (in all others), is true. An open-ended question asks for whatever the respondent can say about some political object (typically, some public figure), some but not all of which may be true (see Luskin and Bullock 2011). Someone who answers an open-ended question asking who David Cameron is by describing him as the "president of England" is neither entirely misinformed nor entirely knowledgeable. He or she knows that David Cameron is the chief executive of a country including England but does not know that the country is the United Kingdom, nor that the chief executive there is the prime minister. Responses of this sort resist any clean sorting, although they do appear to be less common than some recent accounts have suggested (compare Luskin and Bullock 2011 and DeBell xxxx with Gibson and Caldeira 2009).

Of course, offices held by prominent political figures, the focus of almost all open-ended knowledge items, are unlikely to excite much misinformation. A confident belief that that David Cameron is the prime minister of Ireland fits no stereotype and has no consequence for policy or electoral preferences. It is therefore rare. There is nothing to prevent open-ended items from

asking about policy relevant facts or objective performance, on which there would probably be much more misinformation. But the available ones do not. In what follows, we therefore confine our attention to closed-ended items.

DK Orientation

Knowledge and misinformation items vary in the extent to which they discourage or encourage DKs. Knowledge and misinformation items may or may not offer explicit DK options. They may have a preface urging respondents who do not believe they know the right answer either to take a stab anyway or one urging them to just say they don't know. Or they may have no preface. There may or may not be probes pressing respondents who initially say DK for a substantive response. There may or may not be opening phrases inviting respondents to shrug off uncertainties ("Do you think ...," "To the best of your knowledge, ...," or "As far as you know, ...") or reply with mere opinions ("Do you personally believe that ..." or "Based on what you have heard, ..."). Openings of this sort invite respondents who *know they don't know* the answer to choose what they see as most *probable*, based on assertions by trusted sources, fresh inferences from *side* knowledge or misinformation, or what they would most *like* to believe. Many Republicans who knew that they did not *know* the actual truth of the death panel allegation may have responded "yes" to the question, "do you *think* [emphasis ours] the 2010 health care legislation involves death panels?"

Response Options

Some of the individual propositions constituting incorrect response options may be the loci of more misinformation or may draw more fresh inference than others. We have already suggested some of the grounds on which such expectations might be based. Doubtless, there are many others, but, for the moment, let us add one more. It is our impression from working with

knowledge items that people have much more trouble with numerical than with categorical propositions. On most topics, very few people have precise numbers, correct or incorrect, stored in memory. Many people know that the U.S. federal deficit is large has increased over time. They may believe, incorrectly, that it decreased during the presidency of Ronald Reagan or increased during that of Bill Clinton. But only some tiny fraction of the public ever knows the number, even to the nearest trillion. Responses to questions offering alternative numbers or ranges of numbers as alternatives will therefore be almost entirely guesses or inferences.

But the set of response options also need to be considered as a whole. The more numerous the response options, the more guessing they are likely to produce. With only two options, guessing the right answer seems easy. With four, it seems more daunting. We refer to the psychological perception of difficulty, but of course that tracks the objective the probability of guessing the correct answer (.5 in the first case, only .25 in the second, where the guessing is at random from a uniform distribution).

The structure of the options also matters. That the question is multiple choice means that one is true, and all the others false. In itself, that inherent constraint is an encouragement to guess or make inferences. If the response options are all independent propositions, all, none, or any proper subset of which could be true, that is the only constraint. But, in many cases, the propositions in the response options are mutually exclusive—and would be, even if not bundled together in the same multiple choice question. An example is the frequently posed question asking, non-numerically, whether the federal deficit has increased, decreased, or stayed about the same during a given presidential term. Those propositions are mutually exclusive even when not offered as alternatives to a multiple choice question, and that is an additional layer of constraint, making guessing and inference easier.

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Table 1
Response Production Function, with Mechanisms and Conditional Probabilities

Response Type	Information State			
	<i>K</i>	<i>M</i>	<i>B</i>	<i>I</i>
<i>c</i>	ρ (near 1)	μ (very near 0)	l, γ (moderate*)	γ, l (moderate*)
<i>i</i>	μ (very near 0)	ρ (near 1)	l, γ (moderate*)	γ, l (moderate*)
<i>d</i>	ω (very low)	ω (very low)	ω (moderate*)	ρ (moderate*)

Notes: For information state, *K* = knowledge, *M* = misinformation, *B* = belief, *I* = ignorance. For response type, *c* = correct, *i* = incorrect, *d* = DK. For mechanism, ρ = straightforward reporting, ω = withholding, μ = misrepresentation, γ = guessing, l = inference.

The cell entries indicate the possible mechanisms and, in parentheses, in rough verbal terms, the conditional probabilities of the response type given the information state.

The conditional probabilities given *B* or *I* may vary considerably with the number of response options and the item's orientation toward DK responses (discouraging, neutral, or encouraging).

*For *B* and *I*, the conditional probabilities of *c* versus *i* versus *d* depend greatly on the DK orientation and responses options of the item.

Table 2
How Much Misinformation?

Survey	Item	Option	MC	P (strict)	P (lenient)
<i>MTurk</i>	ACA 1	Provides coverage for illegal immigrants	.071	.082	.106
		Replaces private health insurance with a "single payer"	.186	.060	.090
		Increases Medicare payroll tax for upper-income Americans*	.317	.139	.199
		Reimburses routine mammograms only for women over 50	.060	.050	.100
	ACA 2	Create gov. panels to make end-of-life decisions for people on Medicare	.044	.042	.064
		Replace Medicare with a "public option"	.115	.046	.064
		Limit future increases in payments to Medicare providers*	.208	.225	.273
		Cut benefits to existing Medicare patients	.049	.042	.068
	Greenhouse 1	A cause of respiratory problems	.016	.133	.187
		A cause of for lung cancer	.005	.106	.151
		Damaging the ozone layer	.596	.410	.560
		A cause of rising sea levels*	.617	.066	.096
	Greenhouse 2	Unconnected to burning natural gas	.027	.044	.060
		Produced more by burning clean coal than other fossil fuels	.197	.102	.151
		Produced by nuclear power plants	.071	.082	.120
		Reduced by trees and other plants*	.295	.072	.092
Trump EO	Subject immigrants living in the U.S. illegally to deportation	.093	.341	.432	
	Strip immigrants from countries supporting terrorism of green cards	.011	.129	.191	
	Strip immigrants from several Muslim-majority countries of green cards	.016	.153	.221	
	Temporarily ban immigrants from several majority-Muslim countries*	.120	.016	.024	
<i>Alumni</i>	ACA 1	Death Panel	.040	.025	.031
		Medicare with a public option	.074	.018	.031
		Cuts Medicare Benefits	.085	.037	.043
		Limit future increases in payments to Medicare providers*	.199	.184	.190

	ACA 2	Covers Illegal Immigrants	.034	.055	.055
		Replaces health insurance with single payer	.040	.006	.018
		Mammograms not Reimbursed	.170	.080	.086
		Increases Medicare payroll tax for upper-income Americans*	.244	.209	.227
<i>Staff</i>	ACA 1	Death Panel	.051	.023	.023
		Medicare with a public option	.127	.012	.012
		Cuts Medicare Benefits	.063	.070	.093
		Limit future increases in payments to Medicare providers*	.241	.140	.140
	ACA 2	Covers Illegal Immigrants	.000	.023	.058
		Replaces health insurance with single payer	.076	.000	.000
		Mammograms not Reimbursed	.177	.047	.093
		Increases Medicare payroll tax for upper-income Americans*	.253	.151	.163
<i>MTurk 2</i>	Obama Birthplace	Born in US	.073	.070	.086
	Obama Religion	Is a Muslim	.175	.047	.052
	ACA Illegal	Gives illegal immigrants help to buy insurance	.228	.052	.078
	ACA Death Panels	Does not create government panels to make decisions about life and death	.167	.132	.151
	Budget Deficit	Since 2012, budget deficit has increased	.203	.108	.141
	GW Causes	Temperatures increasing because of human activity	.207	.060	.084
	GW Scientists Agree	Most climate scientists believe that global warming is not occurring	.146	.020	.024
	Voter Fraud	In 2016 election, President Trump won majority of legally cast votes	.159	.076	.104
	MMR Vaccine	MMR vaccine causes autism in children	.081	.021	.030

Notes: For MTurk question texts and design, see Appendix B. *P* is the measure based on the probability scale, the strict version of which treats probabilities of 0 (for true statements) or 10 (for false ones) as incorrect, and the lenient version of which treats probabilities of 0 or 1 (for true statements) or of 9 or 10 (for false ones) as misinformation. For MC the entries are the proportions responding incorrectly: Choosing the option if it is false, choosing another option if it is true. Note: reports of misinformation in surveys using MC items are often much higher, on account of inflationary, DK-discouraging features excluded from our versions.

*The correct response option.

Table 3

Survey	Index	14k	P10	P8
Mturk 2	Education PID Strength Political Interest			

Table 3
Partisan Gaps in Misinformation (Strict Scoring)?

Survey	Item	Option	D	I	R
<i>MTurk</i>					
	ACA 1	Provides coverage for illegal immigrants	.036	.071	.176
		Replaces private health insurance with a "single payer"	.036	.054	.109
		Increases Medicare payroll tax for upper-income Americans*	.153	.143	.118
		Reimburses routine mammograms only for women over 50	.056	.054	.042
	ACA 2	Create gov. panels to make end-of-life decisions for people on Medicare	.020	.030	.092
		Replace Medicare with a "public option"	.041	.071	.025
		Limit future increases in payments to Medicare providers*	.230	.220	.193
		Cut benefits to existing Medicare patients	.010	.042	.092
	Greenhouse 1	A cause of respiratory problems	.179	.107	.084
		A cause of for lung cancer	.143	.089	.084
		Damaging the ozone layer	.526	.387	.261
		A cause of rising sea levels*	.020	.095	.101
	Greenhouse 2	Unconnected to burning natural gas	.041	.048	.034
		Produced more by burning clean coal than other fossil fuels	.128	.113	.034
		Produced by nuclear power plants	.107	.060	.067
		Reduced by trees and other plants*	.056	.089	.084
	Trump EO	Subject immigrants living in the U.S. illegally to deportation	.403	.333	.269
		Strip immigrants from countries supporting terrorism of green cards	.133	.149	.109
		Strip immigrants from several Muslim-majority countries of green cards	.153	.196	.101
		Temporarily ban immigrants from several majority-Muslim countries*	.005	.030	.017
<i>Alumni</i>					
	ACA 1	Death Panel			

	Medicare with a public option Cuts Medicare Benefits Limit future increases in payments to Medicare providers*
ACA 2	Covers Illegal Immigrants Replaces health insurance with single payer Mammograms not Reimbursed Increases Medicare payroll tax for upper-income Americans*
<i>Staff</i>	
ACA 1	Death Panel Medicare with a public option Cuts Medicare Benefits Limit future increases in payments to Medicare providers*
ACA 2	Covers Illegal Immigrants Replaces health insurance with single payer Mammograms not Reimbursed Increases Medicare payroll tax for upper-income Americans*
<i>MTurk 2</i>	
Obama Birthplace	Born in US
Obama Religion	Is a Muslim
ACA Illegal	Gives illegal immigrants help to buy insurance
ACA Death Panels	Does not create government panels to make decisions about life and death
Budget Deficit	Since 2012, budget deficit has increased
GW Causes	Temperatures increasing because of human activity
GW Scientists Agree	Most climate scientists believe that global warming is not occurring
Voter Fraud	In 2016 election, President Trump won majority of legally cast votes
MMR Vaccine	MMR vaccine causes autism in children

Notes: For MTurk question text and design, see Appendix B. * signifies the correct option

Appendix A
Sample Characteristics by Study

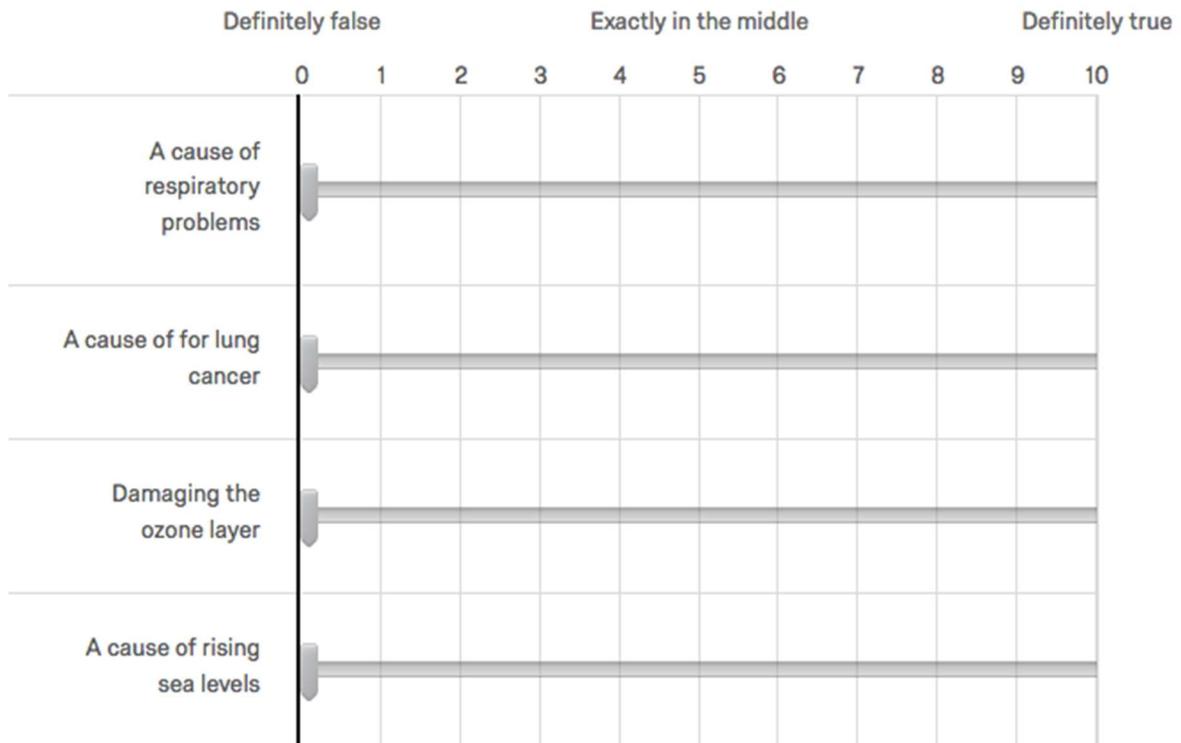
	AREP (2010)	SREP (2010)	MTurk (2017)	National Sample (2010)	National Sample (2015)
Democrat	.72	.76	.55	.46	.42
Republican	.21	.18	.26	.39	.43
Independent	.08	.06	.18	.14	.15
Conservative	.15	.15	-	.39	.42
Liberal	.67	.70	-	.26	.30
HS or Less	0	.03	.11	.44	.41
Some College	0	.03	.36	.30	.31
College Degree	.23	.54	.40	.16	.17
Post-Graduate	.77	.37	.13	.09	.10
18-29 years old	.06	.13	.26	.17	.17
30-44 years old	.25	.34	.46	.20	.20
45-64 years old	.50	.52	.23	.26	.26
65+ years old	.20	.02	.05	.13	.14
Female	.61	.84	.54	.51	.51
White	.77	.71	.83	.74	.74
Black	.02	.01	.06	.13	.13
Latino/Hispanic	.07	.06	.07	.05	.05
Asian	.07	.18	.05	.16	.17
Other/Mixed	.07	.05	.05	.08	.08

Notes: AREP has no responses for “HS or Less” and “Some College”. MTurk did not include a Liberal-Conservative measure. Party identification and Liberal-Conservative measure for national samples are from the 2012 and 2016 ANES Time Series studies. All other demographics in the national samples are from the 2010 and 2015 ACS. PID includes leaners.

2. Are greenhouse gases?

- CE: A cause of respiratory problems, A cause of for lung cancer, Damaging the ozone layer, **A cause of rising sea levels**, or Don't know
- Scale: Rating each response option above from definitely false (0) to definitely true (10). Don't know was not included.

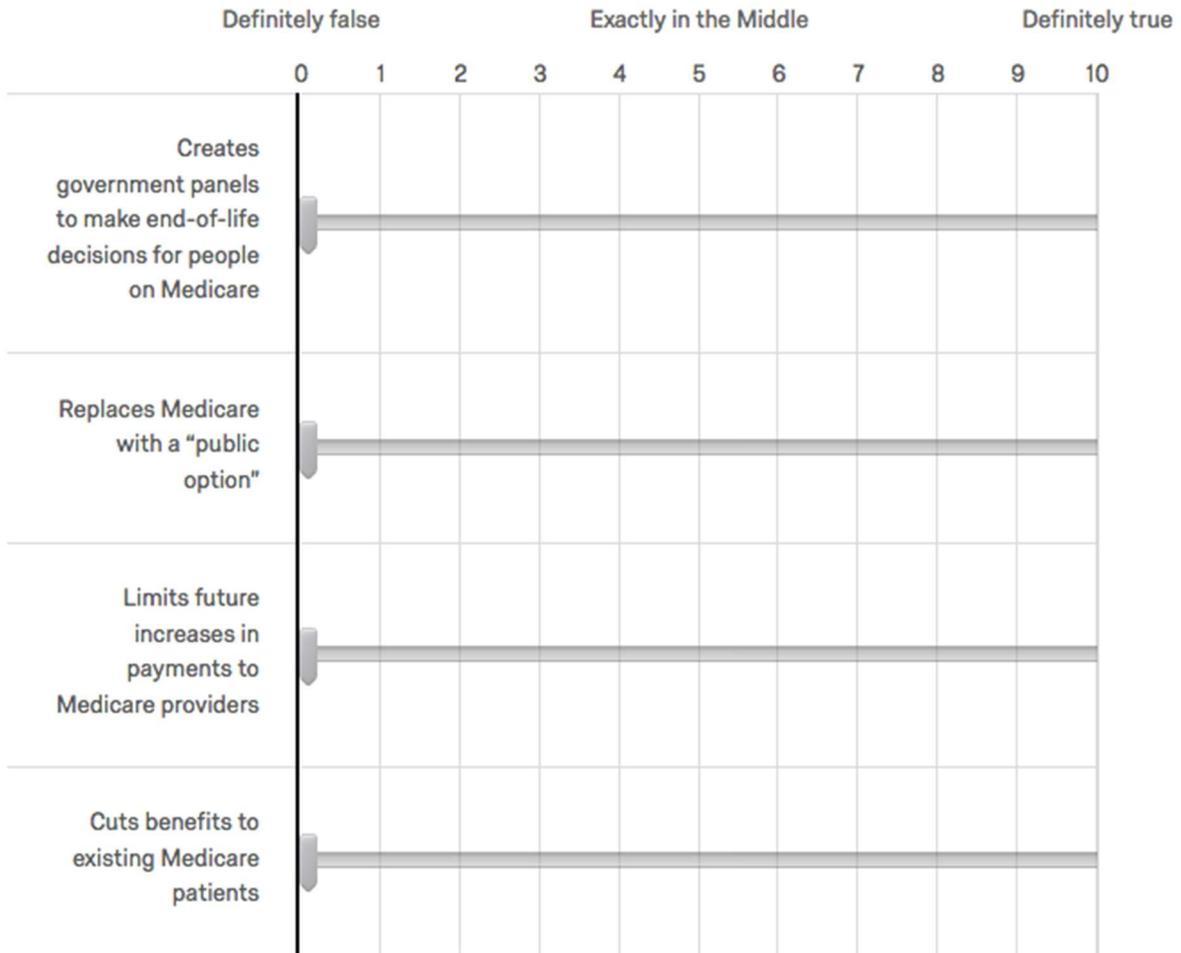
Greenhouse gases are...



3. And does the Affordable Care Act ...?

- CE: Create government panels to make end-of-life decisions for people on Medicare, Replace Medicare with a "public option", **Limit future increases in payments to Medicare providers**, Cut benefits to existing Medicare patients, Don't know
- Scale: Rating each response option above from definitely false (0) to definitely true (10). Don't know was not included.

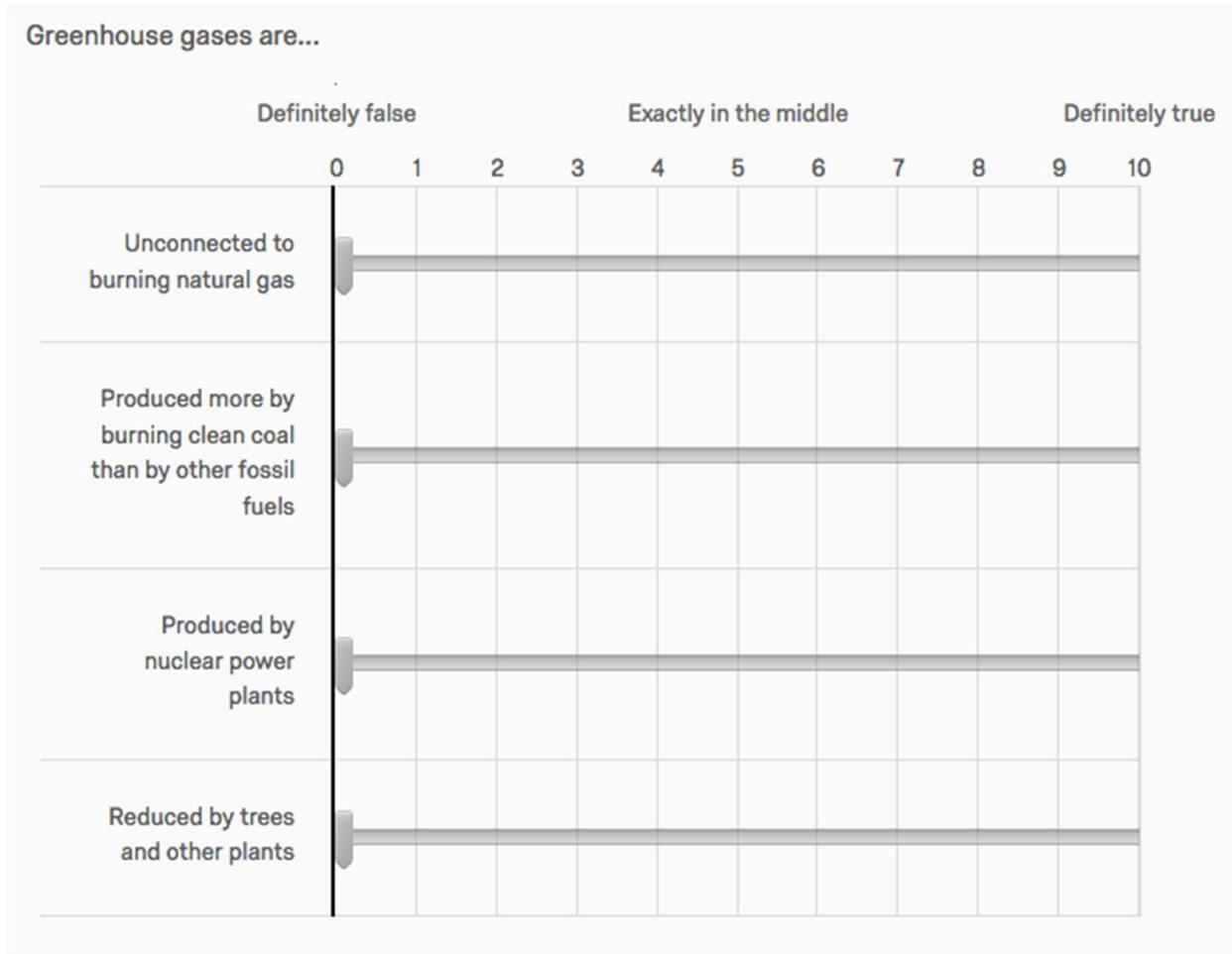
The Affordable Healthcare Act ...



4. Are greenhouse gases?

Note: We decided not to use this question as we think there are two correct answers (which we highlight below). The mistake was a result of a last-minute edit, during which we switched 'produced by trees and other plants' to 'reduced by ...'

- CE: Unconnected to burning natural gas, **Produced more by burning clean coal than by burning other fossil fuels**, Produced by nuclear power plants, **Reduced by trees and other plants**, Don't know
- Scale: Rating each response option above from definitely false (0) to definitely true (10). Don't know was not included.



5. Does President Trump's most recent executive order on immigration ...?
- CE: Subject immigrants living in the U.S. illegally to deportation, Strip immigrants from countries supporting terrorism of their green cards, Strip immigrants from several Muslim-majority countries of their green cards, **Temporarily ban immigrants from several majority-Muslim countries**, Don't know
 - Scale: Rating each response option above from definitely false (0) to definitely true (10). Don't know was not included.

Appendix C Alumni and Staff Surveys

The recently passed health care bill ...?

- Provides coverage for people who are currently in the country illegally
- Replaces private health insurance with a "single payer system"
- Increases the Medicare payroll tax for upper-income Americans
- Does not reimburse routine mammograms for women younger than 50
- Couldn't say

The recently passed health care bill ...?

- Allows a government panel to make decisions about end-of-life care for people on Medicare
- Replaces Medicare with a "public option"
- Limits future increases in payments to Medicare providers
- Cuts benefits to existing Medicare patients
- Couldn't say

Here are some statements about the recently passed health care bill. On a scale of 0 to 10, where 0 means definitely false, 10 means definitely true, and 5 is exactly in the middle, how definitely true or false would you that each statement is? The healthcare bill... (Please enter a number between 0 and 10.)

- Allows a government panel to make decisions about end-of-life care for people on Medicare
- Replaces Medicare with a "public option"
- Limits future increases in payments to Medicare providers
- Cuts benefits to existing Medicare patients
- Provides coverage for people who are currently in the country illegally
- Replaces private health insurance with a "single payer system"
- Increases the Medicare payroll tax for upper-income Americans
- Does not reimburse routine mammograms for women younger than 50

What has happened to the number of deportations of illegal immigrants during the Obama administration, compared to the George W. Bush administration? Has it ...?

- Increased
- Remained about the same
- Decreased
- Couldn't say

Under the immigration law recently passed by Arizona, law enforcement officials ...?

Do not have to read illegal immigrants their rights when arresting them

- Can ask people they suspect of being illegal immigrants for their papers only when stopping them for other reasons.

- Can impound vehicles of illegal immigrants
- Can ask anyone they suspect of being an illegal immigrant for their papers
- Can escort illegal immigrants back across the border
- Couldn't Say

Appendix D Mturk 2

We surveyed 1,250 respondents on Amazon Mechanical Turk (MTurk) on July 9th, 2017.

24K GS

Now here are a series of statements. On a scale of 0 to 10, where 0 means definitely false, 10 means definitely true, and 5 is exactly in the middle, how definitely true or false is each statement?

- Barack Obama was born in the US (T)
- Barack Obama is a Muslim (F)
- The Affordable Care Act gives illegal immigrants financial help to buy health insurance (F)
- The Affordable Care Act does *not* create government panels to make decisions about end-of-life care (T)
- Temperatures around the world are increasing because of human activity, like burning coal and gasoline (T)
- Most climate scientists believe that global warming is *not* occurring (F)
- In the 2016 presidential election, President Trump won the majority of the legally cast votes (F)
- The vaccine for measles, mumps, and rubella (MMR) causes autism in children. (F)
- Since 2012, the annual federal budget deficit has increased. (T)

1. Obama's Birthplace

According to the Constitution, American presidents must be "natural born citizens." Some people believe Barack Obama was not born in the United States, but was born in another country. Do you think Barack Obama was born in ...?

- The US
- Another country

2. Obama Religion

Do you personally believe that Barack Obama is a ...?

- Muslim
- Christian

3. ACA Illegal

To the best of your knowledge, would you say the Affordable Care Act...?

- Gives illegal immigrants financial help to buy health insurance

- *Does not give* illegal immigrants financial help to buy health insurance

4. ACA—Death Panels

To the best of your knowledge, would you say that the Affordable Care Act ...?

- *Creates* government panels to make decisions about end-of-life care
- *Does not create* government panels to make decisions about end-of-life care

5. Global Warming—Happening + Causes

Which of the following best fits your view about this? Are temperatures around the world ...?

- Increasing because of natural variation over time, such as produced the ice age
- Increasing because of human activity, like burning coal and gasoline
- Staying about the same as they have been

6. GW—Scientist Agreement

Just your impression, which one of the following statements do you think is most accurate?

- Most climate scientists believe that global warming *is* occurring.
- Most climate scientists believe that global warming *is not* occurring.
- Climate scientists are about equally divided about whether global warming is occurring or not

7. Voter Fraud

As you may know, President Trump has said that several million people voted illegally in the 2016 presidential election and that he won the majority of the legally cast votes. Do you believe that President Trump ...?

- Won the majority of the legally cast votes
- Did not win the majority of the legally cast votes

8. Vaccines

From what you have read or heard, do you personally think that the vaccine for Measles, Mumps, and Rubella (MMR):

- *Causes* autism in children
- *Does not cause* autism in children

9. BO—Budget Deficit

As you may know, the federal government runs a deficit when it spends more than it takes in. Since 2012, would you say that the annual federal budget deficit has ...

- Increased
- Stayed about the same
- Decreased

NOTES

¹Empirically, the results of simulations like those of Delli Carpini and Keeter (1996) or Althaus (xxxx) seem to suggest some frequent net effect, but these analyses bundle ignorance with misinformation.

²This says nothing about whether the wall Donald Trump has proposed to build on the U.S.-Mexico border would reduce illegal border crossing (much less about whether any reduction would be desirable or worth the cost). As stated, however, the belief would be misinformation.

³Awarded, by definition posthumously, to those who have, based in the evidence of their manner of death, improved the human gene pool by removing themselves from it. xxxx

⁴These studies, too, bundle ignorance with misinformation.

⁵The guessing and inference can be reduced—but hardly eradicated—by an explicit DK option and a DK-encouraging preamble (Luskin and Bullock 2011).