The Echo Chambers Are Empty: Direct Evidence of Balanced, Not Biased, Exposure To Mass Media

Michael J. LaCour *
University of California, Los Angeles

August 13, 2014

Abstract

This study provides the first direct assessment of the extent to which citizens are exposed to like-minded political views via mass media. The widely accepted conjecture that people refuse to hear the other side is based upon self-reports of media exposure, rather than direct observation of it. In light of this long-acknowledged limitation, I leverage a unique dataset tracking partisanship as well as *actual* exposure to media collected 24/7 via passive tracking devices. Contrary to frequent claims, results indicate that the vast majority of partisans consume predominately centrist newscasts, while frequently encountering ideological programming challenging their views. In fact, the best predictor of how much conservative news you watch is how much liberal news you watch. The fact that the echo chambers are all but empty attenuates concerns of media-driven polarization and challenges the long-held belief that resistance to political influence occurs at the exposure stage of the persuasion process.

Keywords: selective exposure, media bias, news, media effects, audience measurement, Lazarsfeld

DO NOT CITE OR CIRCULATE WITHOUT PERMISSION
All Figures Appear In Color
[1]

*Department of Political Science and Statistics, University of California, Los Angeles **(mlacour87@ucla.edu)**

[1]This paper was prepared for presentation at the Annual Meeting of the Midwest Political Science Association Chicago, IL, April 4-7, 2014. I thank Lynn Vavreck, Tim Groeling, Gary King, Don Green, Talia Stroud, Jim Webster, David O. Sears, Jim DeNardo, Jeff Lewis, Mark Handcock, Michael Tesler, David Broockman, Mark Peterson, and Shanto Iyengar for helpful comments and feedback. I am grateful to John Zaller, Markus Prior, Diana Mutz and Martin Johnson for particularily detailed and stimulating comments.

Introduction

One of the most broadly accepted theories in social science is the concept of selective exposure – people attend to information they already agree with and avoid anything to the contrary (Hyman and Sheatsley 1947; Lazarsfeld, Berelson and Gaudet 1944; Festinger 1957; Klapper 1960; Mynatt, Doherty and Tweney 1977; Anderson and McGuire 1965). In addition to being widely accepted, the idea is one of the longest-held, dating back to the first panel study of U.S. elections: "The fact that people select their exposure along the line of their political predispositions is only a special case of a more general law which pervades the whole field of communications research. Exposure is always selective..." (Lazarsfeld, Berelson and Gaudet 1944, p. 164). The widespread belief that citizens shield themselves from opposition gave rise to the enduring theoretical view that persuasion is rarely possible, thus "mass communication functions far more frequently as an agent of reinforcement than as an agent of change" (Klapper 1960, p. 15). In the domain of political information, today as in the early 1900s, a reemergent partisan press has created a diverse media environment (Prior 2007) – with each news source offering a distinct (and sometimes ideological) distillation of the major events of the day. The renewed *opportunity* for citizens to engage in exclusive exposure to like-minded news has reignited interest in the classic theory (Bennett and Iyengar 2008; Hahn et al. 2008; Iyengar and Hahn 2009; Mullainathan and Shleifer 2005; Mutz and Martin 2001; Sunstein 2001; Stroud 2008). Cumulatively, these efforts have given rise to a common claim about how democracy works: citizens refuse to hear the other side.

Yet, classic theories of democracy posit that exposure to politically divergent ideas is imperative for a democracy to properly function (Mill 1869). Inoculation from disagreement is thought to constitute evidence of a dangerous bias in citizen decision-making – depriving the public of a common base of information with which to hold their elected officials accountable (Prior 2014*a*) and deliberate (Fishkin 1991; Mendelberg 2002; Mutz 2006). The perceived rise in ideologically closed-minded "echo chambers," wherein people avoid the news and opinions that challenge their own views (Sunstein 2007), is thought to produce an electorate that is less politically tolerant of opposing views (Jamieson and Cappella 2008), more opinionated but less informed (Sunstein 2009), and increasingly polarized (Iyengar and Hahn 2009; Levendusky 2013; Stroud 2010). In sum, scholars have reached a paradoxical consensus: on the one hand, "Both in political theory and empirical work, there is near unanimous agreement that exposure to diverse political views is good for democracy and should be encouraged" (Mutz and Martin 2001, p. 97); while recognizing that, "Now as in Lazarsfeld's day, reinforcement of existing views (and concomitant polarization) is probably the most widely hypothesized media effect" (Mutz and Young 2011, p. 1035).

Despite the importance and timeliness of this question, the empirical effort to demonstrate whether and to what extent the echo chambers exist has been bedeviled by methodological limitations.[2] First, measuring the ideological slant of the news has only recently overcome methodological criticisms of subjectivity and identification, outlined in a recent recent meta-analysis (Groeling 2013), by using Congress as an objective and long-validated baseline with which to assess media slant (Groseclose and Milyo 2005; Gentzkow and Shapiro 2010). Despite these methodological advances, this effort stops short of measuring the extent to which political communication audiences *share* the political biases of the communicator. Second, existing evidence of partisan selective exposure (Dilliplane 2011; Holbert, Hmielowski and Weeks 2012; Hollander 2008; Jamieson and

[2] To assess how the partisanship of individuals relates to the ideological slant of the news they consume requires accurate measurement of: the ideological slant of the media, the partisan identification of the audience, as well as which partisans are exposed to which media.

Cappella 2008; Lawrence, Sides and Farrell 2010; Morris 2007; Nie et al. 2010; Stroud 2008, 2011) is reliant upon retrospective self-reports of media exposure, demonstrated to be highly inaccurate and error-laden (LaCour and Vavreck 2014; Prior 2009*a*,*b*, 2012, 2013*a*; Vavreck 2007). Despite decades of awareness and dissatisfaction of this limitation (Ansolabehere and Iyengar 1998; Bartels 1993; Chaffee and Schleuder 1986; Guess 2014; Goldman, Mutz and Dilliplane 2013; Price and Zaller 1993), researchers — because of data limitations — have been constrained in their ability to directly measure selective exposure to news media. Thus, an apparent relationship between partisanship and media exposure may arise, not because of real differences in behavior, but because of differences in the accuracy of reporting exposure.

Experimental designs that attempt to overcome the self-reports problem by observing media consumption in the laboratory (Arceneaux and Johnson 2013; Druckman, Fein and Leeper 2012; Knobloch-Westerwick 2009; Knobloch-Westerwick and Meng 2011; Levendusky 2013) have been criticized for relying on non-spontaneous and restricted information search situations (Hahn et al. 2008) that force subjects to encounter media they may be unlikely to consume in their daily lives (Hovland 1959). Although, recent studies leverage automated devices to passively measure viewers' media exposure (Webster 2005; Webster and Ksiazek 2012), these data do not include the political views of their panelists – making it impossible to investigate how the partisanship of individuals relates to the ideological slant of the news they consume.[3] Given these measurement limitations it is not surprising that a recent review concludes, "Surveys have led us astray with inflated estimates of the news audience and misleading characterizations of audience overlap. Firmer conclusions about the effect of partisan media require better measurement of who is exposed to partisan media" (Prior 2013*b*). In order to assess these questions, we need individual-level data on partisanship *and* simultaneous tracking data on the same people's *actual* exposure to news. Such data are rare, but the present effort is in a unique position of having just such a dataset.

The occasion for the present study is an opportunity to combine the strengths and avoid the limitations of prior studies by leveraging individual-level data combining survey measures of political views with media tracking data that continuously and automatically log panelists' 24/7 exposure to all radio and television programming over a 90 day period – resulting in $541,892$ observations for 920 panelists. A strength of these data is the ability to capture individuals' media exposure over the course of three months, enabling an analysis of actual viewing behavior made over a long period of time, rather than a one-time decision made by participants during an experiment or survey. Using data from real behavior, not survey responses of media exposure, the results contradict 75 years of conventional wisdom – that people predominately consume political programming that is consistent with their political predispositions. Rather, analyses indicate that most people do not refuse to hear the other side. In fact, most people consume predominately centrist newscasts, while tuning out news from ideological news sources altogether. To my knowledge, this is the first study to directly measure partisan selective exposure to mass media in the context of peoples' daily lives.

I motivate the study by reanalyzing the foundational empirical evidence of the selective exposure theory. To do this, I provide the first replication of Lazarsfeld et. al's (1944) classic finding using their original data. A reanalyzes of Lazarsfeld et. al's (1944) raw data reveals that the prevalence of selective exposure was much smaller than originally reported in Lazarsfeld, Berelson and Gaudet (1944, pg. 164). Next, I present hypotheses and outline the empirical strategy and data to be used in the present study. To measure the ideological alignment between the sender (media) and the receiver (citizen), I estimate a measure of ideological slant for TV and Radio newscasts

[3] Ryan and Brader (2013) use automated measures to examine partisan selective exposure to political advertisements.

by comparing the similarity of a news program's closed captioning transcripts to floor speeches of congressional republicans and democrats. I then present the main results, which indicate that a small unrepresentative subset of the population engage in partisan selective exposure. In fact, only 4% of partisans consume over 80% of their news from ideologically like-minded sources. I then briefly highlight a feature of the media environment as well as an aspect of audience behavior that potentially limit partisan selective exposure via mass media. In doing so I hope to present a clearer picture of why selective exposure findings are much smaller than previous analyses have demonstrated. Finally, I discuss the limitations of the study and the implications of these findings for research on political communication and media effects.

Replicating The Empirical Foundation of Selective Exposure

The earliest empirical evidence of partisan selective exposure dates back to the first panel study of U.S. elections – *The People's Choice* by Lazarsfeld, Berelson and Gaudet (1944). Because this finding serves as the empirical foundation for the selective exposure theory, in this section, I attempt to replicate the original finding – using the original data.

To measure selective exposure, Lazarsfeld, Berelson and Gaudet (1944), created the *index of political exposure bias*, requiring measurement of (1) the partisan slant of the information, (2) the political views of the individual, and (3) the information the individual was exposed to. To measure the slant of the media, the researchers conducted an in-depth content analysis of 158 individual newspaper and magazine articles, coding each article as either pro- or anti-Democrat, pro- or anti-Republican or Balanced/Neutral (Berelson and Waples 1941).[4] The researchers then displayed these articles to respondents and asked them to recall which articles they read. Panel A of Table 1 presents Lazarsfeld's original finding: the large majority of citizens were exposed primarily to communications favoring their side, while approximately one third were exposed to mainly the other side and the smallest group was exposed to primarily to neutral communications.

Notwithstanding the expansive efforts to extend and build on the this body of research, whether the original result can be replicated using the original data remains an open question. Fortunately, Lazarsfeld, Berelson and Gaudet (1944) made the original data publicly available and provided sufficiently detailed documentation to allow researchers to understand, evaluate and, most importantly, build on this analysis. I began by creating a replication data set, which includes all the information necessary to process and translate the data from the original IBM column binary format to a comma-delimited format useable by today's standards. Extensive measures were taken to replicate the original finding and all data and replication R code are available upon request. Finally, I conducted a study to verify the reliability of the replication data set. To do this, I provided the original Lazarsfeld data to two researchers familiar with data management. Working independently, both researchers translated the dataset and arrived at the same estimates for 97.4% of the results from *The People's Choice*. Panel B of Table 1 provides the replicated

[4]The index of political exposure bias in the 1940 Erie County data, includes 158 media exposure survey items per respondent coded at the article level. Including 28 radio speeches by the presidential candidates and their supporters. Magazine articles that covered campaign material in seven of the most widely read magazines in Erie county – *Life, Colliers, Liberty, Saturday Evening Post, Reader's Digest, Time and Look* in all, 64 magazine editorials or articles are included. The newspaper articles, included the front-page stories on the campaign and they asked respondents about the political columnists they most frequently read – (Walter Lippmann, Dorothy Thompson, Paul Mallon, Jay Franklin, and Ray Tucker) in the four major Erie County newspapers (*Sandusky Register, Sandusky News, Sandusky Plains Journal and The Cleveland Plain Dealer*).

results: contrary to the original result, Democrats self-reported only slightly more Democratic exposure and Republicans actually reported slightly less exposure to Republican propaganda.

Table 1: **Replication of The First Empirical Evidence of Partisan Selective Exposure Using The Original Data by Lazarsfeld, Berelson and Gaudet (1944).**

	Predominant Political Color of Exposure			
Vote Intention	*Republican*	*Neutral or None*	*Democratic*	Row N
Panel A. Lazarsfeld Original Result				
Republican	67%	12%	21%	135
Democratic	27%	13%	64%	95
Panel B. LaCour Replication				
Republican	43%	12%	45%	135
Democratic	47%	13%	40%	95

Note: Replication of (Lazarsfeld, Berelson and Gaudet 1944, pg.164) original selective exposure result. Data and replication R code are available upon request. Three researchers independently translated and attempted to replicate the results all arriving at the same estimates.

Although, the reasons for the discrepancy between the original and replicated result are not yet clear, the inability to replicate the first empirical demonstration of the selective exposure theory casts the foundational evidence in a very different light. The fact that the replication analysis suggests *balanced*, not *selective* exposure to politics, is corroborated by a follow-up study conducted during the next presidential election, "As to what people read and listen to there is a slight tendency for people to see and hear their own side. But this was not particularly strong in Elmira, and each group of partisans paid considerable attention to the opposition. And despite the disproportion in availability, this was about the same for Republicans and Democrats" (Berelson, Lazarsfeld and McPhee 1954, p. 245). Thus, it is not surprising that a review of the empirical evidence of selective exposure conducted in the wake of these classic studies, concluded, "In no way can the available evidence be said to support the contention that people generally seek out supportive information and avoid nonsupportive information" (Sears and Freedman 1967, p. 212).

Balanced or Selective Exposure in The Post-Broadcast Era?

In the years following these pioneering studies, research on selective exposure and media bias waned with the decline of ideologically slanted news and rapid rise of "independent" journalism (Hamilton 2004).[5] In recent years, the reemergence of the partisan press, coupled with changes in the media environment offering increased viewer choice (Prior 2007) has reignited support for the idea that individuals select news sources matching their partisanship and avoid news sources

[5]In its annual yearbooks (titles vary), *Editor and Publisher* lists salient details of every English-language daily newspaper published in the United States, including location, circulation, publishing schedule, and (most importantly for our purposes), self-identified party affiliation.

challenging their views – a hypothesis known as *partisan selective exposure*. In this section, I begin to build an empirically documented alternative theory of exposure to politics, called *balanced exposure*.

There are reasons to believe that exposure to politics may be ideologically *balanced*, not selective. The first is derived from the consistent empirical demonstration that the *supply* of political information provided to citizens in today's media environment is primarily politically centrist.[6] For partisan selective exposure to be prevalent, viewers would have to avoid this stream of politically centrist content in favor of like-minded news.

While the centrist media hypothesis applies to the ideological bias of the media, the second hypothesis investigates the extent to which political communication audiences *share* the biases of the communicator. On the one hand, Republicans self-report more exposure to sources thought to be more conservative and Democrats self-report more exposure to sources thought to be liberal (Coe et al. 2008; Hollander 2008; Jamieson and Cappella 2008; Garrett, Carnahan and Lynch 2011; Stroud 2011; Holbert, Hmielowski and Weeks 2012), though measurement error associated with retrospective self-reports of media use make interpretation of this relationship unclear (LaCour and Vavreck 2014; Prior 2009*b*,*a*, 2012, 2013*a*,*b*).[7] On the other hand, automated tracking data from The Nielsen Company, suggest high levels of "audience overlap" on TV – defined as the share of viewers of one channel who also watch another channel (Webster 2005; Webster and Ksiazek 2012). However, Nielsen does not measure the party identification or ideology of panelists, therefore its data cannot reveal the extent of partisan selective exposure. Similarly, Gentzkow and Shapiro (2011) find low levels of ideological segregation on the Internet, however they measure the segregation of site visits rather than individuals, and note that, "Although user-weighted segregation is the concept we would ideally like to measure, we cannot calculate it for the Internet using the aggregate data that constitutes our main source." Notably, no study to date has directly assessed the relationship between partisanship and *actual* news exposure at the individual-level.

A third hypothesis concerns the prevalence of partisan selective exposure and casts doubt on the ability and/or desire of most citizens to filter out discordant partisan messages. Graber (1984) argues that selective exposure seems to "Require a level of concerned vigilance much greater than most citizens, who are relatively apathetic about politics, are likely to make." Echoing this hypothesis, Zaller (1992) writes, "Most people are simply not so rigid in their information-seeking behavior that they will expose themselves only to ideas that they find congenial." Graber and Zaller's framework is consistent with research suggesting that selective exposure is the most pronounced among the politically engaged (Lazarsfeld, Berelson and Gaudet 1944; McCombs and Shaw 1972; Stroud

[6] Groseclose and Milyo (2005) overcome problems of subjectivity and identification, outlined in a recent meta-analysis (Groeling 2013), by comparing the similarity of think tank citations among the media and Congress. Compared to members of Congress, 17 out of the 20 media outlets fell between the two most moderate Senators at the time, Joe Lieberman (Independent-Connecticut) and Olympia Snowe (Republican-Maine). Building on this method, Ho and Quinn (2008) use the ideology of Supreme Court Justices as a baseline with which to assess newspaper slant, finding that a majority of newspapers (15 out of 25 in their sample) are to the left of Justice Anthony Kennedy and to the right of Justice David Souter – the two most moderate Supreme Court Justices at the time. Gentzkow and Shapiro (2010) construct a new index of media slant that measures the similarity of a newspapers' language to that of a congressional Republican or Democrat. Secondary analyses of Gentzkow and Shapiro's (2010) data provides empirical evidence of widespread centrism in a large sample of newspapers, with 312 out of 434 newspapers' estimated ideology between Joe Lieberman and Olympia Snowe. Whether this finding of widespread centrism in newspapers applies to other types of media remains an open empirical question. A strength of the present study is the ability to assess the ideological slant of a large set of TV and Radio newscasts at the program-level.

[7] Are self-reports of the *amount* of news exposure merely proxy measures of political interest? Or are self-reports of the *type* of news program consumed merely proxy measures of partisanship or ideology?

2011; Prior 2014*b*). For the least interested viewers, news exposure may simply be a by-product of the media environment, dictated by factors orthogonal to partisanship, like program scheduling (Webster, Phalen and Lichty 2005; Webster and Phalen 2013). For highly engaged voters, who possess the contextual information necessary to determine media slant, like-minded news may be more attractive because it is regarded as trustworthy and countervailing media may be avoided as it is perceived hostile (Arceneaux, Johnson and Murphy 2012; Vallone, Ross and Lepper 1985). An alternative hypothesis is that the desire for accurate information may outweigh the motivation to filter out the other side (Hart et al. 2009). The analyses described below therefore examine how the selection process differs by those who watch news frequently and those who do not.

Partisan selective exposure is also thought to vary over-time, as a function of the political context, and is thought to increase during campaigns and elections (Stroud 2008), but see (Milburn 1979). Yet, data limitations restrict our analyses of information search behavior to single-preference decisions made artificially on a survey or in the lab. An important design feature of this study is measurement of actual news consumption choices in vivo from a diverse group of individuals who were not aware the resulting data would be used for a political study – allowing detection of growth, stasis, or decay in levels of selectivity. By passively tracking exposure to mass media in the context of peoples' daily lives, over the course of a real campaign, this study breaks new ground.

Testable Hypotheses. Hypotheses about the centrist media, and the limited ability and/or desire of citizens to tune out the other side, suggest an alternate theory of exposure, which I call *balanced exposure*, wherein individuals watch predominately centrist news as well as an ideologically diverse set of partisan news programs. To empirically test whether exposure to politics is balanced or biased (partisan selective exposure), I derive three testable hypotheses. First, if exposure to politics is *biased*, with "liberals watching mostly liberals and conservatives watching mostly conservatives," as Sunstein (2001) argues, and if Berelson and Steiner (1964) are correct that "People are more likely to see and hear congenial communications than neutral or hostile ones," then the percentage of like-minded news should be greater than the percentage of cross-cutting exposure or centrist/neutral exposure. If, on the other hand, exposure is *balanced*, we would expect the percentage of news exposure devoted to centrist programming or cross-cutting exposure to be greater than the percentage of exposure devoted to ideologically like-minded exposure. The second test concerns the prevalence of partisan selective exposure. If partisan selective exposure is a wide-spread behavior, and Bennett and Iyengar (2008, p. 724) are correct that "most media users rarely find themselves in the path of attitude-discrepant information," and if Stroud's finding based on self-reports is valid, in that 34% of the public consume *only* likeminded sources about politics (Stroud 2011, p. 63), then we should expect to find around a third of the public with exclusive exposure to like-minded news. If exposure is *balanced*, then we should expect the behavior to be restricted to a small group of partisans. The third and final hypothesis test is imported from Sears and Freedman (1967): if exposure is *biased*, with partisanship dictating news exposure, then partisanship should be a stronger predictor (i.e. correlate more highly) with exposure compared to other variables known to be related to news consumption (i.e. education, age, income).[8]

Which of these two behaviors is driving exposure to politics has important implications for the effect of the news media on political beliefs and behavior (Baum 2002; Bennett and Iyengar 2008; Clinton and Enamorado 2014; DellaVigna and Kaplan 2007; Enikolopov, Petrova and Zhuravskaya 2011; Gentzkow 2006; Gerber, Karlan and Bergan 2009; Groseclose 2011; Iyengar and Kinder 1987; Ladd and Lenz 2009; McCombs and Shaw 1972; Prior 2007; Zaller 1996); as well as the causes and very existence of polarization (Arceneaux and Johnson 2011; Abramowitz and Saunders 2008;

[8]This study is not designed to test causal purposes, but we can still use a model as an test of the hypothesis.

Fiorina 2005; Iyengar, Sood and Lelkes 2012). One scenario (partisan selective exposure) is thought to lead to a polarized electorate with closed-minded views of issues and candidates, where the media's role in democracy is primarily to reinforce the opinions that voters already hold. In the other scenario (balanced exposure) ideologically slanted news has a limited impact on democracy because the vast majority of citizens avoid ideological news sources altogether, in favor of neutral programming, while the small group of citizens who do turn to extreme sources, consume news programming from both ends of the political spectrum.

Measurement and Data

Estimating the extent of partisan selective exposure requires: objective measurement of the ideology of news, individual-level measurement of political views, and accurate measurement of individual's media exposure. In this section I describe the measurement of each of these concepts.

To measure the ideology of news programs, I construct an index of news slant that measures the similarity of a news programs language to that of a congressional Republican or Democrat. To do this, I use data from the UCLA Television News Archive (Rosenthal and Steen 2006), providing complete transcripts of closed caption texts from hundreds of unique news broadcasts from the United States from 2005 to present. To measure individual partisan affiliation and media exposure, I use data collected by Integrated Media Measurement Incorporated (IMMI), which includes survey data measuring party identification with automated tracking data that continuously and passively log *the same panelists'* media exposure over a 90 day period. The resulting dataset contains 541,123 observations for 920 panelists, where each observation provides the date, program, and duration of an individual's media exposure. I use Nielsen data to validate the IMMI data and present additional robustness checks in the appendix.

Measuring Media Slant

Following Gentzkow and Shapiro (2010), I construct a measure of media slant that measures the similarity of a news program's language to that of a congressional Republican or Democrat. I estimate a model of ideological slant in news coverage and compute it for 60 television and radio news programs that aired in 2006. The universe of news programs was based on programs that the 2006 TV Guide categorized as "General News" or "Politics."

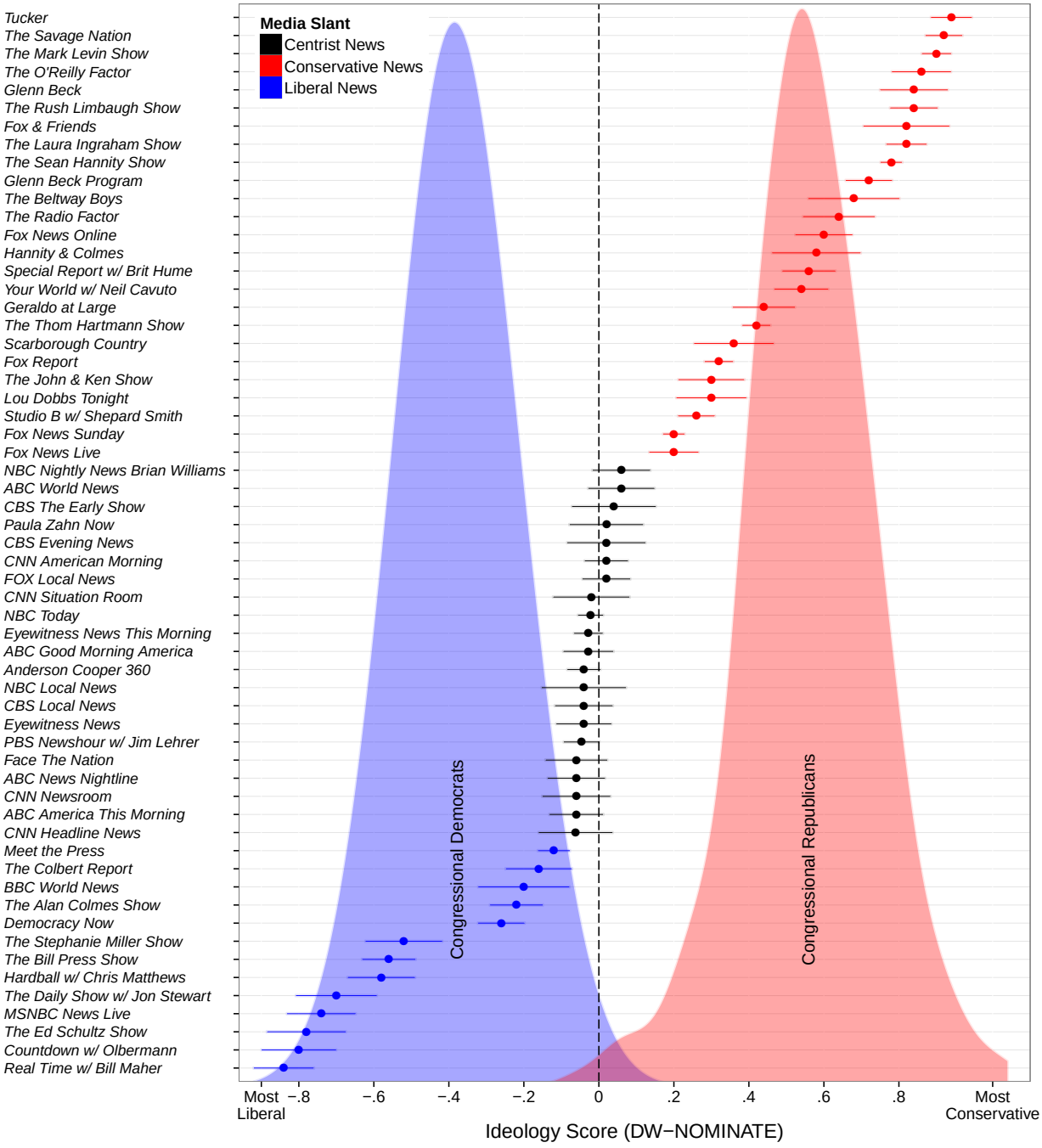
The slant index provides a method to estimate the frequency with which news programs use language intended to sway viewers to the right or the left on political issues. To compute this, I compare phrase frequencies in television and radio newscasts with phrase frequencies from the 2006 *Congressional Record*. I use data from the UCLA Television News Archive, which includes full transcripts of all national, cable and several local news programs from 2006 to present (Rosenthal and Steen 2006). I use the text of the 2006 Congressional Record, supplied by Gentzkow and Shapiro (2010).[9] Table 2, in the Supplement, shows the top two-word phrases used by Members of Congress in the 2006 *Congressional Record*. For example, in Congress in 2006, Republicans used the

[9] Gentzkow and Shapiro (2010) downloaded the data from thomas.loc.gov and parsed using an automated script that identifies the speaker of each passage. To increase the efficiency of the text analysis algorithm, they apply a standard preprocessing procedure that removes extremely common words (such as "to," ,"from" and "the") and strips words down to shared linguistic roots (so that, for example, "tax cut" and "tax cuts" are identified as the same phrase). A final script produces counts by speaker and party of two-word phrases in the 2006 Congressional Record.

phrase "death tax" 365 times and the phrase "estate tax" only 46 times. Democrats, by contrast, had the reverse pattern, using the phrase "death tax" only 35 times and the phrase "estate tax" 195 times.

To map phrases to ideology I estimate the following model, described in detail in the supplement, which can be understood as follows. First, I use congresspeople – whose ideology is observed – to estimate the relationship between the use of a phrase p and the ideology of the speaker. Second, I use the relationship observed in the first stage to infer the ideology of a news program by asking whether a given news program tends to use phrases favored by more Republican members of Congress. If the use of some phrase p is uncorrelated with a congressperson's ideology, the use of that phrase does not contribute to the estimate $\hat{y}_{ip}$. If phrase p is used more often by more right-wing congresspeople, the estimator will judge a speaker who uses phrase p often as more conservative. Essentially, this method treats news programs as congresspeople, whose ideology is missing, and imputes an ideological score based on their use of partisan phrases. Details of the methodology and model are described in detail in the Appendix.

Figure 1: **Mapping Television and Radio News Programs to Congressional Ideology**



Note: Figure provides language-based estimates of the ideological slant of news programs in 2006, based upon the number of times a news program used phrases most used in the 2006 *Congressional Record* by Democrats or Republicans. DW-NOMINATE scores range from (x axis) -1 (liberal) to 1 (conservative). The center dots correspond to the posterior point estimates of the news programs' DW-NOMINATE ideology scores – lines represent 95% credible intervals. The color of the dots indicates the classification of the news program. Kernel density plots represent DW-NOMINATE ideology scores for the 109th House and Senate.

Figure 1 presents the media slant results. The media ideology score is shown for the 60 television and radio news programs. The method is designed to classify news programs into three distinct types of news: liberal, centrist and conservative. I define *conservative news* as news programs with an ideology (DW-NOMINATE) score greater than 0, whose 95% credible interval does not overlap 0. *Liberal news* is defined as news programs with a ideological score less than 0, whose 95% credible interval does not overlap 0. *Centrist news* is defined as news programs with 95% credible intervals overlapping 0. As shown in Figure 1, the news programs classified as centrist are more moderate than most members of congress.

The face validity of the results shown in Figure 1 suggest that this methodology produces a meaningful measure of slant. The model identifies all of the news programs on Fox News Channel as having a conservative slant, all of the news programs on CNN (with the exception of *Glenn Beck* and *Lou Dobbs Tonight*) as centrist news programs, and all of the news programs on MSNBC (with the exception of *Tucker*) as liberal news programs.

The first condition for increased mass polarization through increased selective exposure to partisan media is met: relative to members of congress a handful of television and radio news programs offer an ideological extreme package of news and opinion. However, approximately a third of news programs are more centrist than even the most moderate members of congress and far from having a clear conservative or liberal slant. After describing the media tracking data, the next section examines not only the supply of ideological news but also the demand for that news.

Media Tracking Data

To measure media exposure, I use a unique dataset that contains survey measures of partisanship and passive tracking of media exposure collected by a San Mateo, CA startup called Integrated Media Measurement Incorporated (IMMI).[10] In 2006, IMMI hired survey research firm YouGov, Inc. to impanel several thousand people from five major media markets around the country. The samples were constructed via probability methods using list-based sampling techniques (with replacement), and were drawn to be representative at the media market level.[11] Initial contact was made via a phone call containing a very short profile survey and the invitation to enroll in the panel.[12] The profile survey contained measures of party identification, as well as demographic variables. The party identification of the IMMI sample[13] compares favorably to a nationally representative sample during the same time, as recorded by Gallup in the third quarter of 2006: Republicans (24%), Democrats (35%) Independents (40%). One of the practical innovations of this study is that the survey vendor and its callers were blind to the purpose of the study and to the deployment of the media tracking devices. The scripts did not link the survey in any way to a political party, campaign or political research project.[14] Table 9 in the supplement, shows the distribution of age, race, and gender in the sampling frame, as well as the demographic distribution

[10] The company's technology was subsequently purchased by Arbitron in 2009. These data were obtained through a consulting agreement between IMMI and ANONYMOUS in 2006.

[11] YouGov started with a list of consumers in each market obtained from a commercially available file. Panelists were randomly selected and were replaced with the nearest matching consumer on the list if need be.

[12] Nearly 20 percent of the sample completed the initial profile survey. Actual enrollment in the panel, which was done via a second phone call, was roughly half (10 percent).

[13] Strong Democrat= 19%, Weak Democrat = 15%, Independent Democrat= 17%, Independent= 11%, Independent Republican= 12%, Weak Republican= 13%, Strong Republican= 13 %.

[14] The party identification question, was buried amidst unrelated items, so as not to tip off respondents to the purpose of the study.

of the IMMI panel.

IMMI offered panelists a web-enabled smart phone and paid the monthly charge, and in exchange, panelists agreed to make the phone their primary mobile device. The IMMI phones detect ambient room noise *for each panelist on every day* using software developed by its programmers. The sounds were encoded, not recorded, and simultaneously IMMI was encoding all of the media (and time-spent listening to) every television and radio program in the panelists' markets. To ease concerns about the way media viewership or the media landscape may have changed since 2006, I note that the IMMI method accounts for time-shifting viewing and can code content viewed or heard online as well. The data from the phones were matched to the universe of media in the market, allowing IMMI to generate a daily profile of every panelist's media consumption.[15] By automatically comparing the uploaded audio fingerprints captured by the phones with audio fingerprints stored on the IMMI servers, happening at or around the same time, IMMI identifies all of the media (and the time spent listening) to which each panelist is exposed on any given day. Figure 10, in the supplement, displays the way the IMMI digital fingerprinting works.

Validating The Media Tracking Data

Extensive validation procedures indicated that the media logged by panelists' tracking devices reflect the media exposure patterns of the U.S. adult population. This is confirmed by analyses reported in the Appendix as well as in Jackman et al. (2012) and LaCour and Vavreck (2014), which show that both aggregate and individual-level estimates of television and radio exposure compare favorably to nationally representative estimates from The Nielsen Company and Arbitron. To convey a sense of the fidelity of the IMMI measures, the IMMI panelists in these data watched an average of 28.4 hours of television per week, compared with the Nielsen 2006 national estimates of 31 hours of television per week. Similarly, in terms of radio exposure the IMMI panelists averaged 18.8 hours of radio a week compared with Arbitron 2006 national estimates of 19 hours of radio per week. Also, the audio recognition devices performed with a high level of accuracy in trial runs and throughout the deployment of study.[16] Finally, 89 percent of panelists' devices were in compliance, on average, each day, panel attrition was limited to 2% of the sample, and I find no evidence that compliance or attrition is differently predicted by partisan affiliation or background attributes. Cross-validation procedures are described in detail in the Supplemental Materials.

Main Results

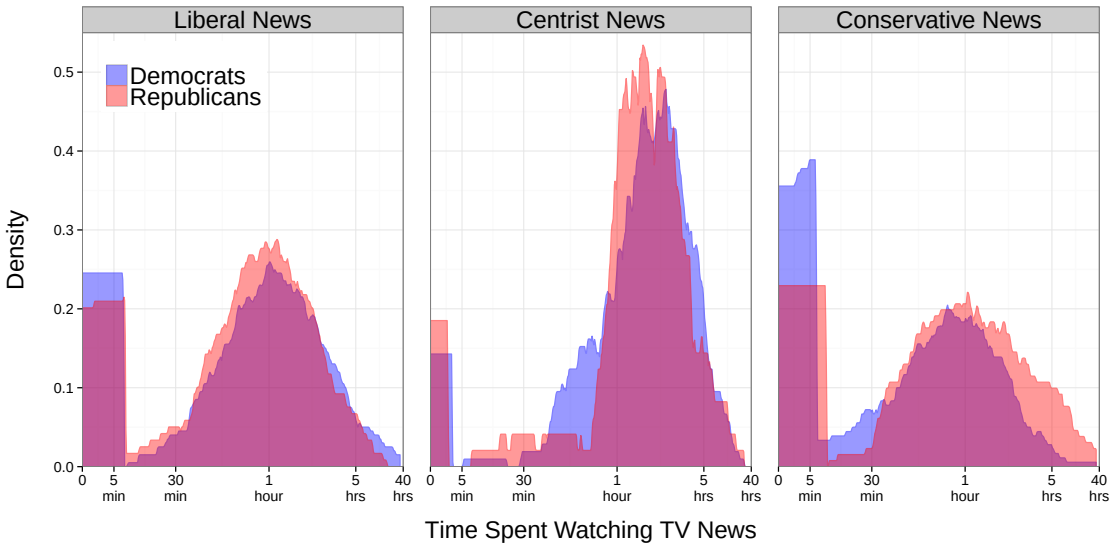
I begin by showing the relationship between partisanship and ideological news exposure. I use the IMMI data to illustrate directly this relationship between party identification and time spent watching liberal, centrist, and conservative news (see Figure 1 for a list of news slant scores

[15] For more on the IMMI method and validation of its measurement techniques see LaCour and Vavreck (2014). I use IMMI data from the weeks leading up to the 2006 midterm elections in the New York and Chicago media markets, which both had a competitive Senate election and several house elections in 2006. The New York market covers Western Pennsylvania, more than half of New Jersey, part of Connecticut, and several counties in upstate New York. A replication dataset for the figures drawn here is available upon request.

[16] Jackman et al. (2012) investigated instances of suspected technology over-reporting when they noticed the software registering hits for political ads that were not aired during the time people allegedly saw them (the master set of media showed the ads were not on the air at these times). Upon further investigation, they discovered that the campaign ads were being played on Sunday morning political talk shows that the panelists were watching – and the tracking software, appropriately, counted that media as an ad viewing.

by program). The relationship is presented using data on real behavior, not survey responses about news consumption; thus, these data show the direct relationship between political partisanship and the amount of news a person *actually* consumes. In terms of real behavior, do partisan loyalties bind citizens to like-minded ideological news sources? If so, we would expect to see a red/blue media divide, with Democrats and Republicans having distinct patterns of news exposure as Iyengar and Hahn (2009) suggest.

Figure 2: **Television News Exposure by News Slant, Among Democrats and Republicans.**



Note: Figure displays distribution of time spent watching television news by news slant. Kernel density estimates for Republicans shown in red, estimates for Democrats shown in blue and the overlap shown in purple. Bandwidth selectors for density estimates were chosen based on Silverman 1986, p.48, eqn (3.31). Labels on the x axis are transformed from the log scale back to original units. Data are from 552 Integrated Media Measurement Incorporated panelists and 379,324 media moments, logged from August 15 to November 7, 2006.

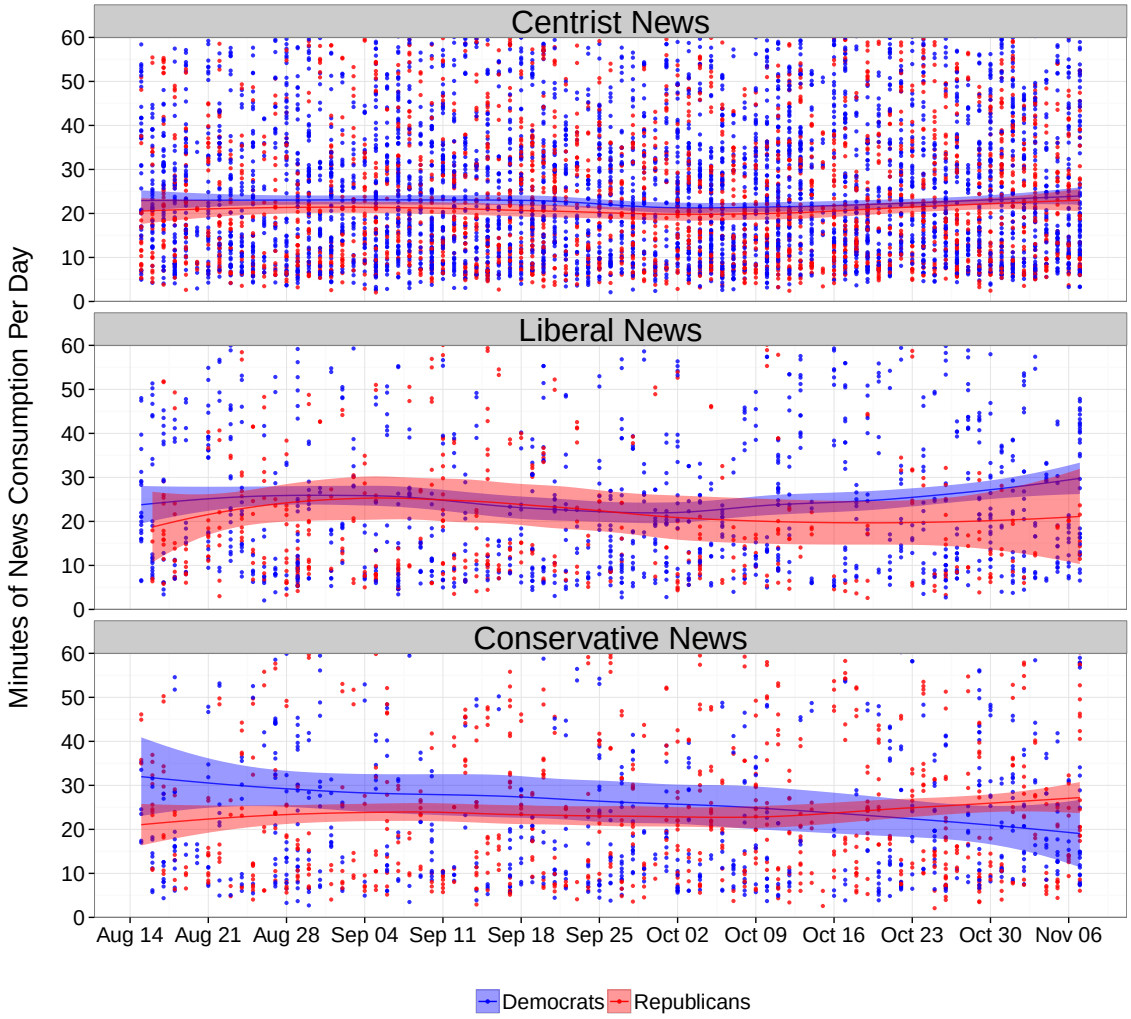
Levels of Partisan Overlap

The data are clear on this question, whether we plot the relationship between party identification and news exposure, across platform or over-time. Far from a red/blue media divide, the data show that Democrats and Republicans have statistically indistinguishable patterns of news consumption. First, consider Figure 2, which shows the distribution of time spent watching TV newscasts or Figure 11, in the appendix, which shows time spent listening to radio programming.[17]

[17] Because the distribution of media exposure is substantially skewed (see Figure 2), I transform the data for ease of visualization by taking the natural logs of exposure (and add one unit to every case to avoid having to take the log of zero). Essentially, I am "zooming in" on the part of the graph where most of the cases are found (low end of exposure), and "zooming out" on the high end of the scale. Units on the graph represent actual hours of exposure.

Results are consistent across platform: there is a large amount of centrist news consumption, significant avoidance of ideological news programming (illustrated by the large modal spikes at 0 for conservative and liberal news exposure), and high levels of overlap between Democrats and Republicans (illustrated in purple). All three results appear to support the balanced exposure hypothesis.

Figure 3: **News Exposure by News Slant, Among Democrats and Republicans**



Note: Points represent panelists' total time spent consuming centrist, liberal or conservative news per day. Lines represent mean news consumption, among those watching news on a given day, from August 14, 2006, to November 7, 2006 (election day) shading represents 95% confidence intervals. Data are from Integrated Media Measurement Incorporated.

Second, consider Figure 3, which shows the over time results, longitudinally. The overlapping 95% confidence intervals in Figure 3, illustrate that, of those who watch some news, Democrats and

Republicans have statistically indistinguishable levels of ideological news consumption throughout the three months leading up to the election. To illustrate this pattern of results, consider centrist news exposure, the weekly average for Democrats is 3 hours and 10 minutes versus 3 hours and 2 minutes for Republicans. A similar pattern is shown for the weekly average of liberal news exposure consisting of 1 hour and 20 minutes for Democrats and 1 hour and 3 minutes for Republicans. While, the weekly average for conservative news exposure is 1 hour and 46 minutes for Republicans and 1 hour and 4 minutes for Democrats. Whether we look across platform or over time the same relationship holds: Republicans and Democrats, in the aggregate, have massively overlapping news exposure patterns.[18] Upon initial investigation, it appears that the partisanship of individuals is not strongly related to the ideological slant of the news they consume.

There are, however, small partisan differences in Figure 2 and Figure 3 that are worth considering. First, consider the large modal spikes at 0 for liberal news exposure (Figure 2 left panel) and conservative news exposure (Figure 2 right panel), indicating a panelist completely avoiding news from conservative or liberal sources. Second, consider the statistically insignificant but apparent increase in selective exposure in the days prior to the election, shown in Figure 3. Although, the partisan differences in exposure seem minor, if the group of Democrats tuning out liberal news *also* tune out conservative news *or* if the people watching a lot of conservative programming are *also* listening to a lot of liberal news, this would allay the fears of Sunstein (2007) and others. On the other hand, if the group of Democrats tuning out conservative news is among those outliers who consume almost 40 hours of liberal news, this would represent exactly the situation that Sunstein (2007) is worried about: *exclusive* exposure to like-minded programming. To address this concern, we must move beyond partisan levels of overlap in the aggregate, and investigate the relationship between partisanship and news exposure at the individual level.

Outline of Results. I now offer three increasingly specific tests of the selective exposure hypothesis. These tests are based on (1) the percentage of individuals' exposure devoted to ideologically like-minded news, (2) the prevalence of selective exposure (number of people in the echo chambers), and (3) the predictors of ideological news exposure.

News Diet: People Consume Primarily Centrist News

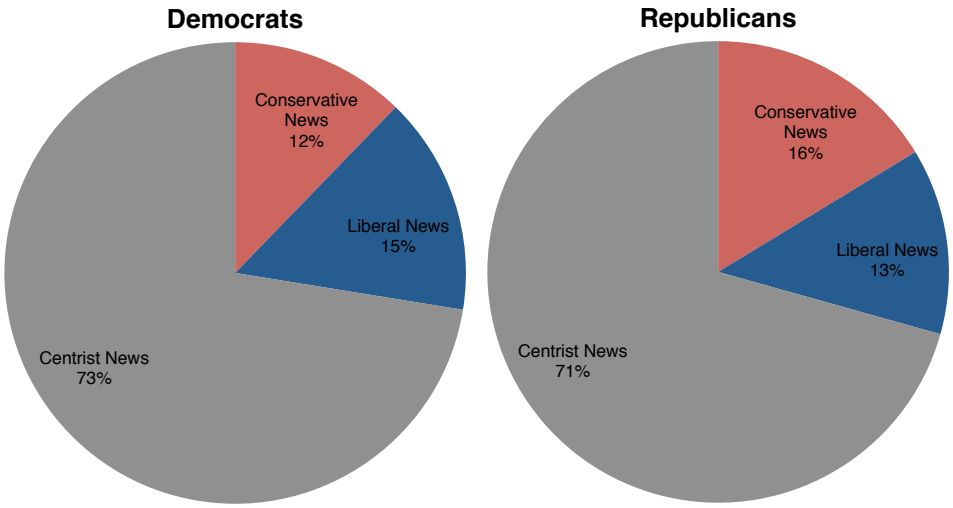
What percentage of individuals' overall news consumption is devoted to ideologically like-minded programming versus other news programming? If exposure to politics is *biased*, with "liberals watching mostly liberals and conservatives watching mostly conservatives," as Sunstein (2001) argues, and if Berelson and Steiner (1964) are correct that "People are more likely to see and hear congenial communications than neutral or hostile ones," then the percentage of like-minded news should be greater than the percentage of cross-cutting exposure or centrist/neutral exposure. If, on the other hand, exposure is *balanced*, we would expect the percentage of news exposure devoted to centrist programming or cross-cutting exposure to be greater than the percentage of exposure devoted to ideologically like-minded exposure.

Using the IMMI data, it is simple to calculate the percent of individuals' overall news exposure that is devoted to like-minded programming. Figure 4 shows *news diet* for the average panelist, defined as the percent of individuals' total news consumption spent consuming liberal news versus centrist news versus conservative news. Where, for example, *conservative news percent* is the percent of time a panelist watches conservative TV newscasts and listens to conservative radio

[18] Appendix Figure 13 shows the longitudinal results for Independents.

programs, relative to the total amount of news consumed. This measure captures how *concentrated* people are in their use of different types of news.

Figure 4: **News Diet by Media Slant, Among Democrats and Republicans**



Note: Figure displays news diet for the average IMMI panelist – defined as the percentage of individuals' total news consumption spent consuming centrist, conservative and liberal news, respectively. Data are from 552 Integrated Media Measurement Incorporated panelists and 379,324 media moments, logged from August 15 to November 7, 2006

The data, shown in Figure 4, are clear on this question, whether looking at the average Democrat (left panel) or Republican (right panel): the *overwhelming* majority of exposure is not devoted to like-minded media, it is devoted to centrist media (73% for Democrats and 71% for Republicans). By comparison, exposure to like-minded programming is *not only minimal* (15% for Democrats versus 16% for Republicans), it is *similar* to the amount of cross-cutting exposure (12% for Democrats and 13% for Republicans). Figure 4 presents a characterization of media consumption that looks quite different from Sunsteins' (2007) characterization of users hunkering down in enclaves of agreeable, like-minded media echo chambers. Consistent with the balanced exposure hypothesis, the typical person is exposed primarily to centrist or neutral communications – *supplementing*, not *substituting* this neutral exposure with a small dose of ideological news. However, the news diet measure, averaged over all panelists, may mask the substantial variation in news consumption patterns and does not speak directly to the *prevalence* of partisan selective exposure. The next section presents the results in more detail and addresses the concern raised by Stroud (2011), namely, that selective exposure is a far-reaching behavior, that extends to a broad range of Americans.

Prevalence: How Many People in the Echo Chamber?

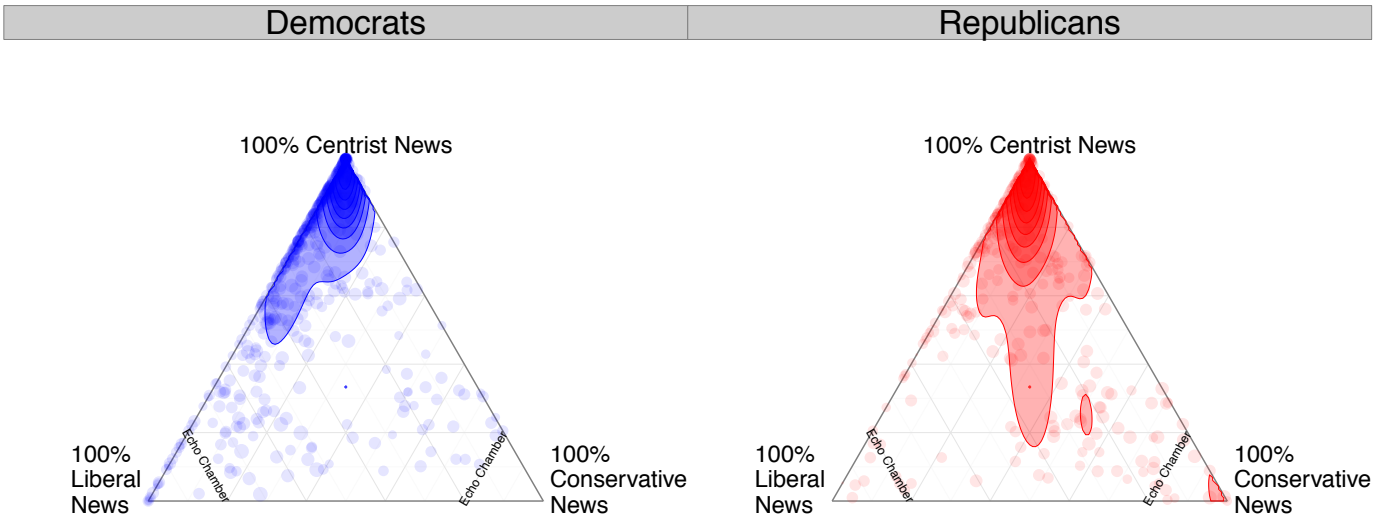
In this section, I ask whether the prevalence of partisan selective exposure is large or small in absolute terms. If partisan selective exposure is a wide-spread behavior, and Bennett and Iyengar

(2008, p. 724) are correct that "most media users rarely find themselves in the path of attitude-discrepant information," and if Stroud's finding based on self-reports is valid, in that 34% of the public consume *only* likeminded sources about politics (Stroud 2011, p. 63), then we should expect to find around a third of the public with exclusive exposure to like-minded news. If exposure is *balanced*, then we should expect the behavior to be restricted to a small group of partisans. What percent of the sample consume predominately like-minded programming?

To address this question, I present Figure 5, which displays the percentage of time spent consuming liberal, centrist and conservative news as positions in an equilateral triangle.[19] Density estimates graphically depict where the bulk of the IMMI panelists are located. Essentially, Figure 5 can be interpreted as three "pulls of gravity:" points near the top indicate exclusive centrist exposure, the lower left corner represents exclusive liberal exposure and the lower right corner indicates exclusive conservative exposure. Again, if Stroud (2011) is right that selective exposure is widespread, with "34% of the public self-reporting exposure to *only* likeminded sources about politics," we would expect to find around a third of Democrats in the liberal echo chamber (lower left corner of Figure 5 – indicating exclusive exposure to liberal news). Likewise, for Republicans we would expect to see a large group in the conservative echo chamber (lower right corner of Figure 5 – indicating exclusive exposure to conservative news).

[19]The motivation for using triangle (or simplex) plots for depicting compositions is that panelists' *centrist news percent, liberal news percent* and *conservative news percent* can be plotted in a two-dimensional graph.

Figure 5: **News Diet Among Democrats and Republicans**



Note: Figure displays kernel density estimates of the proportion of time spent consuming liberal, centrist and conservative news on ternary (or triangle) plots – which graphically depict the percent of liberal, centrist and conservative news as positions in an equilateral triangle. The percent of the three variables sum to 100% for each panelist. Each point represents a unique panelist – the size of the point is proportional to the total amount of news consumed. Bandwidth selectors for density estimates were chosen based on Silverman 1986, p.48, eqn (3.31). Data are from 552 Integrated Media Measurement Incorporated panelists and 379,324 media moments, logged from August 15 to November 7, 2006.

The result is dramatic: the majority of people watch and listen to predominately centrist news (53% of partisans consume over 80% centrist news). The second largest group do not specialize in any one type of news (40% of partisans do not consume over 80% of liberal, centrist or conservative news), but rather consume news from centrist newscasts as well as an ideologically diverse set of partisan programs. Cross-cutting exposure exceeds 80 percent of total news exposure among 3 percent of partisans and like-minded exposure exceeds 80 percent of total news exposure among only 4 percent of partisans. These results are robust to alternative specifications. Under the most lenient measure of echo chambers, greater than 50% of news consumption from like-minded programming, only a small subset of partisans are included – 10% of Democrats and 16% of Republicans. Using a more stringent measure of echo chambers, over 90% of news consumption from like-minded programming, an even smaller subset of individuals are included (1% of Democrats and 3% of Republicans). Most importantly, exactly *zero* partisans consume 100% like-minded news. When using actual time spent watching or listening to news, there is not one panelist in the sample that consumes *only* like-minded news.[20] Consistent with the balanced exposure hypothesis, the vast majority are far from having an exclusive liberal or conservative news diet, in fact most consume primarily centrist news programming.

Before preceding, I briefly highlight a feature of the media environment that clarifies why

[20]Like-minded exposure exceeds 80 percent of total news exposure among only 3 percent of Independents.

partisan selective exposure findings are much smaller than is often conjectured. The evidence presented thus far indicates that news consumption via mass media is vertically differentiated, in that a majority of exposure goes to a select few centrist news programs. Appendix Figure 12 shows the cumulative distribution of news consumption by program rank. The top 8 news programs, which are all centrist, account for more than 50% of all news consumption.

Among the group who do turn to ideological sources, it appears most do not avoid news sources that run contrary to their political proclivities. What is distinctive between the exposure patterns of partisans portrayed by Figure 5 is that more Democrats appear to avoid partisan news altogether, supplementing their heavy stream of centrist news with a small dose of liberal news, while most Republicans, supplement their centrist news diet with a more balanced dose of ideological news. The exception is the tiny group of Republicans that appear to populate the conservative echo chamber (lower right corner of Figure 5). To test these observations more directly, the next section focuses on how "balanced" individuals' news diet is among ideological sources.

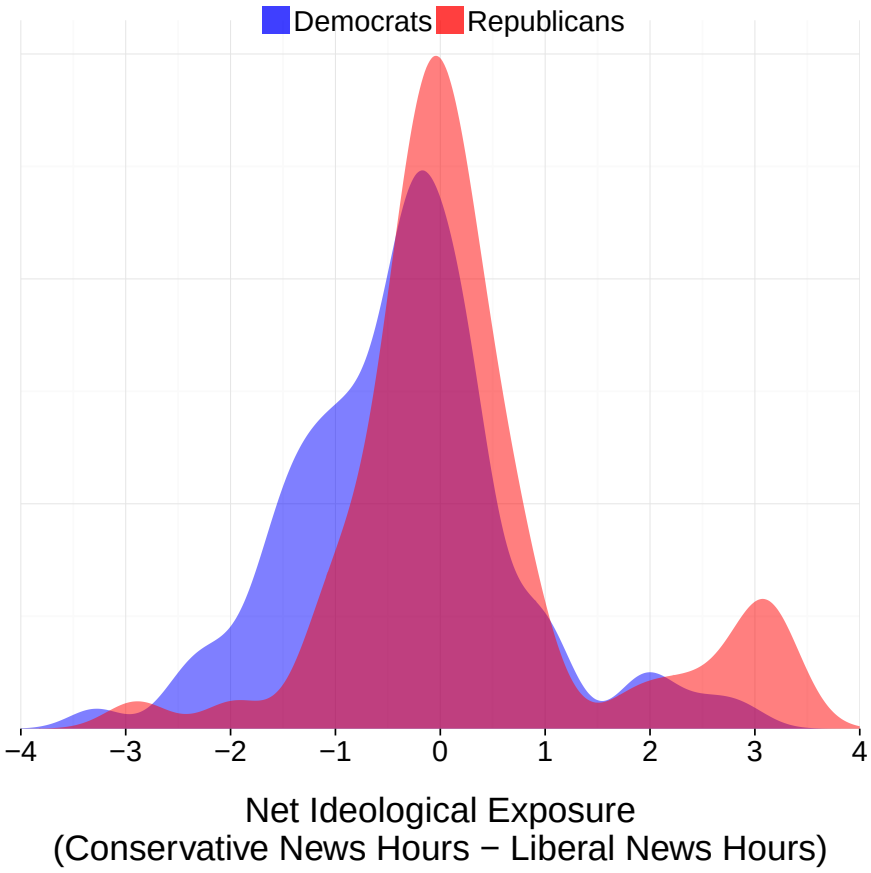
Political Exposure Bias Among Ideological News Sources

The foregoing discussion focused on individuals' entire news consumption. We now seek to answer the question: how *balanced* are individuals in the ideological news they consume? To address this, I adapt the classic measure of selective exposure, *index of political exposure bias*, defined here as individuals' time spent consuming conservative news minus time spent consuming liberal news. On this scale a high positive score represents a panelist watching and listening to media that is conservative. Conversely, a negative score indicates a panelist watching or listening to media that is liberal, where the absolute magnitude of the score indicates the frequency and volume of exposure. The theory of selective exposure posits that we should see a bimodal distribution of *political exposure bias* with Republicans consuming predominately conservative news and Democrats consuming predominately liberal news – in other words, a red/blue media divide.

Figure 6 displays the distribution of the *index of political exposure bias* for Democrats and Republicans. Far from a red/blue divide, Figure 6 demonstrates that the distribution of political exposure bias for both Democrats and Republicans is unimodal and centered around zero. There are two competing reasons why the mode in Figure 6 could be centered around zero. The first is people could be consuming both liberal and conservative news regardless of their partisan affiliations. The second is people are not consuming a lot of partisan news, therefore keeping them from moving out to the tails of the distribution. To investigate whether the mode is centered at zero because of balanced diets or low news consumption, we can further leverage the power of the IMMI data to examine not only the distribution of political exposure bias in the aggregate, but also the distribution of exposure bias *for each panelist* – shown in Figure 7. The dominance of purple in Figure 7 indicates that individuals have balanced diets at the individual level.

To examine how the selection process differs between those who watch news frequently and those who do not, Figure 14, in the appendix, displays percent conservative news by total news consumption. Figure 14 illustrates that individuals' have almost perfectly balanced diets, and start to become *slightly* biased only after watching more than 10 hours of news a week. However, the polarization is minimal – even news junkies who consume news as though it were a full time job (40 hours a week) have a relatively balanced news diet with approximately 60% like-minded news and 40% cross-cutting news. Whether we look at the distribution of political exposure bias in the aggregate or at the individual level the data are clear on this point: most Republicans and Democrats are frequently exposed to cross-cutting content.

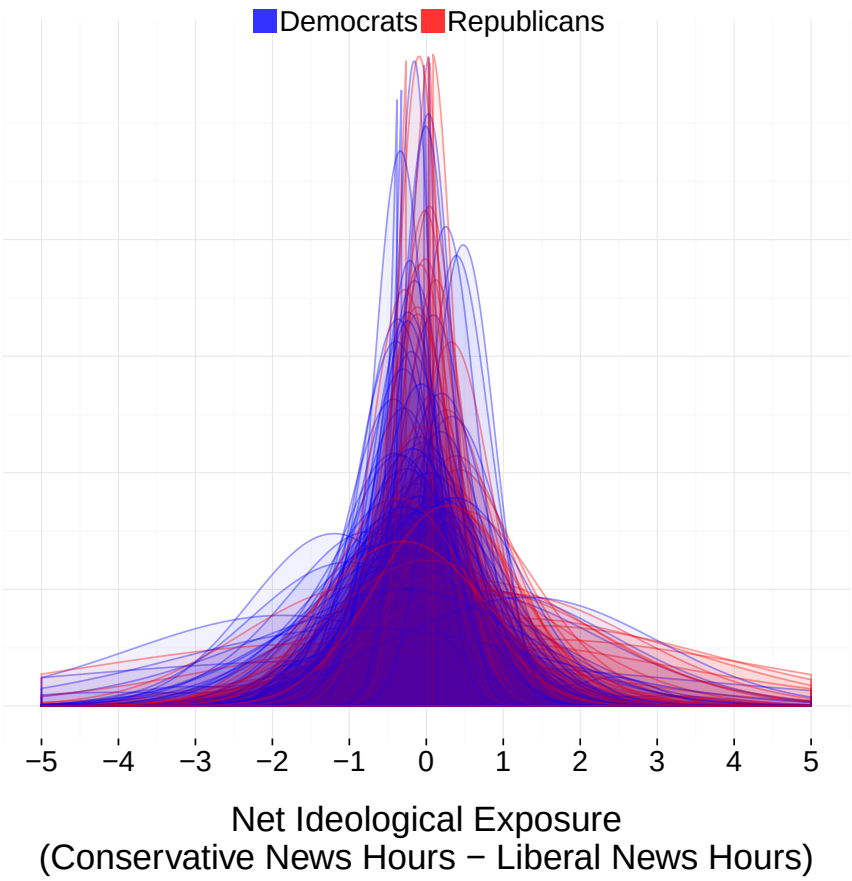
Figure 6: **Political Exposure Bias**. Conservative News Exposure Minus Liberal News Exposure, Among Democrats and Republicans.



Note: Figure displays kernel density estimates of time spent consuming conservative news minus time spent consuming liberal news for Democrats and Republicans. Bandwidth selectors for density estimates were chosen based on Silverman 1986, p.48, eqn (3.31). Data are from 552 Integrated Media Measurement Incorporated panelists and 379,324 media moments, logged from August 15 to November 7, 2006.

(Lazarsfeld and Fiske 1938)

Figure 7: **Political Exposure Bias (Individual-Level)**. Conservative News Exposure Minus Liberal News Exposure, Among Democrats and Republicans.



Note: Figure displays kernel density estimates of time spent consuming conservative news minus time spent consuming liberal news, per day, for each panelist. Democrats are shown with blue curves and Republicans are shown with red curves. Purple indicates areas of overlap. Bandwidth selectors for density estimates were chosen based on Silverman 1986, p.48, eqn (3.31).

More Liberal News, More Conservative News

The third and final hypothesis test is imported from Sears and Freedman (1967): if exposure is *biased*, with partisanship dictating news exposure, then partisanship should be a stronger predictor (i.e. correlate more highly) with exposure compared to other variables known to be related to news consumption. This study is not designed to test causal purposes, but we can still use a model as an test of the hypothesis. To test this hypothesis, I present Table 3, which displays predictors of the total time spent watching or listening to liberal, centrist and conservative news. Covariates include partisanship, news consumption, and demographics.

Contrary to the partisan selective exposure hypothesis, partisanship is *not* a significant pre-

dictor of conservative *or* liberal news exposure. The results in Table 3 demonstrate that the relationship between liberal news exposure and conservative news exposure is not only *positive*[21] – in fact, *the strongest predictor of how much conservative news you watch is how much liberal news you watch.* Likewise, the strongest predictor of liberal news exposure is the amount of conservative media consumed. The data are clear and unambiguous: people who watch a lot of conservative news *also* watch a lot of liberal news – regardless of partisanship. To validate that the profile survey and exposure data were merged correctly, Appendix Table 4, shows that identifying as "Hispanic" on the profile survey is the strongest predictor of the amount of spanish-language media exposure.

Potential Reason Why Exposure to Politics is *Balanced*

To provide some flavor to exactly what is going on in the current media environment, I conclude the results section by providing two concrete examples of panelists' actual news exposure patterns, during the final week of the campaign. To do this, I randomly sampled one panelist among the group of strong Democrats and one panelist among the group of strong Republicans, who both ranked in the top twenty-fifth percentile of ideological news consumption. Figure 8 shows the actual news media moments of these two randomly selected IMMI panelists, in the lead up to election day.

Figure 8: **Actual News Exposure Moments For Two IMMI Panelists**

Strong Democrat

Day	Channel	Program	View Start	View End
M	NBC	Today	8:04:16 AM	8:30:28 AM
M	CBS	CBS News at 6PM	6:07:55 PM	6:30:00 PM
M	CBS	CBS Evening News	6:30:00 PM	7:00:00 PM
M	MSNBC	Hardball With Chris Matthews	10:27:07 PM	11:00:00 PM
M	FNC	The O'Reilly Factor	11:23:05 PM	11:55:06 PM
M	MSNBC	Countdown With Keith Olbermann	12:00:10 AM	12:25:55 AM
T	FNC	On the Record With Greta Van Susteren	10:00:02 PM	10:05:38 PM
T	CNN	Anderson Cooper 360	10:05:38 PM	11:03:36 PM
T	FNC	The O'Reilly Factor	11:03:36 PM	11:25:43 PM
T	MSNBC	Countdown With Keith Olbermann	12:00:17 AM	1:00:01 AM
T	FNC	Your World With Neil Cavuto	1:09:54 AM	1:19:01 AM
W	CBS	CBS News at 6PM	6:07:55 PM	6:30:00 PM
W	CBS	CBS Evening News	6:30:00 PM	7:00:00 PM
W	FNC	On the Record With Greta Van Susteren	10:00:03 PM	11:00:03 PM
W	FNC	The O'Reilly Factor	11:00:04 PM	12:00:04 AM
W	FNC	Special Report With Brit Hume	12:00:07 AM	12:09:18 AM
W	MSNBC	Countdown With Keith Olbermann	12:09:18 AM	1:00:02 AM
W	MSNBC	MSNBC Reports	1:00:02 AM	1:01:28 AM
W	FNC	Your World With Neil Cavuto	1:01:28 AM	1:37:25 AM
TH	MSNBC	MSNBC News Live	9:00:02 AM	11:10:32 AM
TH	CBS	CBS 2 News at 5PM	5:22:44 PM	5:55:35 PM
TH	FNC	The O'Reilly Factor	11:43:54 PM	11:57:45 PM
TH	CNN	Anderson Cooper 360	11:57:45 PM	11:59:17 PM
TH	MSNBC	Hardball With Chris Matthews	12:00:04 AM	12:23:23 AM

Strong Republican

Day	Channel	Program	View Start	View End
M	CNN	American Morning	6:57:29 AM	7:06:15 AM
M	ABC	Eyewitness News This Morning	7:41:19 AM	8:00:03 AM
M	FNC	Fox and Friends	8:26:08 AM	8:43:12 AM
M	MSNBC	MSNBC News Live	1:00:07 PM	1:28:53 PM
M	ABC	Eyewitness News	6:23:04 PM	6:30:00 PM
M	ABC	ABC's World News	6:30:00 PM	7:00:00 PM
M	FNC	The Fox Report With Shepard Smith	7:31:32 PM	8:00:00 PM
M	FNC	The O'Reilly Factor	8:00:00 PM	8:59:10 PM
T	MSNBC	MSNBC News Live	9:00:00 AM	9:12:46 AM
T	MSNBC	MSNBC News Live	11:16:56 AM	12:00:08 PM
T	MSNBC	Countdown With Keith Olbermann	8:01:18 PM	9:00:00 PM
T	FNC	On the Record With Greta Van Susteren	10:00:00 PM	10:07:24 PM
T	FOX	Fox 5 News at 10	10:07:28 PM	10:34:04 PM
W	ABC	Eyewitness News This Morning	7:19:24 AM	8:00:00 AM
W	ABC	Good Morning America	8:00:00 AM	8:11:30 AM
W	CNN	CNN Presents	3:45:01 PM	4:00:00 PM
W	FNC	Special Report With Brit Hume	6:00:04 PM	6:08:55 PM
TH	ABC	Eyewitness News This Morning	6:46:15 AM	7:00:00 AM
TH	MSNBC	MSNBC News Live	2:37:20 PM	2:43:03 PM
TH	FNC	Special Report With Brit Hume	6:00:04 PM	6:08:55 PM
TH	CBS	CBS Evening News	6:33:04 PM	7:00:00 PM
TH	FNC	The Fox Report With Shepard Smith	7:31:32 PM	8:00:00 PM
TH	FNC	The O'Reilly Factor	8:00:00 PM	8:29:10 PM
TH	MSNBC	Hardball with Chris Matthews	8:29:10 PM	9:00:00 PM

Note: Data are from 2 randomly selected IMMI panelists over the week of October 30 to November 2, 2006. Consumption patterns may deviate from program scheduling due to time-shifted viewing. Data are from Integrated Media Measurement Inc.

The consumption patterns of these two panelists are neither exceptions nor unusual. To

[21] A finding consistient with Garrett, Carnahan and Lynch (2011) suggesting that attitudinally consonant and attitudinally discrepant information is positively correlated in self-reported online media use.

demonstrate this point, I use the IMMI tracking data to investigate not only what people consume, but also, the *order* in which they consume it. Among panelists who watch news regularly,[22] for 88% percent of IMMI panelists, centrist news was their *first* exposure to news on an average weekday.[23] Among the remaining 12 percent of panelists, 6 percent encountered like-minded news as their first exposure of the day and seven percent consume cross-cutting news first. The fact that people encounter centrist news not only *first*, but also *repeatedly*, makes this exposure all the more important in light of research showing that repeated exposure to initial information increases perceptions of its accuracy (Cacioppo and Petty 1989; Moons, Mackie and Garcia-Marques 2009), resulting in attitude stability and concomitant resistance to later frames (in this case ideological news).

One additional result provides a *hint* about the *active* search behavior dictating political news consumption – channel switching. Among the 88% of panelists who initially consume centrist news and change the channel to ideological news, 59% *change the channel* to like-minded programming, with the remaining 41% switching the channel to a cross-cutting newscast, on average. Most importantly, of the panelists watching like-minded news, 92% change the channel to a cross-cutting news program, on average. This pattern of results is consistent with early experimental studies finding that voluntary exposure to one-side increases voluntary exposure to the other side (Sears 1965; Sears and Freedman 1967). The fact that 92% of panelists *change the channel* to a cross-cutting news program, demonstrates clear evidence of *active* balanced, not biased, information search behavior.

Concluding Remarks

To summarize, there is little evidence that the electorate is self-sorting into "ideologically like-minded information cocoons" at the level being described by scholars and political commentators. Results indicate that the vast majority of partisans consume predominately centrist newscasts, while frequently encountering ideological programming challenging their views. In fact, the best predictor of how much conservative news you watch is how much liberal news you watch. These results have important implications for research on media effects, polarization, persuasion, and deliberative democracy.

First, the finding that the vast majority of Democrats and Republicans alike get most of their news from centrist news outlets, *supplementing*, not *substituting*, this neutral exposure with a small dose of balanced ideological news, suggests a change of focus in our study of media effects. Whether the news media is structured so as to limit audience fragmentation or the public just prefers to get political news from sources that have no particular ideological point of view, [24] the evidence is unambiguous: a majority of news consumption goes to a select few centrist news programs. The sheer volume is striking: centrist news consumption consists of 10 percent of the average panelist's *entire* media diet compared to ideologically slanted news, which makes up *one half of one percent* of the average media diet. The fact that centrist and local news are their

[22] Defined here as watching more than 5 minutes of news per weekday, on average, over the 12 weeks individuals were tracked (n=810).

[23] The beginning of the day is defined here as 5:00 AM, approximately, when the morning news programming begins.

[24] Survey evidence suggests that a majority (64%) of people prefer to get political news from sources that have no particular ideological point of view (Pew 2012), though it is not clear how news preferences measured on surveys translate to actual news behavior.

primary source of political information for the vast majority of individuals (Gilliam and Iyengar 2000) emphasizes the importance of measuring not only centrist news exposure, but also the *content* of this information and how this exposure and content varies across media markets (Hale, Fowler and Goldstein 2007) – doing so should be among the highest priorities for the research on the political impact of the mass media.

Second, the fact that the echo chambers are all but empty (only 1% of Democrats and 4% of Republicans get at least 90% of their news from ideologically like-minded sources) attenuates concern that partisan selective exposure occurs on a sufficiently broad scale to significantly contribute to mass polarization or threaten democracy by fueling extremism. Although, there is little evidence for ideological selectivity as a mass behavior, the small group of Republicans who do reside in the echo chamber warrant further attention, as they may be the "opinion leaders" (Lazarsfeld, Berelson and Gaudet 1944) or party activists (Cohen et al. 2009) capable of wielding disproportionate political influence in social networks (Katz and Lazarsfeld 1970). Thus, future efforts to deploy the automated tracking method, on a larger-scale, a networked sample, or field experimental context, would certainly be valuable, as this effort will increase our ability to investigate the magnitude, channels and transmission of media influence among this tiny group of potentially important people.

Although the results from this study are statistically robust, the present effort is nevertheless quick to acknowledge the limitations of this research. I have studied partisan selective exposure via mass media (Television and Radio) in two regions and in just one political environment (the circumstances surrounding the lead-up to the 2006 Midterm Elections). Although, it remains to be seen whether citizens seek out information in a similarly balanced fashion on other platforms, areas, and in different contexts, the findings from this effort receive strong confirmation from a follow-up study finding similarly balanced exposure to ideological news on the Internet (AUTHOR 2014).[25]

While, this study requires replication and extension, the use of a direct measure of media exposure via passive tracking devices represents a solution to the long-acknowledged, but previously unaddressed self-reports problem. A problem limiting the empirical investigation of selective exposure since the first study of U.S. elections (Lazarsfeld, Berelson and Gaudet 1944). In the absence of such a behavioral measure, researchers are bound to rely on self-reports that require corrections. The characterization of an electorate where powerful partisan loyalties bind citizens to their preferred ideological news sources, appears, on the basis of the analysis presented here, to be due in significant part to the tendency of previous research designs to omit measurement of centrist news exposure – the primary source of information for the overwhelming majority of individuals. Research designs which remove the middle ground and force respondents to choose between ideologically extreme media options not only represent an artificial choice, they run the risk of making moderates appear as ideological warriors.

In closing, I note that this analysis suggests that it is a serious mistake for scholars to attribute the "minimal" persuasive effects of the mass media to the tendency of citizens to avoid the other side. Against this backdrop of direct evidence, it is clear that people *do in fact see and hear the other side*. The fact that people frequently encounter information contradicting their political beliefs challenges the long-held conjecture that resistance to political influence occurs at the exposure stage of the persuasion process (Festinger 1957; Lazarsfeld, Berelson and Gaudet

[25] I am currently in the process of replicating this study, using individual-level media tracking data on Internet behavior for a nationally representative sample of 3,000 people from September 1-December 1, 2011.

1944; Klapper 1960; Bennett and Iyengar 2008).[26] Just as the depiction of the electorate as a biased citizenry was not accurate in Lazarsfeld's day, so the characterization of a public burrowed away in ideological echo chambers is not accurate today. Thus, the true persuasive or polarizing effects of the mass media likely represent a response to primarily centrist communications, as well as a combination of exposure to both *similar and dissimilar* ideological perspectives. The fact that citizens encounter centrist news *before* watching ideological news makes this exposure all the more important in light of recent experimental evidence demonstrating the preeminence of early frames and the rejection of later frames (Druckman, Fein and Leeper 2012). The key to discovering whether and to what extent the media has minimal or massive effects lies in what citizens do with the *balanced*, not selective, political information they consume.

[26]The fact that Democrats and Republicans diverge markedly on important factual questions (Gaines, Kuklinski, Quirk, Peyton and Verkuilen 2007, but see Bullock, Gerber, Hill and Huber 2013) despite the fact that they encounter the same news sources, emphasizes the importance of further experimentation on how citizens attend to, retain, and translate this countervailing exposure into political views (Arceneaux, Johnson and Murphy 2012; Krupnikov 2014; Lau and Redlawsk 2006; Taber and Lodge 2006). No less important is the task of studying what influences news selection in the first place. I leave for future work the important task of assessing selectivity to news based on issue-content (Kim 2009), accuracy of information (Hart et al. 2009) or social endorsement cues (Messing and Westwood 2011). Although these important questions about the determinants and mechanisms of news choice, as well as the causal effects of media exposure, remain open, these results for the first time demonstrate that, in terms of real behavior, not survey responses of media exposure, most people *do in fact* see and hear the other side.

References

Abramowitz, Alan I. and Kyle L Saunders. 2008. "Is Polarization a Myth?" *Journal of Politics* 70(2):542–55.

Anderson, Lynn R. and William J. McGuire. 1965. "Prior Reassurance of Group Consensus as a Factor in Producing Resistance to Persuasion." *Sociometry* 28(1):pp. 44–56.

Ansolabehere, Stephen D. and Shanto Iyengar. 1998. "Messages Forgotten: Misreporting in Surveys and the Bias Toward Minimal Effects." University of California, Los Angeles. Unpublished manuscript.

Arceneaux, Kevin and Martin Johnson. 2011. "Does Media Fragmentation Produce Mass Polarization? Selective Exposure and a New Era of Minimal Effects.".

Arceneaux, Kevin and Martin Johnson. 2013. *Changing Minds or Changing Channels? Media Effects in the Era of Expanded Choice*. University of Chicago Press.

Arceneaux, Kevin, Martln Johnson and Chad Murphy. 2012. "Polarized Political Communication, Oppositional Media Hostility, and Selective Exposure." *The Journal of Politics* 74(1):pp. 174–186.

Bartels, Larry M. 1993. "Messages Received: The Political Impact of Media Exposure." *American Political Science Review* 87(2):267–285.

Baum, M.A. 2002. "Sex, Lies, and War: How Soft News Brings Foreign Policy to the Inattentive Public." *American Political Science Review* 96(1):91–110.

Bennett, W.L. and Shanto Iyengar. 2008. "A new era of minimal effects? The changing foundations of political communication." *Journal of Communication* 58(4):707–731.

Berelson, Bernard and Douglas Waples. 1941. Public Communications and Public Opinion PhD thesis Chicago: University of Chicago.

Berelson, Bernard and G. A. Steiner. 1964. *Human behavior: An Inventory of Scientific Findings*. New York: Harcourt, Brace & World.

Berelson, Bernard R., Paul F. Lazarsfeld and William N. McPhee. 1954. *Voting: A Study of Opinion Formation in a Presidential Campaign*. Chicago: University of Chicago Press.

Bullock, John G., Alan S. Gerber, Seth J. Hill and Gregory A. Huber. 2013. Partisan Bias in Factual Beliefs about Politics. Working Paper 19080 National Bureau of Economic Research.

Cacioppo, John T. and Richard E. Petty. 1989. "Effects of Message Repetition on Argument Processing, Recall, and Persuasion." *Basic and Applied Social Psychology* 10(1):3–12.

Chaffee, Steven H. and Joan Schleuder. 1986. "Measurement and Effects of Attention to Media News." *Human Communication Research* 13(1):76–107.

Clinton, Joshua D. and Ted Enamorado. 2014. "The National News Media's Effect on Congress: How Fox News Affected Representatives in Congress." *Manuscript* .

Coe, Kevin, David Tewksbury, Bradley J. Bond, Kristin L. Drogos, Robert W. Porter, Ashley Yahn and Yuanyuan Zhang. 2008. "Hostile News: Partisan Use and Perceptions of Cable News Programming." *Journal of Communication* 58(2):201–219.

Cohen, Marty, David Karol, Hans Noel and John Zaller. 2009. *The Party Decides: Presidential Nominations Before and After Reform*. University of Chicago Press.

DellaVigna, Stefano and Ethan Kaplan. 2007. "The Fox News Effect: Media Bias and Voting." *Quarterly Journal of Economics* 122(3):1187–1234.

Dilliplane, Susanna. 2011. "All The News You Want To Hear: The Impact of Partisan News Exposure on Political Participation." *The Public Opinion Quarterly* 75(2):pp. 287–316.

Druckman, James N., Jordan Fein and J. Leeper, Thomas. 2012. "A Source of Bias in Public Opinion Stability." *American Political Science Review* 106(2):430–454.

Enikolopov, Ruben, Maria Petrova and Ekaterina Zhuravskaya. 2011. "Media and Political Persuasion: Evidence from Russia." *The American Economic Review* 101(7):3253–3285.

Festinger, Leon. 1957. *A Theory Of Cognitive Dissonance*. Stanford University Press.

Fiorina, Morris P. 2005. *Culture War? The Myth of Polarized America*. New York: Pearson Longman.

Fishkin, James S. 1991. *Democracy and Deliberation: New Directions for Democratic Reform*. Vol. 217 Cambridge University Press.

Gaines, Brian J., James H. Kuklinski, Paul J. Quirk, Buddy Peyton and Jay Verkuilen. 2007. "Same Facts, Different Interpretations: Partisan Motivation and Opinion on Iraq." *The Journal of Politics* 69(4):pp. 957–974.

Garrett, R.K., D. Carnahan and E.K. Lynch. 2011. "A Turn Toward Avoidance? Selective Exposure to Online Political Information, 2004–2008." *Political Behavior* pp. 1–22.

Gentzkow, Matthew. 2006. "Television and Voter Turnout." *Quarterly Journal of Economics* 121(3):931–972.

Gentzkow, Matthew and Jesse M. Shapiro. 2010. "What Drives Media Slant? Evidence from U.S. Daily Newspapers." *Econometrica* 78(1):35–71.

Gentzkow, Matthew and Jesse M. Shapiro. 2011. "Ideological Segregation Online and Offline." *The Quarterly Journal of Economics* 126(4):pp. 1799–1839.

Gerber, Alan S., Dean Karlan and Daniel Bergan. 2009. "Does the Media Matter? A Field Experiment Measuring the Effect of Newspapers on Voting Behavior and Political Opinions." *American Economic Journal: Applied Economics* 1(2):35–52.

Gilliam, Franklin D., Jr. and Shanto Iyengar. 2000. "Prime Suspects: The Influence of Local Television News on the Viewing Public." *American Journal of Political Science* 44(3):560–573.

Goldman, Seth K., Diana C. Mutz and Susanna Dilliplane. 2013. "All Virtue Is Relative: A Response to Prior." *Political Communication* 30(4):635–653.

Graber, D.A. 1984. *Processing the news: How people tame the information tide*. Longman New York.

Graetz, Michael J. and Ian Shapiro. 2011. *Death by a Thousand Cuts: The Fight Over Taxing Inherited Wealth*. Princeton University Press.

Groeling, Tim. 2013. "Media Bias by the Numbers: Challenges and Opportunities in the Empirical Study of Partisan News." *Annual Review of Political Science* 16.

Groseclose, T. 2011. *Left Turn: How Liberal Media Bias Distorts the American Mind*. St Martins Pr.

Groseclose, T. and J. Milyo. 2005. "A Measure of Media Bias." *The Quarterly Journal of Economics* 120(4):1191–1237.

Guess, Andrew M. 2014. "Measure for Measure: An Experimental Test of Online Political Media Exposure." *Political Analysis* .

Hahn, Kyu S., Shanto Iyengar, John A. Krosnick and John Walker. 2008. "Selective exposure to campaign communication: The role of anticipated agreement and issue public membership." *The Journal of Politics* 70(01):186–200.

Hale, Matthew, Erika F. Fowler and Kenneth M. Goldstein. 2007. "Capturing Multiple Markets: A New Method of Capturing and Analyzing Local Television News." *Electronic News* 1(4):227–243.

Hamilton, James. 2004. *All the news that's fit to sell: How the market transforms information into news*. Princeton University Press.

Hart, William, Dolores Albarracín, Alice H. Eagly, Inge Brechan, Matthew J. Lindberg and Lisa Merrill. 2009. "Feeling validated versus being correct: a meta-analysis of selective exposure to information." *Psychological Bulletin* 135(4):555.

Ho, Daniel E. and Kevin M. Quinn. 2008. "Measuring Explicit Political Positions of Media." *Quarterly Journal of Political Science* 3(4):353–377.

Holbert, R.L., J.D. Hmielowski and B.E. Weeks. 2012. "Clarifying Relationships Between Ideology and Ideologically Oriented Cable TV News Use A Case of Suppression." *Communication Research* 39(2):194–216.

Hollander, Barry A. 2008. "Tuning out or tuning elsewhere? Partisanship, polarization, and media migration from 1998 to 2006." *Journalism and Mass Communication Quarterly* 85(1):23–40.

Hovland, Carl I. 1959. "Reconciling conflicting results derived from experimental and survey studies of attitude change." *American Psychologist* 14(1):8.

Hyman, Herbert H. and Paul B. Sheatsley. 1947. "Some Reasons Why Information Campaigns Fail." *Public Opinion Quarterly* 11(3):412–423.

Iyengar, Shanto and Donald R. Kinder. 1987. *News That Matters: Television and Public Opinion*. Chicago: University of Chicago Press.

Iyengar, Shanto, Gaurav Sood and Yphtach Lelkes. 2012. "Affect, not Ideology: A Social Identity Perspective on Polarization." *Public Opinion Quarterly* .

Iyengar, Shanto and Kyu S. Hahn. 2009. "Red Media, Blue Media: Evidence of Ideological Selectivity in Media Use." *Journal of Communication* 59(1):19–39.

Jackman, Simon D., Michael J. LaCour, Jeffrey B. Lewis and Lynn Vavreck. 2012. "Digital Fingerprints: A New Method for Measuring Political Advertising." Presented at the Annual Meeting of the Midwest Political Science Association, Chicago.

Jamieson, Kathleen Hall and Joseph N. Cappella. 2008. *Echo Chamber: Rush Limbaugh and the Conservative Media Establishment*. Oxford University Press.

Katz, Elihu and Paul F. Lazarsfeld. 1970. *Personal Influence: The Part Played by People in the Flow of Mass Communications*. New Brunswick, NJ: Transaction Publishers.

Kim, Young Mie. 2009. "Issue Publics in the New Information Environment Selectivity, Domain Specificity, and Extremity." *Communication Research* 36(2):254–284.

Klapper, Joseph T. 1960. *The Effects of Mass Communication*. Free Press.

Knobloch-Westerwick, S. 2009. "Looking the Other Way." *Communication Research* 36(3):426.

Knobloch-Westerwick, S. and J. Meng. 2011. "Reinforcement of the Political Self Through Selective Exposure to Political Messages." *Journal of Communication* 61(2):349–368.

Krupnikov, Yanna. 2014. "Changing Minds: The Power of Unexpected Exposure to Opposing Viewpoints." *Unpublished Manuscript* .

LaCour, Michael J. and Lynn Vavreck. 2014. "Improving Media Measurement: Evidence From the Field." *Political Communication* 31(3):408–420.

Ladd, Jonathan McDonald and Gabriel S. Lenz. 2009. "Exploiting a Rare Communication Shift to Document the Persuasive Power of the News Media." *American Journal of Political Science* 53(2):394–410.

Lau, Richard R. and David P. Redlawsk. 2006. *How Voters Decide: Information Processing in Election Campaigns*. Cambridge University Press.

Lawrence, E., J. Sides and H. Farrell. 2010. "Self-segregation or deliberation? Blog readership, participation, and polarization in American politics." *Perspectives on Politics* 8(01):141–157.

Lazarsfeld, Paul F., Bernard Berelson and Hazel Gaudet. 1944. *The People's Choice: How the Voter Makes Up His Mind in a Presidential Campaign*. 2nd ed. New York: Duell Sloan and Pearce.

Lazarsfeld, Paul and Marjorie Fiske. 1938. "The "Panel" as a New Tool for Measuring Opinion." *The Public Opinion Quarterly* 2(4):pp. 596–612.
URL: http://www.jstor.org/stable/2745105

Levendusky, Matthew S. 2013. *Partisan News that Matters*. University of Chicago Press.

McCombs, Maxwell E. and Donald L. Shaw. 1972. "The Agenda-Setting Function of Mass Media." *Public Opinion Quarterly* 36(2):pp. 176–187.

Mendelberg, Tali. 2002. "The Deliberative Citizen: Theory and Evidence." *Political Decision Making, Deliberation and Participation* 6(1):151–193.

Messing, Solomon and Sean J. Westwood. 2011. "Selective Exposure in the Age of Social Media: Endorsements Trump Partisan Source Affiliation when Selecting Online News Media." Department of Communication, Stanford University.

Milburn, Michael A. 1979. "A Longitudinal Test of the Selective Exposure Hypothesis." *Public Opinion Quarterly* 43(4):pp. 507–517.

Mill, John Stuart. 1869. *On Liberty*. Longmans, Green, Reader, and Dyer.

Moons, Wesley G., Diane M. Mackie and Teresa Garcia-Marques. 2009. "The Impact of Repetition-Induced Familiarity on Agreement with Weak and Strong Arguments." *Journal of Personality and Social Psychology* 96(1):32.

Morris, Jonathan S. 2007. "Slanted Objectivity? Perceived Media Bias, Cable News Exposure, and Political Attitudes." *Social Science Quarterly* 88(3):707–728.

Mullainathan, S. and A. Shleifer. 2005. "The Market for News." *American Economic Review* pp. 1031–1053.

Mutz, D.C. and L. Young. 2011. "Communication and Public Opinion." *Public Opinion Quarterly* 75(5):1018–1044.

Mutz, Diana C. 2006. *Hearing the Other Side: Deliberative versus Participatory Democracy*. Cambridge University Press.

Mutz, Diana C. and Paul S. Martin. 2001. "Facilitating Communication across Lines of Political Difference: The Role of Mass Media." *American Political Science Review* 95(1):97–114.

Mynatt, Clifford R., Michael E. Doherty and Ryan D. Tweney. 1977. "Confirmation Bias in a Simulated Research Environment: An Experimental Study of Scientific Inference." *The Quarterly Journal of Experimental Psychology* 29(1):85–95.

Nie, N.H., D.W. Miller III, S. Golde, D.M. Butler and K. Winneg. 2010. "The World Wide Web and the US Political News Market." *American Journal of Political Science* 54(2):428–439.

Price, Vincent and John Zaller. 1993. "Who Gets the News? Alternative Measures of News Reception and Their Implications for Research." *The Public Opinion Quarterly* 57(2):133–164.

Prior, Markus. 2007. *Post-Broadcast Democracy: How Media Choice Increases Inequality in Political Involvement and Polarizes Elections*. New York: Cambridge University Press.

Prior, Markus. 2009*a*. "The Immensely Inflated News Audience: Assessing Bias in Self-Reported News Exposure." *Public Opinion Quarterly* 73(1):130–143.

Prior, Markus. 2009*b*. "Improving Media Effects Research through Better Measurement of News Exposure." *The Journal of Politics* 71(3):pp. 893–908.

Prior, Markus. 2012. "Who Watches Presidential Debates? Measurement Problems in Campaign Effects Research." *Public Opinion Quarterly* 76(2):350–363.

Prior, Markus. 2013*a*. "The Challenge of Measuring Media Exposure: Reply to Dilliplane, Goldman, and Mutz." *Political Communication* 30(4):620–634.

Prior, Markus. 2013*b*. "Meda and Political Polarization." *Annual Review of Political Science* 16:101–127.

Prior, Markus. 2014*a*. *Conditions for Political Accountability in a High-Choice Media Environment*. Oxford University Press.

Prior, Markus. 2014*b*. "Visual Political Knowledge: A Different Road to Competence?" *The Journal of Politics* 76(01):41–57.

Rosenthal, Paul I. and Francis Steen. 2006. "UCLA Communication Studies News Archive.".

Ryan, Timothy J. and Ted Brader. 2013. "Partisan Selective Exposure in the Digital Age: Evidence from Field Experiments." Presented at the Annual Meeting of the American Political Science Association 2013.

Sears, David O. 1965. "Biased Indoctrination and Selectivity of Exposure to New Information." *Sociometry* 28(4):pp. 363–376.

Sears, David O. and Jonathan L. Freedman. 1967. "Selective Exposure to Information: A Critical Review." *The Public Opinion Quarterly* 31(2):pp. 194–213.

Silverman, Bernard W. 1986. *Density Estimation for Statistics and Data Analysis*. Vol. 26 CRC press.

Stroud, Natalie J. 2010. "Polarization and Partisan Selective Exposure." *Journal of Communication* 60(3):556–576.

Stroud, Natalie J. 2011. *Niche News: The Politics of News Choice*. Oxford University Press.

Stroud, Natalie Jomini. 2008. "Media Use and Political Predispositions: Revisiting the Concept of Selective Exposure." *Political Behavior* 30(3):pp. 341–366.

Sunstein, Cass. 2001. *Republic. com*. Princeton University Press.

Sunstein, Cass R. 2009. *Going to Extremes: How Like Minds Unite and Divide*. New York: Oxford University Press.

Sunstein, C.R. 2007. *Republic.com 2.0*. Princeton University Press.

Taber, Charles S. and Milton Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50(3):755–769.

Vallone, Robert P., Lee Ross and Mark R. Lepper. 1985. "The Hostile Media Phenomenon: Biased Perception and Perceptions of Media Bias in Coverage of the Beirut Massacre." *Journal of Personality and Social Psychology* 49(3):577.

Vavreck, Lynn. 2007. "The Exaggerated Effects of Advertising on Turnout: The Dangers of Self-Reports." *Quarterly Journal of Political Science* 2(4):325–343.

Webster, James G. and Thomas B. Ksiazek. 2012. "The Dynamics of Audience Fragmentation: Public Attention in an Age of Digital Media." *Journal of Communication* 62(39–56).

Webster, James and Patricia F. Phalen. 2013. *The Mass audience: Rediscovering The Dominant Model*. Routledge.

Webster, James, Patricia Phalen and Lawrence Lichty. 2005. *Ratings Analysis: Theory and Practice*. Routledge.

Webster, J.G. 2005. "Beneath the veneer of fragmentation: Television audience polarization in a multichannel world." *Journal of Communication* 55(2):366–382.

Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.

Zaller, John. 1996. The Myth of Massive Media Impact Revived: New Support for a Discredited Idea. In *Political Persuasion and Attitude Change*, ed. Diana C. Mutz, Paul M. Sniderman and Richard A. Brody. Ann Arbor MI: The University of Michigan Press, pp. 17–78.

Supplemental Information

Appendix A: Media Slant

Selecting Phrases For Analysis

Following Gentzkow and Shapiro (2010), "a concrete illustration of this approach to measuring slant, consider the use of the phrases "death tax" and "estate tax" to describe the federal tax on assets of the deceased. The phrase "death tax" was coined by the tax's conservative opponents. According to a high-level Republican staffer, "Republicans put a high level of importance on the death/estate tax language – they had to work hard to get members to act in unison, including training members to say "death tax", as "estate tax" sounds like it only hits the wealthy but "death tax" sounds like it hits everyone" (Graetz and Shapiro 2011).

To select the phrases for analysis, I let f_{pld} and f_{plr} denote the total number of times phrase p of length l (two words) is used by Democrats and Republicans, respectively. Let $f \sim pld$ and $f \sim plr$ denote the total occurrences of length-l phrases that are not phrase p spoken by Democrats and Republicans, respectively. Let x^2_{pl} denote Pearson's x^2 statistic for each phrase:

$$x^2_{pl} = \frac{(f_{plr} f \sim_{pld} - f_{pld} f \sim_{plr})^2}{(f_{plr} + f \sim_{pld})(f_{pld} + f \sim_{plr})(f_{pld} + f \sim_{plr})(f_{pld} + f \sim_{plr})}$$

I select the phrases for the analysis as follows:

1. I select the 1000 phrases of each length l with the greatest values of x^2_{pl} for a total of 1000 phrases.

2. I compute the total number of times that each phrase appeared in television and radio programs closed captioning text in the UCLA Television News Archive for 2006.

The second step identifies phrases that are diagnostic of the speaker's political party. If the counts f_{pld} and f_{plr} are drawn from (possibly different) multinomial distributions, x^2_{pl} is a test statistic for the null hypothesis that the propensity to use phrase p of length l is equal for Democrats and Republicans. This statistic conveniently summarizes the political asymmetry in the use of the phrase. (More naive statistics, such as the ratio of uses by Republicans to uses by Democrats, would tend to select phrases that are used only once by Republicans and never by Democrats, even though pure sampling error could easily generate such a pattern.) x^2_{pl} is also simple to compute, in the sense that it requires only two calculations per phrase: the number of uses by Republicans and the number of uses by Democrats.

Table 2: **Most Partisan Phrases From 109th Congressional Record (2005-2007)**

Phrases Used More Often by **Democrats**		
private accounts	Rosa Parks	workers rights
trade agreement	President Bush	poor people
American people	Republican party	Republican leader
tax breaks	change the rules	Arctic refuge
trade deficit	minimum wage	cut funding
oil companies	budget deficit	American workers
credit card	Republican senators	living in poverty
nuclear option	privatization plan	Senate Republicans
war in Iraq	wildlife refuge	fuel efficiency
middle class	card companies	national wildlife

Phrases Used More Often by **Republicans**		
stem cell	personal accounts	retirement accounts
natural gas	Saddam Hussein	government spending
death tax	pass the bill	national forest
illegal aliens	private property	minority leader
class action	border security	urge support
war on terror	President announces	cell lines
embryonic stem	human life	cord blood
tax relief	Chief Justice	action lawsuits
illegal immigration	human embryos	economic growth
date the time	increase taxes	food program

Note: The top 30 Democratic and Republican two-word phrases, respectively, are shown ranked by x_{pl}^2. The phrases are classified as two words after dropping common "stop words" such as "for" and "the." The full list of phrases used in this analysis includes 500 Democratic and 500 Republican Phrases.

Media Slant Model

$$
\begin{aligned}
y_{ij} &\sim \text{poisson}(\lambda_{ij}) \\
\lambda_{ij}|\alpha_i, \beta_j, \theta_j, x_i &= exp(\alpha_i + \theta_j + \beta_j x_i) \\
\alpha_i &\sim \text{N}(, 0.1) \\
\beta_j &\sim \text{dnorm}(0, .001) \\
\theta_j &\sim \text{dnorm}(0, .001) \\
x_i &\sim \text{unif}(0, 100)
\end{aligned}
$$

where:

- i : index of news programs ($i_{1:60}$) and index of congresspeople ($i_{61:595}$)
- j : index of partisan phrases
- y_{ij}: is the ith citer's usage of the jth phrase (i.e. news program and congresspeople phrase frequencies)
- α_i : *speaker* parameter (i.e. how often congresspeople or news programs speak)
- θ_j : *phrase* parameter (i.e. takes into account how often a phrase is used)
- β_j : *slope* parameter. This is the independent variable in the equation. A positive β indicates a conservative ideology. A negative β indicates a liberal ideology.
- x_i : Ideology score for congresspeople ($x_{61:595}$) and news programs ($x_{1:60}$). For the 60 news programs we do not know the value of x. Estimating the ideology score of media outlets. Therefore, sometimes the x is data (congresspeople), sometimes it is a parameter to be estimated (news programs).

Prior Specification. I set the prior of the news programs to be distributed normally with a mean of 50.06 and precision .001. 50.06 is an estimate of the average United States voters ADA score, where 0 is the most liberal and 100 is the most conservative). I selected a prior distribution that is non-informative or "flat" relative to the likelihood function by specifying a small precision/large standard error. Thus, this prior should have minimal impact on the posterior distribution of x_i.

Appendix B: Sampling

Figure 9: **New York and Chicago Designated Market Area Demographics and IMMI Panel Demographics**

New York DMA Population

		18-24	25-34	35-44	45-54	55-65	65 and older
Male	**White**	326654	354303	733940	925468	806378	1279962
	Black	128008	137153	194813	216276	159892	206363
	Asian	45752	62530	131865	130095	95009	91964
	Hispanic	146794	230959	339340	282562	178887	185382
	Other/mixed	19006	26151	45541	45523	30557	30770
Female	**White**	309298	349683	756080	943650	855907	1661499
	Black	127380	160040	268640	289716	221459	335533
	Asian	41474	62484	132732	123241	93322	100782
	Hispanic	138389	210007	327663	296090	206316	256319
	Other/mixed	18325	25849	45211	43119	30782	39688
							16058575

Chicago DMA Population

		18-24	25-34	35-44	45-54	55-65	65 and older
Male	**White**	183906	202862	390145	474278	403146	551779
	Black	70502	73310	96918	106375	83745	109172
	Asian	13279	18144	38534	30808	25607	26005
	Hispanic	64815	114366	159452	108810	62365	51136
	Other/mixed	5054	6725	11238	10209	7461	7922
Female	**White**	174785	196452	388556	479290	411740	707461
	Black	70604	87654	131844	143247	113247	160038
	Asian	12285	18088	37356	29846	26476	29124
	Hispanic	59310	93068	133085	95713	58604	57080
	Other/mixed	4918	6607	10762	9447	7369	9615

New York IMMI Sample

		18-24	25-34	35-44	45-54	55-65	65 and older
Male	**White**	2.0%	2.2%	4.6%	5.8%	5.0%	8.0%
	Black	0.8%	0.9%	1.2%	1.3%	1.0%	1.3%
	Asian	0.3%	0.4%	0.8%	0.8%	0.6%	0.6%
	Hispanic	0.9%	1.4%	2.1%	1.8%	1.1%	1.2%
	Other/mixed	0.1%	0.2%	0.3%	0.3%	0.2%	0.2%
Female	**White**	1.9%	2.2%	4.7%	5.9%	5.3%	10.3%
	Black	0.8%	1.0%	1.7%	1.8%	1.4%	2.1%
	Asian	0.3%	0.4%	0.8%	0.8%	0.6%	0.6%
	Hispanic	0.9%	1.3%	2.0%	1.8%	1.3%	1.6%
	Other/mixed	0.1%	0.2%	0.3%	0.3%	0.2%	0.2%

Chicago IMMI Sample

		18-24	25-34	35-44	45-54	55-65	65 and older
Male	**White**	2.5%	2.8%	5.4%	6.5%	5.5%	7.6%
	Black	1.0%	1.0%	1.3%	1.5%	1.2%	1.5%
	Asian	0.2%	0.2%	0.5%	0.4%	0.4%	0.4%
	Hispanic	0.9%	1.6%	2.2%	1.5%	0.9%	0.7%
	Other/mixed	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%
Female	**White**	2.4%	2.7%	5.3%	6.6%	5.7%	9.7%
	Black	1.0%	1.2%	1.8%	2.0%	1.6%	2.2%
	Asian	0.2%	0.2%	0.5%	0.4%	0.4%	0.4%
	Hispanic	0.8%	1.3%	1.8%	1.3%	0.8%	0.8%
	Other/mixed	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%

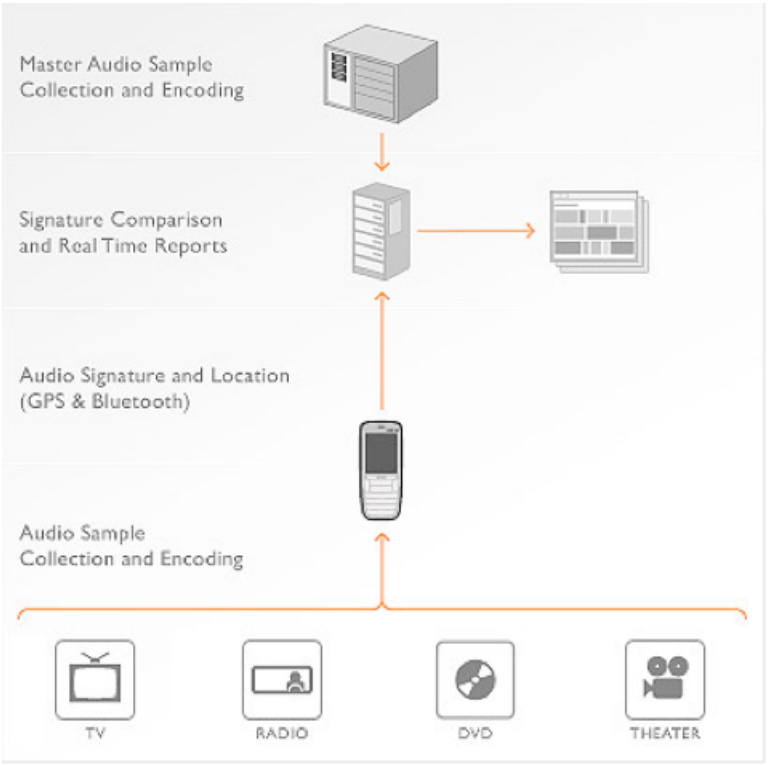
Appendix C: Media Tracking Validation

Excerise 1. The analysis below, compares these results to Nielsen data and provides further validation that the media logged by panelists' cell-phones reflect the media exposure patterns of the U.S. adult population. There are two unexpected findings shown in Figure 4 that run contrary to conventional wisdom and therefore warrant further discussion. The first is that people watch more cable news relative to network evening news. I find that the average panelist watches approximately five times as much cable news as national network news. This estimate is consistent with the Prior (2007, pg.152) study which finds that in 2004 the average household watched approximately five times as much cable news as evening network news (3 hours of cable news vs. approximately 40 minutes of evening network news per week). Nielsen ratings also confirm this finding: in the fourth quarter of 2006 the average household watched approximately five times as much cable news as evening network news (27 minutes of cable news per average weekday vs. 5 minutes of evening network news per weekday).

Excerise 2. Jackman et al. (2012) examined the IMMI method by comparing advertising runs recorded by the media monitors in the DMA to advertising exposures registered by cell phones with a focus on identifying instances where phones recorded an exposure to an advertisement that was not aired at that time, according to the system. Using a battery of cross-validating exercises the authors concluded that the IMMI technology provides a high level of fidelity between phone-recorded advertising exposure and actual ad exposure. Happily, there were very few situations like this. One particular instance, however, stood out and seemed as if it could indicate a systematic problem with the data. On August 15 and 16, 2006, roughly 20 panelist phones recorded exposure to an ad for John Spencer, although the media monitors did not record any ad showings. To diagnose the disjuncture, Jackman et al. (2012) examined the television shows on which the alleged advertising hits were believed to have run. The shows were systematically different from the typical shows on which other Senate candidates ran ads in this campaign. All of the other Senate ads were run on broadcast television, but these 20 hits were allegedly run on cable networks during political talk shows such as *Tucker, Hardball*, or *Hannity and Colmes.* Other candidates avoided political talk shows on broadcast TV, thus adding another dimension of difference. Jackman et al. (2012) find that panelists who were exposed to these Spencer ads watching the ads when they were replayed during a political talk shows as part of a segment on the show (Jackman et al. 2012). By acquiring the transcripts from several of the shows the researchers learned that each of the shows did a segment on those days about an advertising controversy between Spencer and Clinton. During the second week of August, Spencer ran an ad (not in the NY DMA) comparing Clinton to Osama Bin Laden. The ad generated instant criticism and was the topic of many discussions on political talk shows during the two days that followed its initial air date. The 20 IMMI panelists who recorded exposure to a Spencer ad during this time actually saw the ad replayed as a segment on political talk shows.

Exercise 3. Panelists in the IMMI panel in aggregate watched similar amounts of liberal news and conservative news. Again, Nielsen ratings confirm the patterns observed in the IMMI data. An analysis of Nielsen ratings during the same time period of observation as the IMMI study (the fourth quarter of 2006) indicate that Fox News received an average rating of (1.0), while liberal news received a combined average rating of approximately a (1.0): CNN (.6) + MSNBC (.3) + Comedy Central News (.1). These findings are another check on the method and provide further validation that the media logged by panelists cell-phones reflect the media exposure patterns of the U.S. adult population.

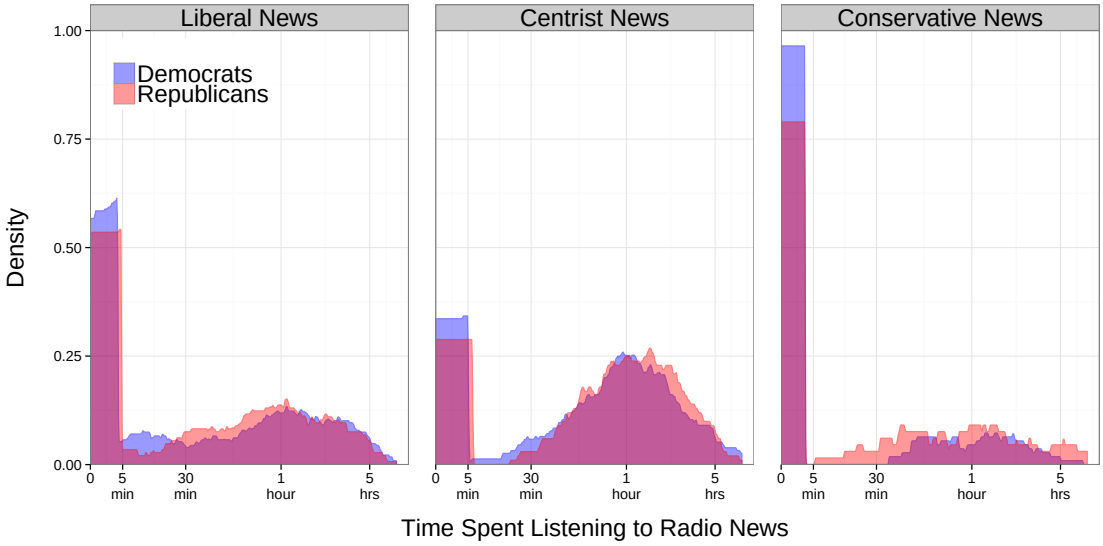
Figure 10: **The Digital Recording and Pattern Matching System**



Source: Integrated Media Measurement Incorporated (read Figure from bottom up)

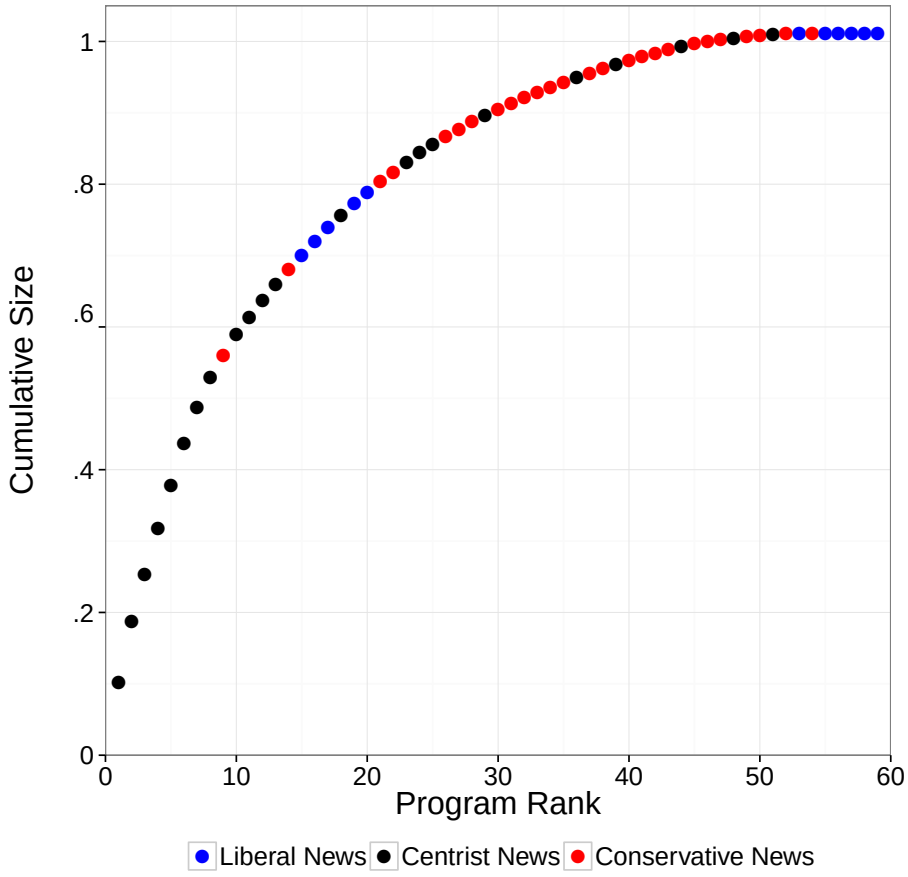
Appendix D: Results

Figure 11: **Radio News Exposure by News Slant, Among Democrats and Republicans.**



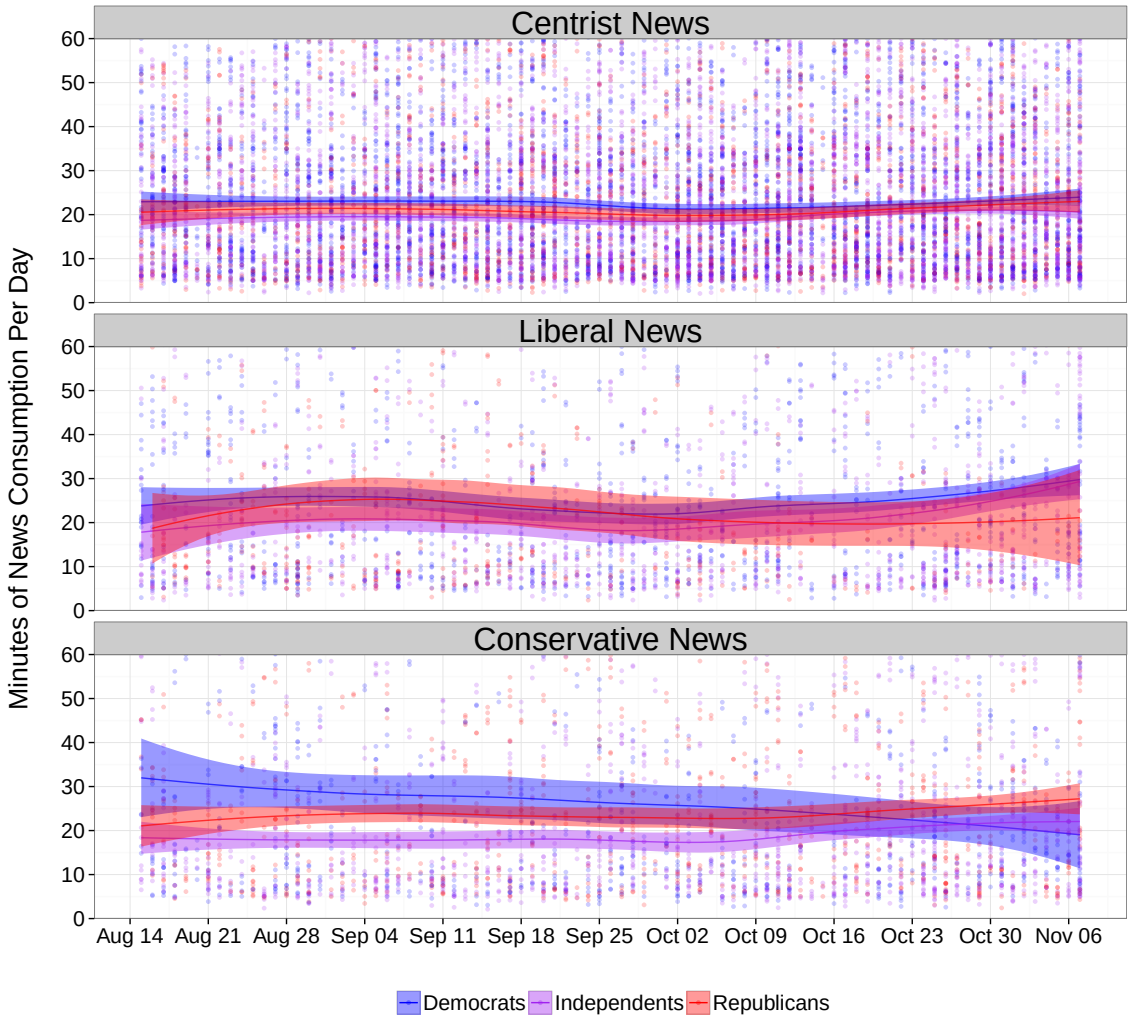
Note: Figure displays distribution of time spent listening to radio news by news slant. Kernel density estimates for Republicans shown in red, estimates for Democrats shown in blue and the overlap shown in purple. Bandwidth selectors for density estimates were chosen based on Silverman 1986, p.48, eqn (3.31). Labels on the x axis are transformed from the log scale back to original units. Data are the IMMI panelists over the period from August 15 to November 7, 2006.

Figure 12: **Cumulative Distribution of TV and Radio Unique Visits**



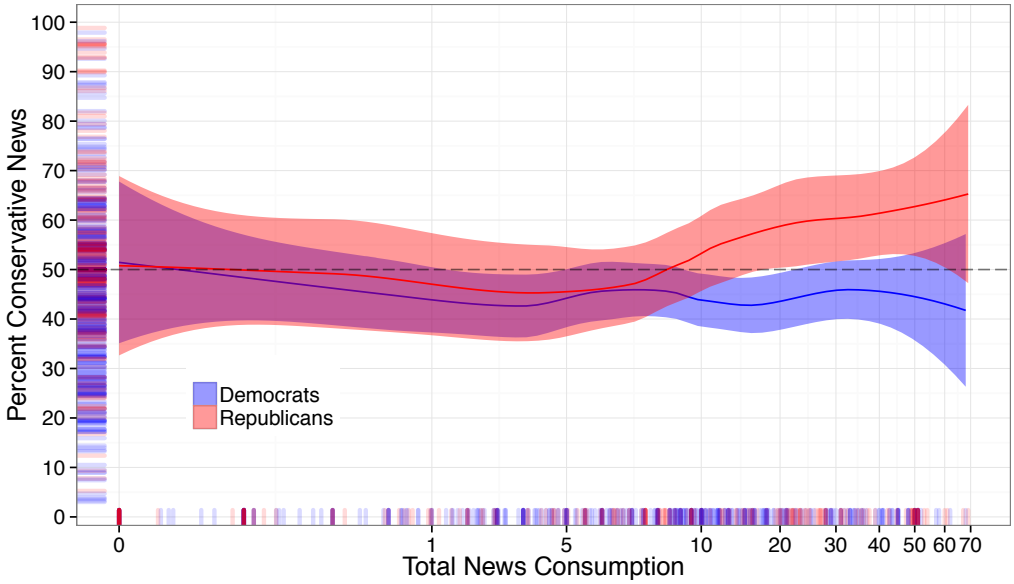
Note: Data are from Integrated Media Measurement Inc. Size is measured by total number of unique visitors.

Figure 13: **News Exposure by News Slant and Party Identification (Including Independents).**



Note: Points represent panelists' total time spent consuming centrist, liberal or conservative news per day. Lines represent mean news consumption for news watchers from August 14, 2006, to November 7, 2006 (election day) shading represents 95% confidence intervals. Data are from 920 Integrated Media Measurement Incorporated panelists.

Figure 14: **Media Polarization by Total News Consumption**



Note: Figure displays the conservative news percent, defined here as time-spent consuming conservative news divided by time-spent consuming liberal + conservative news. The lines are loess (locally weighted scatterplot smoothing) estimates. The shaded regions indicate 95% confidence intervals. Marginal rug plots on the x-axis display where the data is concentrated.

Table 3: Predictors of Liberal, Centrist and Conservative News Exposure

	Dependent variable:		
	Liberal News Exposure (log)	Centrist News Exposure (log)	Conservative News Exposure (log)
Strong Republican	0.000	-1.034	1.907*
	(1.015)	(0.797)	(1.003)
Weak Republican	-0.627	0.376	0.717
	(0.553)	(0.435)	(0.548)
Weak Democrat	-0.412	0.658*	0.422
	(0.468)	(0.367)	(0.464)
Strong Democrat	1.527**	0.142	-0.817
	(0.663)	(0.525)	(0.661)
Centrist News Exposure (log)	0.245***	–	0.167***
	(0.062)		(0.062)
Liberal News Exposure (log)	–	0.152***	0.424***
		(0.038)	(0.045)
Conservative News Exposure (log)	0.430***	0.105***	
	(0.045)	(0.039)	–
Age	0.012	0.082***	0.064***
	(0.019)	(0.014)	(0.018)
Education	0.696	-0.140	0.025
	(0.590)	(0.465)	(0.587)
Female	-0.145	0.232	−0.176
	(0.324)	(0.406)	(0.387)
Black	-0.245	1.338***	−1.053**
	(0.523)	(0.406)	(0.517)
Hispanic	-0.392	0.918**	-0.032
	(0.537)	(0.420)	(0.533)
Intercept	0.365	4.004***	−1.726***
	(0.659)	(0.479)	(0.649)
Observations	920	920	920
R^2	0.315	0.269	0.345
Adjusted R^2	0.298	0.251	0.329
*p<0.1; **p<0.05; ***p<0.01			

Note: Table shows estimates from OLS regression where dependent variable is time spent consuming: liberal news, centrist news and conservative news. Standard errors are shown in parentheses. Age, education, income, and religiosity are all coded on a 0-1 scale, with 1 representing the highest levels. Data are 920 IMMI panelists over the period from August 15 to November 7, 2006.

Table 4: Predictors of Spanish Language Exposure

	Dependent variable:
	Spanish Language Exposure (log)
Strong Republican	0.337
	(0.924)
Weak Republican	−0.161
	(0.505)
Weak Democrat	0.510
	(0.427)
Strong Democrat	0.911
	(0.612)
Liberal News Exposure (log)	−0.228
	(0.196)
Centrist News Exposure (log)	0.207***
	(0.056)
Conservative News Exposure (log)	0.000
	(0.000)
Age	0.021
	(0.017)
Education	−0.640
	(0.543)
Black	2.700***
	(0.473)
Hispanic	5.526***
	(0.488)
Intercept	−0.688
	(0.601)
Observations	920
R^2	0.331
Adjusted R^2	0.311

*p<0.1; **p<0.05; ***p<0.01

Note: Table shows estimates from OLS regression where dependent variable is time spent consuming spanish language TV and Radio. Standard errors are shown in parentheses. Age, education, income, and religiosity are all coded on a 0-1 scale, with 1 representing the highest levels. Data are 920 IMMI panelists over the period from August 15 to November 7, 2006.