Mobile News Consumption: A Habit of Snacking

Abstract

This study investigates news consumption on mobile devices with the goal of identifying where mobile devices fit into people's media repertoires and how consumption patterns on them are different from those on other platforms. Results suggest that mobile devices are almost always used along with other platforms for getting news, that news sessions on smartphones are shorter than on other platforms, and mobile news consumption happens more times per day and is spread through the day. Implications for the study of news consumption, news producers, and consumers are discussed.

Keywords: mobile news, news consumption, smartphones, media platforms

Mobile News Consumption: A Habit of Snacking

In 2015, mobile devices including smartphones and tablets for the first time accounted for the majority (51%) of time spent with digital media, outpacing all other connected platforms combined (Bosomworth 2015). News organizations in particular have noticed a significant increase in the amount of Internet traffic coming from mobile devices, with 39 of the top 50 news websites receiving more traffic from mobile devices than from computers (Mitchell 2015). As Pew's Mitchell is quick to point out, however, in most cases mobile visitors to these top 50 news sites spend less time on the site than visitors using a computer. What is behind these different consumption patterns? Is the news audience shifting toward mobile and away from other platforms? What makes mobile news consumption different from consuming news on other platforms? Understanding these changes to the digital news audience and news consumption patterns is crucial for news producers and journalism scholars.

Observers have often lamented the lack of attention the public pays to news, suggesting that people often "snack" or "graze" on the news. While this practice could appear on any platform, it was particularly identified in relation to the remote control and channel-switching on television (Pew Research Center 2012) and the multiplicity of channels and quick-hit web pages and links on the Internet (Bucy, Gantz, and Wang 2014). Mobile technology has the potential to exacerbate the trend toward snacking on news to the extent that it encourages shorter, dispersed consumption patterns and to the extent that mobile news use displaces other forms of news consumption. In order to test that proposition, this study conducts two original surveys of adults in the United States, measuring news consumption on various platforms in detail. A key contribution of this study is to measure news consumption across platforms in the general population, whereas many previous studies have focused on variance in news consumption among smartphone owners or mobile internet users (Struckmann and Karnowski 2016; Van

Damme et al. 2015; Wolf and Schnauber 2015). Together, findings from these two surveys (conducted in 2014 and 2015) provide a clearer picture of news media consumption in the United States across all users, and illuminate patterns and trends in mobile news consumption specifically.

Literature review

Snacking on the news

For years, journalism industry observers and scholars have been concerned with a trend toward "snacking" or "grazing" on the news. The British Journalism Review criticized the "news snacks" some outlets offered in response to a fragmented audience (MacArthur 1993). In a 2005 report of the Carnegie Corporation, Merrill Brown writes, "How news executives today deal with the ways news is consumed, in the form of an image here, an instant message there, a cell phone text message headline, a web portal story or a newspaper shoved into a passing hand while racing to the bus, will say a great deal about the future of news as we know it" (Brown 2005). Wired magazine wrote in 2007 about a "snack culture" that was taking over our media consumption habits (Miller 2007). The article focuses on the range of new technologies that transfer control over media consumption to the user. Technologies such as the DVR and mobile phones allow flexibility in when to consume media, where to consume media, and how much to take in. Others have echoed the importance of user control, saying that the Internet and digital media afford this as well as convenience and relatively low cost, making them particularly well suited to news snacking (Bucy, Gantz, and Wang 2014). As usual, age is said to play a role, with younger generations more likely to be snackers. Young adults "nibble away at the news, whenever and wherever they feel like it. They prefer frequent news snacks to regular full meals. They take the news, shape it, comment on it, and exchange it with their 'friends' on Facebook or via Twitter" (Sauvageau 2012).

These cultural observations are backed up by several research studies. A qualitative study found that young news consumers described quickly checking headlines in order to stay on top of the news, saying that they value immediacy over quality (Costera Meijer 2007). Costera Meijer suggests that checking in on the news "does not lead to solid knowledge, but to 'impressions.'" Another qualitative study also found people appreciating the convenience of news snacks, with many subjects reporting that they consume online and mobile news in short bits (Gutknecht and Dörflinger 2009). This study also suggested that people snacked on news in order to keep up with news, to have at least a passing knowledge of the world's goings on. Surveys have attempted to measure this snacking behavior among U.S. adults, finding the percentage of people who say they check in on news from time to time is rising, now constituting a majority (Pew Research Center 2012). Pew refers to these consumers as "news grazers."

Snacking or grazing on the news is said to cause a number of problems. Foremost among them is evidence that those who snack on news are less knowledgeable about public affairs and less engaged in public life. Researchers have shown that grazing is negatively associated with knowledge and civic engagement (Bennett, Rhine, & Flickinger, 2008; Hardy & Jamieson, 2011; Morris & Forgette, 2007). Another problem is economic in nature. When people value convenience or brevity over quality (i.e. snacking on news), there is less incentive for news organizations to produce high-quality news and news in general is devalued (Chyi and Yang 2009; Chyi 2009). A third problem is that most news organizations now deliver news on multiple platforms and in multiple media. The production process is complicated if it must account for different consumption patterns and potentially different audiences across these platforms. As a result, some media organizations have resorted to producing one version of a story, then pushing

it out to multiple distribution platforms, a practice disparagingly called "shovelware" (Ghersetti 2013; Messner, Linke, and Eford 2011).

The 2012 Pew study (and others related to it investigating news grazing, see Bennett, Rhine, & Flickinger, 2008; Morris & Forgette, 2007) focused primarily on skimming through the dozens of television news channels now available. The Internet gives access to these channels plus additional news sources originating online or stemming from primarily print- or radio-focused news organizations. Indeed, as noted earlier, the Internet and mobile media have significant potential to enable and encourage snacking on the news (Bucy, Gantz, and Wang 2014; Dessauer 2004). Thus it is important to consider how the prevalence of news snacking may have changed in the mobile era.

Mobile devices and news

Mobile devices are defined in this study as smartphones and tablets with wireless data connections and mobile-specific operating systems capable of running apps. Smartphones are distinguished from other cellular phones by having large screens (commonly measuring 4 to 6 inches on the diagonal) and the ability to run advanced applications using software akin to a computer operating system. They are distinguished from laptop and desktop computers, however, because of their size and the fact that their mobile-specific operating systems and processors are not capable of running full-featured desktop software. Roughly a quarter of the world's population used a smartphone at least monthly in 2014 (eMarketer 2014), and more than two-thirds of American adults own a smartphone (Smith 2015; Anderson 2015). Tablet and ownership levels are lower, at about 45 percent of American adults (Anderson 2015).

News is a common use of these devices. More than two thirds of smartphone users say they use the devices to keep up with news (Smith 2015). The fact that people always have their smartphone with them (an affordance that Ruston (2012) calls "ubiquity") means that they are

more likely to check in on news throughout the day, and indeed, "checking" is a major habit on mobile phones (Oulasvirta et al. 2012). Eventually, people may begin checking in automatically, without paying attention or having a conscious information seeking goal (Bayer and Campbell 2012). This may drive further incidental use. Apps that offer breaking news alerts and notifications also drive unplanned, incidental and likely brief check-ins with news.

This suggests that news consumption patterns on mobile devices may be different from those on other platforms. Indeed, scholars have posited that because mobile phones and their mobile internet connections allow users control over time (when to consume content) and space (where to consume content), smartphone users should be more likely to exhibit short, burst-like consumption patterns, rather than sustained sessions — a difference described as "staccato" rather than "legato" (Dholakia, Reyes, and Bonoff 2014). There is some evidence of this consumption pattern in action, especially in relation to the news. A study relying on media diaries found that people tended to squeeze mobile news consumption into otherwise unoccupied spaces in their day (Lai 2014) — times referred to as "interstices" (Dimmick, Feaster, and Hoplamazian 2011). In summary, mobile news use is characterized by frequent, brief checkups to see what is new (Van Damme et al. 2015).

These gaps in one's day, of course, are not the only times when these devices are used. Others point out that mobile phones and, to some extent, news have diffused throughout daily life and become intertwined with other activities (Westlund 2014; Oulasvirta et al. 2012; Mihailidis 2014; Ruston 2012; Wolf and Schnauber 2015; Struckmann and Karnowski 2016). But the suggestion that mobile news consumption is additive rather than competitive with other forms of news consumption goes against earlier models predicting relative constancy in news media use (McCombs and Eyal 1980; Wood 1986; Son and McCombs 1993).

This has led some scholars to view mobile devices as one part of a repertoire of overall media consumption (Yuan 2011; Schroeder 2010). In the case of news, Yuan finds that different news users choose different mixes of media platforms depending on which news gratifications they're seeking. As part of this mix, mobile may fill different niches and roles for different users (Van Damme et al. 2015). But overall, as news interest increases, the number of platforms on which people get news increases. Thus it is important to consider what part mobile devices play in people's repertoire of news media consumption.

Research question and hypotheses

This study investigates how mobile devices, specifically smartphones, are becoming part of the public's media repertoires and how consumption patterns on those devices might differ. The first research question focuses on where mobile fits into the overall mix of media that people use to consume news.

RQ1: On which platforms do people get news?

The above literature, observation and logic suggest that the mobile news consumption experience is likely to be characterized by brevity, frequency, distraction, and low attention (Dimmick, Feaster, and Hoplamazian 2011; Dholakia, Reyes, and Bonoff 2014; Bayer and Campbell 2012). These studies suggest that people squeeze mobile news sessions into otherwise unoccupied gaps in their day. Media consumption on mobile devices happens most often in intermittent, burst-like and dispersed consumption moments (Dholakia, Reyes, and Bonoff 2014). People's interactions with their mobile devices are often driven by alerts and notifications that incentivize brief check-ins. In short, people are likely to snack on the news when consuming it on mobile devices. This proposition is put to an empirical test using the following two hypotheses.

H1: News sessions will be shorter on mobile devices than on other platforms.

H2: News will be accessed more times per day on mobile devices than on other

platforms.

Method

To answer the research question and test the hypotheses in this study, two online surveys

of U.S. adults were conducted. The first was conducted during the summer of 2014, and the

second was conducted during the summer of 2015. The methods for each of these studies are

discussed separately below because Study 2 built upon and improved the measures used in Study

1 in order to provide additional tests of the two hypotheses. The goal of each was to measure

news consumption across platforms and across a broad sample of the general population in order

to compare mobile news consumption to consumption on other platforms. Both studies were

approved by the University of Texas at Austin's Institutional Review Board[1].

Study 1

Study 1 used a managed panel in order to select a pool of respondents that most closely

matches the demographics of U.S. adults. This method is meant to ensure that the group of

respondents matches the overall population on the variables selected, but it does not ensure that

respondents match population distributions for other variables of interest. However, when

samples are matched on key demographics, the managed panel sample will converge with a true

random sample under most circumstances as sample size increases (Rivers, 2005). The survey

was fielded by the Office of Survey Research at the University of Texas at Austin[2].

---

[1] The author wishes to recognize Dr. Paula Poindexter of the University of Texas at Austin, who funded the survey for Study 1 and invited the author to develop questions to include on the survey.

[2] OSR is a member of both the Association of Academic Survey Research Organizations (AASRO) and the American Association for Public Opinion Research (AAPOR) and has provided survey research expertise to both internal and external clients since 1986. At the time of the survey, OSR was part of the Annette Strauss Institute for Civic Life, but has since been reorganized.

The survey questionnaire for Study 1, which took 10 to 15 minutes to answer, was completed by 1,505 respondents. The actively managed panel of online respondents was acquired through Survey Sampling International, an internationally respected survey sampling firm. Because the panel sample was a non-probability sample, it was requested that the sample match the demographics of the American population according to the U.S. Census Bureau. For information on evaluating non-probability online panels, see Callegaro & Disogra (2008) and AAPOR's Standard Definitions (2011, p. 38).

Respondents were asked how often they get news "in print," "online on a desktop or laptop computer," "on television," "on radio," and "on a smartphone or tablet." Respondents were first asked how many *days per week* on average they get news on these platforms, with responses ranging from 0 days per week to 7 days per week. Respondents were then asked how many *times per day* on average they get news on these platforms, with responses being open ended. Respondents were also given a matrix question asking them to indicate the length of their most recent news session on the five platforms. They were asked, "Think of the last time you used each of the following media for news. About how long did you spend getting news that time?" Possible responses were on an eight-point scale ranging from "you don't use this medium" and "10 minutes or less" to "more than an hour," in 10-minute increments. Respondents also completed a standard set of demographic questions (including age, gender, race, education and income) and other survey questions not used in this study.

Study 2

Study 2 used an opt-in panel of paid respondents recruited through Amazon's Mechanical Turk service. Anyone can register to become an MTurk worker after preapproval by Amazon. However, researchers who post surveys there can set up qualifications for the type of worker they would like to complete the survey. Workers on MTurk are generally younger, overeducated,

underemployed, less religious, and more liberal than the U.S. population at large. Considering race, Asian-Americans are overrepresented while blacks are underrepresented (Paolacci and Chandler 2014). While the quality of the data obtained via MTurk is generally high and at least as reliable as other survey methods (Buhrmester, Kwang, and Gosling 2011), it most closely approximates traditional convenience samples and therefore should not be considered representative of the general population (Paolacci and Chandler 2014; Berinsky, Huber, and Lenz 2012). Studies suggest that MTurk workers are more attentive to survey instructions than subjects taking studies in person (Hauser and Schwarz 2015), but that including attention check questions can improve data quality from some respondents (Peer, Vosgerau, and Acquisti 2014).

For this study, the qualifications were that participants must be U.S. residents who are at least 18 years old and have a high MTurk approval rating (percent of previous tasks accomplished that were considered acceptable by other researchers). This qualification helps reduce the risk of fraudulent participants. The MTurk job listing also provided a brief description of the study and the amount of compensation ($.75 for the 10-15 minute survey)[3]. The subjects' participation was completely voluntary. The survey was completed by 1,212 respondents, 46 of whom failed an attention check question. After excluding those who failed attention check questions, the final sample included 1,166 responses.

The news consumption questions presented in Study 1 were updated in several key ways. First, smartphones and tablets were treated separately rather than being grouped as mobile devices. Secondly, a set of questions was asked about news consumption on that platform yesterday in order to focus respondents on specific, recent activities. The first question for each platform studied (print, television, radio, computer, tablet and smartphone) asked how many days per week a person gets news on that platform. Next, respondents were asked whether they got news on that platform yesterday, and if so, how long they spent getting news on that platform

---

yesterday (open-ended, in minutes). Respondents who got news yesterday on that platform were asked whether their news consumption happened "all at once" or "spread out over the course of the day." If respondents answered that their consumption was all at once, then the total time consumed is the same as session length, because there was only one session. But if respondents indicated that their consumption on that platform yesterday was spread out over the course of the day, then a final, open-ended question measured the length of their last session in minutes.

The goal of all these measures is to determine how mobile news consumption differs from that on other platforms, specifically with regard to number and length of sessions. Results from these measures of non-probability samples should not be interpreted as population estimates, though efforts have been taken to ensure the samples come as close to the general population as possible. Instead, these measures serve to measure variance in news consumption habits among platforms and across a broad sample of users.

Results

The research question asked, "On which platforms do people get news?" In Study 1, respondents were asked how many days per week, on average, they get news on five platforms: in print, online, on television, by radio and on mobile devices. Results indicate that most people get news from multiple platforms. Users of each platform were identified as those who said they got news on that platform at least one day a week. Nearly everyone in the sample consumes news on multiple platforms. About 95% of respondents reported getting news at least one day a week on 2 or more platforms; 82% of respondents reported getting news at least one day a week on 3 or more platforms. About 29% of respondents said they get news at least one day a week from all five platforms in this study. Thus, more than four-fifths of U.S. adults gets news from three, four or five platforms at least one day a week.

In order to identify significant predictors of multiplatform news consumption, the demographic variables age, gender, race, income and education were entered into a regression model predicting the number of platforms used for news (ranging from 0 to 5). Results show that being younger (β = -.252, p < .001) and having higher income (β = .214, p < .001) were the strongest predictors of multiplatform news consumption (see Table 1). That is, younger adults and those with higher incomes were likely to get news on more platforms. Being male and having more education both showed weak but significant positive effects on multiplatform news consumption. Together these variables account for 12.4% of the variance in the number of platforms used for news. Race did not have a significant effect in this regression model[4], nor in a regression model that analyzed races separately using dummy variables. But a crosstab analysis found that Hispanics and Asian Americans are significantly more likely than other groups to be users of all five platforms (χ^2 = 59.33, Phi = .203, p < .001).

Mobile news users are particularly likely to get news from multiple platforms. Of the 767 respondents who reported getting news on a mobile device, only 2 got news exclusively from that mobile device[5]. More than half (54%) reported getting news on all five platforms, and another quarter (27%) reported getting news on four platforms. Thus 81% of mobile news users also use 3 or 4 *other* platforms to get news. To determine whether mobile news use predicts use of other platforms for news, a second regression model predicted the number of platforms other than mobile that were used for news (ranging from 0 to 4). In addition to the demographic variables in the first model, this model's second block contained a dichotomous variable indicating whether respondents were mobile news users. Results shows that mobile news use was

---

[4] Dichotomizing race into white and minority categories is common practice when including race as a variable in a regression model, even though it is not ideal because there are differences among minority racial groups. For this reason additional analysis of categorical data using crosstabs is presented.

[5] No respondents in Study 2 reported getting news exclusively on a mobile device.

a significant predictor of using multiple platforms for getting news (β = .270, p < .001). See Table 1.

The platform most commonly used along with mobile devices is the computer. Almost 98% of mobile news users also reported getting news on computers, and the percentages are high for mobile users who get news on the other platforms as well (TV, 92%; radio, 71%; print, 70%). Considering the correlations among usage of the platforms for news presented in Table 2, the strongest pairings are between print and radio (r = .227, p < .001), mobile and computer (r = .213, p < .001), and mobile and radio (r = .209, p < .001).

Finally, it is helpful to know how often each platform is used for news. About 92% of respondents reported being online news users. About 90% of respondents reported being TV news users. About 66% of respondents reported being print users. About 61% of respondents reported being radio news users. And about 53% of respondents reported using mobile devices to get news.

News Session Length

H1, "News sessions will be shorter on mobile devices than on other platforms," was tested using linear mixed models to conduct a repeated-measures ANOVA. This test makes it possible to compare differences within subjects in means for each platform, even if not every subject uses all available platforms. In this case, results show within-subjects differences in the length of time respondents reported using each of the five platforms during their last news session on that platform. A main effect was found, such that there are significant differences in the number of times per day each platform was accessed (F(4, 5351) = 121.81, p < .001). Post hoc tests using the Bonferroni correction revealed that the mean session length score for mobile devices was significantly lower than the mean score for television, but not significantly different than the mean scores for other platforms (see Table 3).

13

The data in from Study 1 provide limited support for H1 because they suggest that sessions on mobile devices are significantly shorter than only one other platform: television. One possible explanation for this is that both smartphones and tablets were included in a single mobile category, but usage of these two platforms is significantly different in terms of the independent variable, session length. Furthermore, session length was measured in intervals in Study 1, which may not have been fine enough to capture variances in session length. Study 2 was designed such that session length was measured in minutes and was measured separately on smartphones and tablets.

Results from Study 2 were analyzed using linear mixed models to conduct a repeated measures ANOVA test. Session length was measured in minutes by asking how long respondents spent getting news on each platform before moving on to something else. A main effect was found, such that there are significant differences in mean session length score across platforms $(F(5, 2223) = 54.70, p < .001)$. Post hoc tests using the Bonferroni correction revealed that average news session length on smartphones was significantly shorter than average news session length for all other platforms (see Table 4). The average time spent getting news on a smartphone was less than 12 minutes, the shortest of any platform, compared with about half an hour on television. News sessions on computers were also short, averaging about 15 minutes, but even this time was significantly longer than the smartphone news sessions. This indicates support for H1, suggesting that news sessions on smartphones are shorter than those on other platforms.

News consumption frequency

The second hypothesis predicted, "News will be accessed more times per day on mobile devices than on other platforms." This was tested using linear mixed models to conduct a repeated-measures ANOVA, looking at within-subjects differences in the number of times per day respondents reported using each of the five platforms. A main effect was found, such that

there are significant differences in the number of times per day each platform was accessed ($F(4, 5350) = 45.06$, $p < .001$). Post hoc tests using the Bonferroni correction revealed that the mean number of times per day news was accessed on mobile devices was significantly higher than in print, on TV, and on radio, and was not significantly different from the mean for computers (see Table 5).

Study 2 took a different approach to testing whether mobile users get news in bits and pieces. In addition to asking about tablets and smartphone separately, Study 2 also asked respondents whether their news consumption on each platform happened "all at once" or "spread throughout the day." This is not an exact replication of Study 1, which measured the number of times per day a person got news on each platform, but uses a different measure to tap into a similar idea of snacking on news rather than consuming meals. A simple z-test for proportions between dependent groups (because there is overlap among the groups) was used to test H2. This test compares respondents for each platform who said their news consumption is spread throughout the day with those who said their news consumption on that platform happened all at once (see Table 6). Results show that the proportion of smartphone users who said their news consumption was spread throughout the day is significantly higher than any other platform except the computer. Together with the results from Study 1, these data indicate support for H2.

Discussion

This study investigated news consumption on mobile devices with the goal of identifying where mobile devices fit into people's media repertoires and how consumption patterns on them are different from those on other platforms. This was brought about based on observations that mobile news consumption is often characterized by brevity, frequency, distraction, and low attention (Dimmick, Feaster, and Hoplamazian 2011; Dholakia, Reyes, and Bonoff 2014; Bayer and Campbell 2012). Literature suggests that people use their smartphones to grab bits of news

here and there, filling gaps in their day with sporadic news consumption. The results presented

here suggest that this is the case, with people consuming news on smartphones in shorter

sessions than on other platforms. News consumption on smartphones also happens more times

per day and is more likely to be spread out over the course of the day than news consumption on

other platforms. This practice of "snacking" on the news, or "grazing" or "checking in," has been

observed or suspected by other researchers studying other platforms (Costera Meijer 2007;

Morris and Forgette 2007; Bennett, Rhine, and Flickinger 2008; Hardy and Jamieson 2011;

Gutknecht and Dörflinger 2009), but this study conclusively links the practice with news use on

smartphones. This study also shows that, even if news snacking does occur on other platforms, it

occurs to a greater extent on smartphones.

This study does not deal with the implications of snacking, though previous studies

suggest they are negative. Shorter news sessions convey less information than longer ones, and

so the spread of information may be altered by these consumption habits (Hardy and Jamieson

2011; Morris and Forgette 2007). What is more, some scholars have argued that the mobile web

experience is essentially inferior to using the internet on a personal computer (Napoli and Obar

2014; Baron 2015). Future studies should look beyond session frequency and length in order to

determine whether mobile news consumption is indeed less useful than other forms. As Donner

(2015) points out, this may be especially relevant in developing countries, where mobile is the

primary means of internet access and users tend to "dip and sip" rather than browse the web.

These concerns are mitigated to the extent that mobile news is consumed alongside other

news, and indeed this study also suggests that we live in a multiplatform world. Among the

roughly 2,600 respondents surveyed across the two studies, only two people got news

exclusively from smartphones. For some, the smartphone may be their primary means of getting

news, but in almost all cases, smartphone news use was supplemented by news on other platforms. Furthermore, smartphone news users are likely to get news on multiple other platforms. Earlier studies on news consumption have focused on people's preferred platforms, separating "print users" from "television users" for instance, or asking questions about "internet users," as if these users were monogamous in their media consumption. That may have been true in the past, for some people, but it is certainly not the case anymore. People are spreading their attention across the day and across different media, a trend advertisers and content producers alike have noted with dismay (Starr 2012). Others have called this phenomenon audience fragmentation and have linked it with attention deficits to individual platforms (Webster 2011).

But from the consumer's perspective, there is a wide array of options, each with distinct strengths and weaknesses, which can supplement each other to produce a varied, robust news diet. Audiences are acting on the wide array of choices available to them by spreading their news attention across platforms and throughout the day. Future studies should take these consumer habits into account rather than singling out platforms. This fits with the "consumer-centric" view of news consumption advocated by other researchers (Ksiazek, Malthouse, and Webster 2010).

Media producers are acutely aware of the growing importance of mobile devices, but they would do well to consider the multiplatform nature of today's news consumption landscape. Media executives frequently speak of platforms as being in competition with one another, rather than complementing each other as appears to be the case. It may be worth considering that there is substantial crossover in the audiences for different platforms, and media companies could engage a single consumer across multiple platforms by differentiating the content offered on each platform. This could be done by playing to the strengths of each platform rather than simply reformatting text for different size presentations. In other words, knowing that people use

multiple platforms for news, it may be possible to build customer loyalty by connecting with customers on multiple platforms and considering that a single person might encounter the company's content in multiple media. Making it worthwhile for audience members to get the news on all platforms could potentially increase the audience overall.

Whatever content is presented, it ought to fit into consumers' schedules. The average time span people spent on mobile news before moving on to something else was less than 12 minutes (though even this is likely an overestimation). The question to ask, then, is how news companies can best make use of those 12 minutes with the smartphone. One option is that mobile news offerings should be able to be consumed in a short session. This may sacrifice some detail and nuance that is extremely important in the news, but this study suggests that people may be using other platforms to get that information. Alternatively, smartphone news users might consume only one story in a session, spending all 11 minutes on it, and then come back to read another one at another point in the day (because smartphone news is accessed multiple times per day).

This study is limited in that it uses cross-sectional survey data that relies on self reports. Studies have suggested that self reports tend to overestimate exposure on mobile devices (Kobayashi and Boase 2012). Additionally, asking respondents about their last news session might privilege sessions in the evening or at the end of the day, which could be longer than others. Thus the numbers reported here are likely to overestimate the length of news sessions on all platforms. Other methods such as media diaries, observation or monitoring software could yield more accurate measures of mobile media consumption. This limitation is mitigated somewhat by the use of two different measurement instruments on two survey populations, each yielding similar results.

If news industry professionals and scholars were once concerned with the idea that the public might only snack on news, this study suggests that snacking has expanded now that smartphones are a source of news for many Americans. It will be important for future studies to assess whether this snacking has any effect on what should be one of the primary results of news consumption: news knowledge. Is frequent snacking as nutritious as a few square meals? In this way, platform choice may be seen to affect news knowledge and the ability of citizens to become informed participants in a democracy.

References

Donner, Jonathan. 2015. *After access: Inclusion, development, and a more mobile Internet*. MIT Press.

Anderson, Monica. 2015. "Technology Device Ownership: 2015." *Pew Research Center*. http://www.pewinternet.org/2015/10/29/technology-device-ownership-2015/.

Baron, Naomi S. 2015. *Words Onscreen: The Fate of Reading in a Digital World*. Oxford University Press, USA.

Bayer, Joseph B., and Scott W. Campbell. 2012. "Texting While Driving on Automatic: Considering the Frequency-Independent Side of Habit." *Computers in Human Behavior* 28 (6): 2083–90. doi:10.1016/j.chb.2012.06.012.

Bennett, Stephen Earl, Staci L. Rhine, and Richard S. Flickinger. 2008. "Television 'News Grazers': Who They Are and What They (Don't) Know." *Critical Review* 20 (1–2): 25–36. doi:10.1080/08913810802316316.

Berinsky, Adam J., Gregory A. Huber, and Gabriel S. Lenz. 2012. "Evaluating Online Labor Markets for Experimental Research: Amazon.com's Mechanical Turk." *Political Analysis* 20 (3): 351–68. doi:10.1093/pan/mpr057.

Bosomworth, Daniel. 2015. "Mobile Marketing Statistics 2015." *Smart Insights*. http://www.smartinsights.com/mobile-marketing/mobile-marketing-analytics/mobile-marketing-statistics/.

Brown, Merrill. 2005. "Abandoning the News." *Carnegie Reporter* 3 (2): 2–11.

Bucy, Erik P., Walter Gantz, and Zheng Wang. 2014. "Media Technology and the 24-Hour News Cycle." In *Communication Technology and Social Change: Theory and Implications*, edited by Carolyn A. Lin and David J. Atkin, 143–60. Routledge.

Buhrmester, Michael, Tracy Kwang, and Samuel D. Gosling. 2011. "Amazon's Mechanical Turk." *Perspectives on Psychological Science* 6 (1): 3–5. doi:10.1177/1745691610393980.

Callegaro, Mario, and Charles DiSogra. 2008. "Computing Response Metrics for Online Panels." *Public Opinion Quarterly* 72 (5): 1008–32. doi:10.1093/poq/nfn065.

Chyi, Hsiang Iris. 2009. "Information Surplus and News Consumption in the Digital Age: Impact and Implications." In *Journalism and Citizenship: New Agendas*, edited by Zizi

Papacharissi, 91–107. New York: Taylor & Francis.

Chyi, Hsiang Iris, and Jacie M Yang. 2009. "Is Online News an Inferior Good? Examining the Economic Nature of Online News among Users." *Journalism & Mass Communication Quarterly* 86 (3): 594–612. doi:10.1177/107769900908600309.

Costera Meijer, Irene. 2007. "The Paradox of Popularity." *Journalism Studies*. doi:10.1080/14616700601056874.

Dessauer, Carin. 2004. "New Media, Intemet News, and the News Habit." *Society Online: The Internet in Context*. SAGE, 121.

Dholakia, Nikhilesh, Ian Reyes, and Jennifer Bonoff. 2014. "Mobile Media: From Legato to Staccato, Isochronal Consumptionscapes." *Consumption Markets & Culture*, April, 1–15. doi:10.1080/10253866.2014.899216.

Dimmick, John, John Christian Feaster, and Gregory J. Hoplamazian. 2011. "News in the Interstices: The Niches of Mobile Media in Space and Time." *New Media & Society* 13 (1): 23–39. doi:10.1177/1461444810363452.

eMarketer. 2014. "Smartphone Users Worldwide Will Total 1.75 Billion in 2014." *eMarketer*. http://www.emarketer.com/Article/Smartphone-Users-Worldwide-Will-Total-175-Billion-2014/1010536.

Ghersetti, Marina. 2013. "Still the Same? Comparing News Content in Online and Print Media." *Journalism Practice*, July, 1–17. doi:10.1080/17512786.2013.813201.

Gutknecht, Stefanie, and Tim Dörflinger. 2009. "Coffee Stains on Yellowed Touch Screens? The Future of Newspaper Reading in Germany." In *Future of the Consumer Society*, 20–30.

Hardy, Bruce W., and Kathleen Hall Jamieson. 2011. "Clicking to Learn During the 2008 Presidential Election: Why Capturing Channel Switching Matters." *Journal of Broadcasting & Electronic Media* 55 (4): 470–89. doi:10.1080/08838151.2011.620669.

Hauser, David J., and Norbert Schwarz. 2015. "Attentive Turkers: MTurk Participants Perform Better on Online Attention Checks than Do Subject Pool Participants." *Behavior Research Methods*, March. doi:10.3758/s13428-015-0578-z.

Kobayashi, Tetsuro, and Jeffrey Boase. 2012. "No Such Effect? The Implications of Measurement Error in Self-Report Measures of Mobile Communication Use." *Communication Methods and Measures*. doi:10.1080/19312458.2012.679243.

Ksiazek, Thomas B., Edward C. Malthouse, and James G. Webster. 2010. "News-Seekers and

Avoiders: Exploring Patterns of Total News Consumption Across Media and the Relationship to Civic Participation." *Journal of Broadcasting & Electronic Media* 54 (4): 551–68. doi:10.1080/08838151.2010.519808.

Lai, Chih-Hui. 2014. "An Integrated Approach to Untangling Mediated Connectedness with Online and Mobile Media." *Computers in Human Behavior* 31 (February): 20–26. doi:10.1016/j.chb.2013.10.023.

MacArthur, Brian. 1993. "From Sound Bites to News Snacks." *British Journalism Review* 4 (2): 67–68. doi:10.1177/095647489300400218.

McCombs, Maxwell E, and Chaim H Eyal. 1980. "Spending on Mass Media." *Journal of Communication* 30 (1). Wiley Online Library: 153–58.

Messner, Marcus, Maureen Linke, and Asriel Eford. 2011. "Shoveling Tweets: An Analysis of the Microblogging Engagement of Traditional News Organizations." In *International Symposium on Online Journalism in Austin*.

Mihailidis, Paul. 2014. "A Tethered Generation: Exploring the Role of Mobile Phones in the Daily Life of Young People." *Mobile Media & Communication* 2 (1): 58–72. doi:10.1177/2050157913505558.

Miller, Nancy. 2007. "Minifesto for a New Age." *Wired Magazine*, March. http://archive.wired.com/wired/archive/15.03/snackminifesto.html.

Mitchell, Amy. 2015. "State of the News Media 2015." *Pew Research Center*. http://www.journalism.org/2015/04/29/state-of-the-news-media-2015/.

Morris, Jonathan S., and Richard Forgette. 2007. "News Grazers, Television News, Political Knowledge, and Engagement." *The Harvard International Journal of Press/Politics* 12 (1): 91–107. doi:10.1177/1081180X06297122.

Napoli, Philip M., and Jonathan A. Obar. 2014. "The Emerging Mobile Internet Underclass: A Critique of Mobile Internet Access." *The Information Society* 30 (5): 323–34. doi:10.1080/01972243.2014.944726.

Oulasvirta, Antti, Tye Rattenbury, Lingyi Ma, and Eeva Raita. 2012. "Habits Make Smartphone Use More Pervasive." *Personal and Ubiquitous Computing* 16 (1). Springer-Verlag: 105–14. doi:10.1007/s00779-011-0412-2.

Paolacci, Gabriele, and Jesse Chandler. 2014. "Inside the Turk: Understanding Mechanical Turk as a Participant Pool." *Current Directions in Psychological Science* 23 (3): 184–88.

doi:10.1177/0963721414531598.

Peer, Eyal, Joachim Vosgerau, and Alessandro Acquisti. 2014. "Reputation as a Sufficient
Condition for Data Quality on Amazon Mechanical Turk." *Behavior Research Methods* 46
(4): 1023–31. doi:10.3758/s13428-013-0434-y.

Pew Research Center. 2012. "In Changing News Landscape, Even Television Is Vulnerable."
http://www.people-press.org/2012/09/27/section-3-news-attitudes-and-habits-2/.

Ruston, Scott W. 2012. "Calling Ahead: Cinematic Imaginations of Mobile Media's Critical
Affordances." In *The Mobile Media Reader*, edited by Noah Arceneaux and Anandam
Kavoori. New York: Peter Lang.

Sauvageau, Florian. 2012. "The Uncertain Future of News." In *How Canadians Communicate
IV: Media and Politics*, edited by David Taras and Christopher Robb Waddell, 29–43.
Athabasca University Press.

Schroeder, Ralph. 2010. "Mobile Phones and the Inexorable Advance of Multimodal
Connectedness." *New Media & Society* 12 (1): 75–90. doi:10.1177/1461444809355114.

Smith, Aaron. 2015. "U.S. Smartphone Use in 2015."
http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/.

Son, Jinok, and Maxwell E McCombs. 1993. "A Look at the Constancy Principle under
Changing Market Conditions." *Journal of Media Economics* 6 (2). Taylor & Francis: 23–
36.

Starr, Paul. 2012. "An Unexpected Crisis: The News Media in Postindustrial Democracies." *The
International Journal of Press/Politics* 17 (2): 234–42. doi:10.1177/1940161211434422.

Struckmann, Samson, and Veronika Karnowski. 2016. "News Consumption in a Changing
Media Ecology: An MESM-Study on Mobile News." *Telematics and Informatics* 33 (2):
309–19. doi:10.1016/j.tele.2015.08.012.

The American Association for Public Opinion Research. 2011. "Standard Definitions: Final
Dispositions of Case Codes and Outcome Rates for Surveys."

Van Damme, Kristin, Cédric Courtois, Karel Verbrugge, and Lieven De Marez. 2015. "What's
APPening to News? A Mixed-Method Audience-Centred Study on Mobile News
Consumption." *Mobile Media & Communication* 3 (2): 196–213.
doi:10.1177/2050157914557691.

Webster, James G. 2011. "The Duality of Media: A Structurational Theory of Public Attention."

Communication Theory 21 (1): 43–66. doi:10.1111/j.1468-2885.2010.01375.x.

Westlund, Oscar. 2014. "The Production and Consumption of News in an Age of Mobile Media Oscar Westlund." In *The Routledge Companion to Mobile Media*, edited by Gerard Goggin and Larissa Hjorth. New York: Routledge.

Wolf, Cornelia, and Anna Schnauber. 2015. "News Consumption in the Mobile Era." *Digital Journalism* 3 (5): 759–76. doi:10.1080/21670811.2014.942497.

Wood, William C. 1986. "Consumer Spending on the Mass Media: The Principle of Relative Constancy Reconsidered." *Journal of Communication* 36 (2): 39–51. doi:10.1111/j.1460-2466.1986.tb01422.x.

Yuan, Elaine. 2011. "News Consumption Across Multiple Media Platforms: A Repertoire Approach." *Information, Communication & Society* 14 (7): 998–1016. doi:10.1080/1369118X.2010.549235.

Table 1. *Regression models showing predictors of multiplatform news use.*

	No. of platforms used for news (0-5)	No. of platforms used for news (excluding mobile, 0-4)
Block 1: Demographics		
Age	.055*	-.061*
Gender (female)	-.047*	-.065*
Race (white)	.024	.010
Income	.126***	.191***
Education	.023	.054
ΔR^2 (%)	12.4***	5.7***
Block 2: Mobile News consumption		
Mobile news user		.270***
ΔR^2 (%)		5.4***
Total R^2 (%)	12.4***	11.1 ***

Note: Data from Study 1. N = 1421. Cell entries are final-entry OLS standardized Beta (β) coefficients. ∗p < .05; ∗∗p < .01; ∗∗∗p < .001.

Table 2. *Correlations among usage of various platforms for news.*

	Computer use	TV use	Radio use	Mobile use
Print use	.092***	.156***	.227***	.098***
Computer use		-.022	.167***	.213***
TV use			.115***	.094***
Radio use				.209***

Note: Data from Study 1. N = 1445. Each respondent is classified as a user (1) or non-user (0) of each platform for getting news. Cell entries are correlation coefficients. ∗p < .05; ∗∗p < .01; ∗∗∗p < .001.

Table 3. *Comparison of average news session length scores across platforms.*

| Platform | N | Session length score | | Difference from smartphone mean |
		Mean	Standard deviation	
Radio	932	2.43	1.81	.16
Smartphone	810	2.59	1.81	-
Computer	1319	2.66	1.74	.06
Print	989	2.77	1.70	.18
Television	1306	3.86	1.89	1.26***

Note: Data from Study 1. Session length score was reported only if the respondent got news on that platform at least 1 day per week. Therefore N ranges from 810 to 1319. Session length was measured on an interval scale, where 1 = 0-10 minutes, 2 = 11-20 minutes and so on up to 7 = more than one hour. * = p <.05, ** = p < .01, ** = p < .001

Table 4. *Comparison of average news session lengths in minutes across platforms.*

| | | Session length in minutes | | |
| | | | | Difference from |
Platform	N	Mean	Standard deviation	smartphone mean
Television	441	29.53	21.14	17.91***
Print	120	22.60	15.05	10.97***
Radio	240	20.17	20.54	8.54***
Tablet	110	18.14	24.58	6.51**
Computer	828	15.22	15.16	3.59**
Smartphone	490	11.63	16.81	-

Note: Data from Study 2. Session length was asked only if the respondent got news on that platform yesterday. Therefore N ranges from 110 to 828. * = p <.05, ** = p < .01, ** = p < .001

Table 5. *Comparison of average number of times per day a platform is used for news.*

| Platform | N | Times per day | | Difference from smartphone mean |
		Mean	Standard deviation	
Computer	1329	2.94	2.49	0.04
Smartphone	738	2.90	16.81	-
Television	1300	2.52	2.79	0.38**
Radio	887	2.20	2.09	0.70***
Print	953	1.69	2.32	1.21***

Note: The number of times per day a platform is used for news was asked only if the respondent got news on that platform at least 1 day per week. Therefore N ranges from 738 to 1329. * = $p < .05$, ** = $p < .01$, ** = $p < .001$

Table 6. *Proportions of respondents saying their news consumption was spread throughout the day.*

| Platform | News consumption spread throughout the day | | |
	Percentage	Difference from smartphone percentage	z
Smartphone	72.2	-	-
Computer	70.8	1.4	.571
Tablet	52.7	19.5	3.988***
Radio	47.9	24.3	6.443***
Television	33.6	38.6	11.824***
Print	15.0	57.2	11.522***

Note: * = p <.05, ** = p < .01, ** = p < .001