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Do Chinese Internet users care about news? Tracking news consumers on the Internet in a metropolis 2009–2011

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This study aims to explore the patterns and trends of Internet news use in a Chinese metropolis, Shanghai. By analyzing news webpage browsing data from three selected months in 2009, 2010, and 2011, we seek to present some evidence other than self-report data, which were widely used in past research but subject to the influence of memory limitation and social desirability. Our findings are: First, Internet users in Shanghai paid more attention to soft news, and finance and economy news, than to social and political news both in terms of visit times and visit duration. Second, news page visits and the amount of time people spent on reading news online suggest clear monotonic growth across all categories of news content over a three-year period. Third, despite the growing amount of visits and time used for online news, the proportion of visits and time devoted to news viewing to total webpage visits and time spent online decreased significantly. However, “social and political news” and “finance and economy news” did not experience any decline. Finally, existing gaps were identified between different demographic groups in terms of news reading frequency online, but no clear trends were identified concerning how the gaps developed over time.

Keywords: Internet news use; China; civic culture; user tracking data

As of June 2011, the number of Internet users in China has reached 4.85 billion with a penetration rate of 36.2%.¹ The rapid expansion of the Internet has spurred many theorists and China watchers to deliberate on the possible social changes attributable to new communication technology (Kalathil & Boas, 2003; Tai, 2006; G. Yang, 2003a, 2003b, 2003c; Zheng, 2007; Y. Zhou, 2006). Online political discussion, collective action, and public sphere are a few keywords frequently seen in academic writing and popular media discourses. They form part of the academic concepts that no doubt deserves serious examination. A fundamental antecedent to this online political discourse and action is information intake, without which one cannot effectively participate in civic and political activities. Even though the production of news in Chinese cyberspace is regularly censored and heavily regulated, patterns of news consumption online – in particular, social and political news – are worthy of exploring. Knowing how Chinese people use online news could help us to understand the change of civic culture taking place in China.

The purpose of the current study is to zero in on a basic indicator of civic culture that has evaded rigorous examination: Internet news use, or broadly termed, informational use of the Internet. Informational use of the Internet has been shown to

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be related to political efficacy, political knowledge, and political participation. As for studies with data collected in China, frequent Internet news users were found to be more likely to express themselves online (Shen et al., 2009) and to perceive a more pluralistic opinion climate (Wang, Guo, & Shen, 2011). However, tying Internet news use to outcomes at the individual level does not offer answers to questions at the macro and aggregate levels. As Chinese portal websites have become more commercialized since the early 2000s, are people reading more or less news online than before? What are the possible explanations for the increase or decrease? Among different websites as news sources, what are the most popular sites, commercial portal sites and government-owned news sites?

Literature review

The existing body of research on the Internet in China tends to cluster around three prototypical methods: case studies (Ma, 2008; Tang & Bhattacharya, 2011; K. C. C. Yang, 2010; Yu, 2006), web content and discourse analysis (Tang & Yang, 2011; Yang, 2003a; X. Zhou, 2009), and surveys (Guo & Feng, 2012; Mou, Atkin, & Fu, 2011; Shen et al., 2009; Shen et al., 2011; B. Zhou, 2011). Very few have employed user tracking data (see Tewksbury, 2003 for an example), which have advantages over self-report data in many aspects.

The current study assesses the dynamics and development of Internet news use in one of the biggest Chinese metropolises, Shanghai. We first introduce monitorial citizen theory, a normative theory that expects citizens to fulfill their citizenship duties by paying attention to news. We then provide background information on news production in Chinese cyberspace. A central question at issue relates to the audience's preference between soft news and hard news – a tug of war between “curiosity in less controlled information” and “a natural inclination toward entertainment”. Making use of Internet user tracking data collected over a three-year span in Shanghai, we show how much attention Chinese netizens devoted to different types of news information, how attention waxed and waned during the three years, and how individuals of diverse demographic features consumed news differently.

Monitorial citizen theory and an authoritarian regime

Informed participation is theorized to be a crucial feature of a healthy democracy. Delli-Carpini and Keeter (1996) expect citizens to retain factual knowledge about various aspects of politics. Downs (1957) and Popkin (1991) have a more relaxed view that considers political information shortcuts valuable. Schudson (1998) deems that citizens should be knowledgeable about acute problems appearing in newspaper headlines. Although political scientists disagree on how much information one should acquire, the consensus is that citizens are expected to fulfill their duty of being a monitorial citizen by obtaining information about public issues and using that information in their political decisions (Berelson, 1952; Zaller, 2003). News consumption is one of the direct causes of the increase in civic and political knowledge (Eveland et al., 2005).

Even in authoritarian regimes, citizens are expected and sometimes encouraged to keep abreast of current affairs. The “education” function of the mass media in Leninist theory constitutes an important mechanism of social control, pushing the

audience to adopt interpretative frameworks offered by the strictly controlled media outlets. For fear that massive amounts of entertainment programs may erode the “socialist values” of the country, the Chinese government in 2011 ordered provincial-level television stations to increase the airing time of news programs² to tame the overly promoted entertainment programs such as game shows, dating shows, and singing audition shows. Furthermore, it is widely known that the Chinese government imposes constant control over traditional news media (Q. L. He, 2005). Traditional media content is strictly controlled compared with that carried by newer communication platforms in China (Lee, 1990; Zhao, 1998). Although the marketization reform in the 1990s has changed the pure party propaganda model (Lee, He, & Huang, 2006), politically sensitive issues still receive the toughest editorial treatment at all times. Since political pluralism continues to be resisted by those in power (Goldstein, 1995), the fundamental role of the media in China remains consolidating the party leadership (Brady, 2008) through running a “Party Publicity Inc.” (Z. He, 2000; Lee et al., 2006). In short, the Chinese government encourages the public to learn about news, but only the news “produced and approved” by the government-controlled media outlets. However, the coming of the Internet altered the media landscape. People today can obtain information from cyberspace.

Online news in Chinese cyberspace: pushing the boundary

Unfortunately, Internet news does not escape the heavy-handed management of the government (Harwit & Clark, 2001). According to the “Internet News Information Service Regulation³” (*hulianwang xinwen xinxi fuwu guanli guiding*) – the law that regulates agencies publishing news online in China – there are three types of legitimate and legal news-carrying websites. The first category is news agency-owned websites, whose service is to publish news information already published in traditional media outlets (e.g., the online version of Xinmin Evening News: <http://xmwb.news365.com.cn/>). The second category is government-owned portal websites, whose service is to publish news information not published via traditional media outlets, for example, [Eastday.com](http://www.eastday.com) (www.eastday.com). The third category is portal websites owned by private companies, such as [Sina.com](http://www.sina.com), [Baidu.com](http://www.baidu.com), [Sohu.com](http://www.sohu.com) and [Tencent’s QQ.com](http://www.qq.com). The three types of organizations differ in their levels of commercialization and journalistic autonomy (Zhang & Tao, 2010). The former two types of websites are almost the handmaidens of the government. Since these institutions already have a rigorously controlled routine of news production in place, they are allowed to have their own reporters who can travel out of the newsroom to conduct interviews and cover news stories. In sharp contrast, commercial portal sites need to apply for a license for reposting news articles authored by government-owned media institutions. These institutions can only serve as “news aggregators”: they have no “interview rights” and are not allowed to cover their own stories by conducting interviews.

He and Zhu (2002) studied 94 online newspapers in 1999 and found that news websites then were in a primitive stage of development and the difference between online newspapers and their print versions was not significant. At that time, the production of news online seemed to strictly follow the regulation of the government: online news content was simply a replica of the news offline. Market forces have played a role in transforming the business. The top three portal website companies (Sina, Netease, and Sohu) issued IPOs in 2000. In 2003, they began to make a profit

(Liu, 2005). Fierce competition in the private sector has become a major force pushing the boundary of online news services in China. Most of the time, private portal websites respond more swiftly to news events than government-owned websites (Fu & Zhou, 2007). A comparison between Sina's and Netease's news stories in 2005 (Yi & Xi, 2007) revealed that both companies used their own styles and methods to stretch the envelope of government regulation to capture a larger audience share.

To expand online news market share, at least three strategies were adopted: enhancing in-depth thematic coverage, taking advantage of user generated content, and promoting soft-news and news topics that fall into "grey areas". First, since non-government-owned portal websites do not possess qualified reporters to collect news information through interviews, they make good use of their bestowed right to conduct information synthesis. When an important news event occurs, background information of the event (e.g., history, possible causes, similar cases from foreign countries, etc.) will be quickly assembled, formulating a thematic webpage that contains different related stories (not necessarily "news") that could help the audience to make sense of the news event. About a tenth of Sina.com's news stories in 2005 were in-depth thematic coverage (Yi & Xi, 2007). Second, taking advantage of the interactive feature of the Internet, commercial portal websites, Netease.com in particular, capitalize on user generated content (e.g., blogs, comments, etc.) to amplify their impact. For instance, Internet users' comments on a particular news event could be used as news headlines for appealing to the audience. Since users' comments or blog posts do not count as "interview", they are good raw material for editors to use. Editorials and commentaries by ordinary Internet users are other tools to boost influence that can be revised to the extent that neither of them is "news". Third, according to the "Internet News Information Service Regulation",⁴ "news" refers to coverage and commentaries on politics, economics, military, international relations, and serious social incidents. Thus, the same level of control does not apply to soft news – entertainment, sports, and "less serious" social incidents. In many instances, social topics falling within a grey area – topics not necessarily hardcore political (e.g., the president attending a politbureau meeting) or topics on small-scale social incidents, could be operated with safety to a certain extent (e.g., car accidents, consumer complaints, etc.).

Admittedly, China today possesses the world's most sophisticated Internet monitoring and censorship system (Cherry, 2005), but absolute control over the Internet remains impossible (Endeshaw, 2004) outside of ordering a complete shutdown of the net. Alternative information to official propaganda finds the Internet an amiable place for surviving. With the exceptions of a handful of extremely touchy issues implicating possible subversion of the Chinese Communist Party's rule, diverse opinions and information can be found on blogs, portal websites, bulletin boards, and interpersonal communications online (Esraey, 2008). Thanks to the "grey area" practices invented by web journalists, scholars (Zhang & Tao, 2010) find that journalists working for private portal websites actually enjoyed higher levels of job satisfaction – including sense of achievement and journalistic autonomy – than journalists working for government-owned news websites. Due to the technological features of the Internet, the non-official discursive universe was easier to expand in cyberspace since it is less tightly controlled (Z. He, 2008; 2009; Wang et al., 2011).

Politics or entertainment? The audience's choice

China's division between the traditional media-sphere and cyberspace could possibly render information from online more attractive than that presented on traditional media platforms. Chinese Internet users could find Internet news more timely, trustworthy, and less propagandistic than what they could obtain from newspapers or television programs. If the major concern of US scholars is to identify news topics that could enhance audience interests and reinforce recall (Price & Czilli, 1996), the primary interest for scholars focusing on China is whether the advent of the Internet could foster a vibrant civic culture in an authoritarian regime, at least at a slow pace. The substantial technical freedom that the Internet offers to its users would encourage people to pursue their own interests, mostly entertainment information. Interactivity leads to greater selectivity (Chaffee & Metzger, 2001; Tewksbury & Althaus, 2000). Sunstein (2001) pointed out the dangers of a highly filtered information environment, for instance, a decrease in shared communication experiences and exposure to biased and incomplete viewpoints. Echoing Sunstein's concern (2001), Tewksbury (2003) found that US online news audiences consume less public affairs news than they claimed in survey research.

Individual level factors

So what determines an individual's use of Internet news? Since most human behavior is purposeful (Marken, 1990), the uses and gratifications perspective (Katz, Blumler, & Gurevitch, 1974) can help explain the phenomenon. The media provide different sources of satisfaction and an active audience will need to make choices. The types of needs mostly related to news consumption are utility, surveillance, and diversion. The end-result of the tug of war between "curiosity in less controlled information" and "a natural inclination toward entertainment" is predicated upon surveillance needs. Surveillance motivation is the prime driving force for news information attention. It can be characterized as a mediator (Viswanath et al., 2000) between socioeconomic status (SES) and news learning, as a moderator capable of reducing the knowledge gap (Kwak, 1999), and as an exogenous variable that accounts for a large proportion of the variance in news knowledge (Eveland, 2001, 2002). Hyman and Sheatsley (1947) found it essential to break audience's psychological barriers to stimulate people's interest in knowing. Bennett (1988) concluded that surveillance motivation and capability can account for around half of the variation in news knowledge. Luskin (1990) argued that interest is the most robust predictor of people's information seeking. When the Chinese audience exercises its freedom to consume information beyond the strictly controlled traditional media outlets, which factor will play a weightier role in determining preference – people's natural tendency for entertainment or their attention to public affairs information? The answer to this question has crucial implications for Chinese society in that keeping up with current affairs is one indispensable component of a healthy civic culture.

Surveillance needs are closely related to demographic variables (Nguyen & Western, 2007). Stempel III, Hargrove, and Bernt (2000) found that Internet news use frequency is higher among young, male, highly educated, and high income individuals. Similarly, Xenos and Moy (2007) found younger individuals, the well-educated and high income individuals were more likely to be exposed to online political information. Kaye and Johnson's (2002) study discovered that education is

negatively associated with using political websites for gratifying surveillance needs, but in another study (Kaye & Johnson, 2004), education was positively related to information seeking online.

Macro level factors

Do macro level factors influence the way people consume online news? In addition to scrutinizing individual level factors, it is also meaningful to ask whether Chinese Internet users have been paying a growing or shrinking amount of attention to news online. Over the past few years, quite a few observable social trends have emerged that could have impacts on people's motivation to consume Internet news. First, a growing number of news incidents were first revealed by online sources and attracted widespread traditional media coverage and intense public attention: in 2009, the Deng Yujiao case; in 2010, the tainted milk powder scandal, and the "my dad is Ligang" meme; in 2011, the high-speed train collision. Second and relatedly, social networking sites, in particular, the Weibo service provided by [Sina.com](http://www.sina.com), is a place where the speed of news transmission is exceedingly fast. Around 13.8% of Chinese Internet users were on Weibo in 2010, and this number increased to 48.7% in 2011.⁵ Without social networking sites, one has to possess high surveillance motivation to visit the homepage of a news portal website to look for news. Yet with social networking sites, one can run into news "incidentally", when someone within his or her social network shares a piece of news from portal sites, thus increasing the amount of potential newsreaders. Third, as mentioned earlier, commercial news portal sites have tried many methods to lure in more visitors by making news more attractive. With all these uses for the news, have Chinese Internet users acquired higher levels of civic awareness?

Crude data on Chinese netizens' attention to Internet news are available, but not too helpful in answering the question. The data points in [Figure 1](#) indicate the proportion of Chinese Internet users who identified "reading news online" as a frequent Internet activity, according to CNNIC's (China Internet Network Information Center, the state network information center) biannual nationwide survey, a time series spanning between 2000 and 2011. The overall pattern suggests a clear S-curve pattern: Between 2000 and 2003, only about 10–25% of the netizens frequently read news online; 2004 witnessed a steep increase in online news readers and the number, compared to mid-2003, almost tripled. Between 2004 and 2008, a steady growth was observed, though with ups and downs; but the momentum slowed down in the most recent three years (2009–2011).

Did online news lose its momentum? When using a measure to differentiate users from non-users, we are not able to answer questions regarding the frequency and time at which people read news online. Even in response to questions such as "how frequently do people visit news webpages" and "how much time do they spend on reading news", self-report data are incapable of offering a nuanced understanding of Internet users' news consumption behaviors. People usually have a vague memory about their information consumption habit. Social desirability could also contaminate self-report data. In contrast, web viewing data are richer and more precise.

Furthermore, motivation to acquire news information is closely related to demographic characteristics. Early research on the knowledge gap hypothesis points out that a certain group of people are more likely to expose themselves to media information because of their interests, cognitive skills, and background knowledge

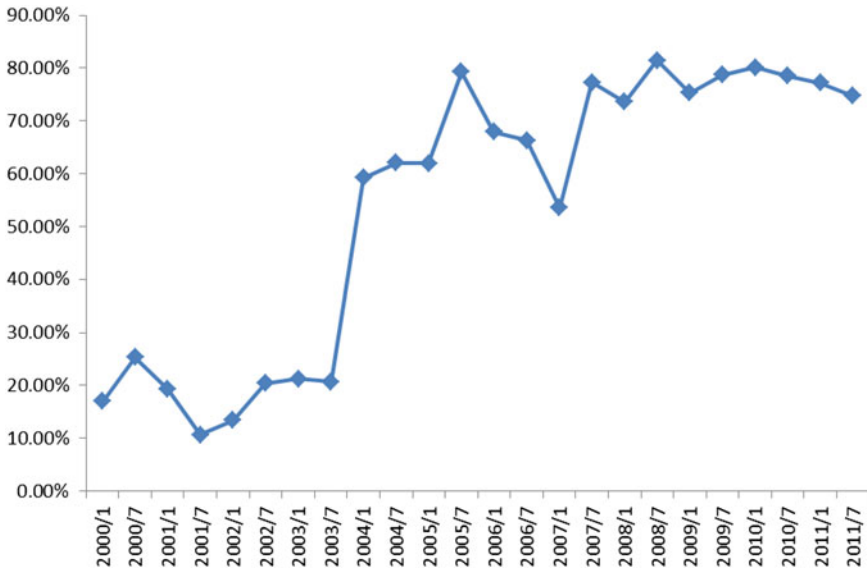


Figure 1. Internet news use trend 2000–2011 (CNNIC biannual survey data). *Notes:* The graph was based on CNNIC biannual survey reports from 2000 to 2011 (see <http://www.cnnic.cn/research/zx/qwfb/>). The time series was derived from answers to the repeated survey question, “Which of the following Internet service you use frequently?” (item: news viewing).

(Tichenor, Donohue, & Olien, 1970). Castells (2001) argues that the Internet not only offers opportunities but also exacerbates technology gaps. Therefore, we also ask whether there are gaps among different demographic groups in terms of online news exposure, and if yes, whether the gaps were closing or widening over the years. With the discussion above, we proposed the following research questions.

- RQ1a: How does online news consumption vary across different news categories? Do people focus their attention only on one category of news or are they exposed to a wide combination of news?
- RQ1b: How does news consumption vary over the past three years?
- RQ2a: Are there any news consumption gaps across sub-populations?
- RQ2b: Are the news consumption gaps closing or widening?

Method

Web viewing data

Web browsing data were obtained from iResearch,⁶ one of the leading Internet research, marketing and consulting companies in Mainland China. The company maintains a national panel of Internet users (i.e., iUserTracker). The data record the URL address of each World Wide Web page each panel member viewed. For the present study, records of 200 panelists in June 2009, June 2010, and June 2011, respectively, were used. All 600 panelists are located in Shanghai. Each of these record entries includes a user identification number, page URL address, the time when the page was accessed, the duration of viewing, demographic information of the panel member (including gender, age, education, and income) and the category of the web page (e.g., news, B2B, social networking etc.). The categorization used by iResearch

does not happen at the news page level, but at the “channel” level. This is because news pages are not randomly distributed on the servers of news providers. For instance, qq.com places all its entertainment news under ent.qq.com; thus all the pages within this folder are entertainment news. Similarly, 163.com places all its sports news under sports.163.com. In other words, iResearch adopted definitions of different types of news from news providers. Admittedly, when it comes to news that falls into two or more categories, for example, the love affair of a sports celebrity, different websites might have their own ways of decision-making. But situations like this should only constitute a small portion of all news. Excluding those page visits unrelated to news (e.g., online shopping, gaming, social networking, search engine, etc.), the raw data contains a total of 10 types of webpages that contain news information. For the sake of simplicity and clarity, the 10 types of webpages were grouped into three categories: soft news (entertainment, sports, etc.), social and political news, and finance and economy news. The sub-categories under soft news include: entertainment, sports, health, and information technology; the sub-categories under social and political news include: society, military, and politics; the sub-categories under finance and economy news include: finance and economy, business, and real estate.

Panel sample

The 600 panel members are sampled according to sex and age distribution of the Internet user population in Shanghai, China (quota sampling). The company recruits panel members via email or reference by existing members. For those who are difficult to reach through the abovementioned channels (e.g., the elderly), the company contacts them via telephone or mail to ensure that the panel includes users with diverse backgrounds. The panelists joined the panel by installing the iUserTracker software on the computers they use to access the Internet. The software tracks Internet users’ web browsing behavior without obtrusive interruptions.

Demographic information on the panelists was collected through telephone interview every six months. About 15% of the panelists were replaced by new members every three months. The panel members were excluded from the panel if they failed to be the user of the computer. Therefore, the 600 users across the three years to be analyzed in our study were not the same, though there were overlaps. The data were weighted by sex and age to ensure the representativeness of Internet users in Shanghai. The weights are based on a random-digit-dialing telephone survey conducted in 2010 in Shanghai (Shen & Wang, 2013). About 52% of the weighted panelists are male, 48% of them are below 35 years old, 57% have a bachelor degree or above, and 41% of have an income above 3000 RMB per month.

Measures

Four individual-level variables were constructed based on the tracking data. “Visit” quantifies the frequency of a particular web category visited by a user in a month. “Visit percentage” measures the proportion of visits to a web category relative to the total visits of a particular user in a month. “Duration” measures the time (in seconds) a user spent on a particular web page category in a month. “Duration percentage” is the proportion of duration a user spent on a particular web category relative to the total time the person spent online in a month.

The present method has several advantages compared to self-report news consumption measures. First, it is more reliable and precise than self-report methods. People do poorly at reporting their own habits (Tewksbury, 2003). News readers may vaguely recall what they actually viewed online and how long they spent on a particular web page. Web tracking software records people's news consumption habits without any intervention like in an experiment (D'Haenens & Jankowski, 2004; Tewksbury & Althaus, 2000). Second, we constructed multiple indicators to measure people's news consumption habits. Lots of previous survey studies consider the Internet an amorphous whole (Shah, Kwak, & Holbert, 2001), but users could browse various types of "news information" by their own definition. Measuring Internet use by frequency and hours of use has long been challenged (Kraut et al., 1998; Nie & Erbring, 2000). Our data record not only whether users read news or not, but also what kinds of news they read, how frequently, and for how long. Furthermore, previous studies tend to use one shot cross-sectional designs to explore the patterns of online news consumption (Althaus & Tewksbury, 2000). In this study, the longitudinal design can help us to gain additional insights into the details of user behavior over the three years.

Results

Before presenting findings responding to our research questions, we first describe Shanghai Internet users' overall news viewing pattern. Irrespective of year-to-year variation, about 89% ($n = 534$) of the panelists have visited news web pages at least once during the selected period of examination, which suggests the vast majority of Internet users were exposed to news online at least once within the selected month. The total frequency of news page visits is about 128,691 (600 users in one month's time). On average, each user visited 241 pages per month (two visits to the same page were counted as two "pages"). Roughly assuming that a single page contains one news item, Internet users from Shanghai read about eight pieces of news on a daily basis. The average time a user spends on reading news pages is around 239 minutes per month, which translates into fewer than eight minutes per day.

However, to put the above statistics in perspective, one has to be aware of the time Shanghai Internet users spend on other types of web services. In actuality, news reading constitutes a small proportion of the time they stayed online. Shanghai Internet users on average spend more than one hour a day on the Internet. The average frequency of web page visits was 75 per day. About 10% of the visits contain some form of news information, and about 12% of online time was devoted to news reading. Table 1 is a list of the websites ranked by visiting frequency. About nine out of the 30 websites on the list provide news services. Other popular websites are online shopping sites, search engines, and social networking sites. The most popular news portal websites were: [QQ.com](http://qq.com) (Tencent), sina.com.cn (Sina), 163.com (Netease), sohu.com (Sohu), yahoo.com (Yahoo), ifeng.com (phoenix TV), eastmoney.com (stock and financial news), hoopchina.com (sports news), and ynet.com.⁷ All of these are commercial portal sites.

- RQ1a: How does online news consumption vary across different news categories? Do people focus their attention only on one category of news or are they exposed to a wide combination of news?

Table 1. Popular websites ranked by viewing frequency (2009–2011).

| Ranking | Website | Service Type | News Website Ranking |
|---------|--|-------------------|----------------------|
| 1 | taobao.com | Shopping | |
| 2 | kaixin001.com | social networking | |
| 3 | baidu.com | search engine | |
| 4 | qq.com | news portal | 1 |
| 5 | dianping.com | consumer reviews | |
| 6 | sina.com.cn | news portal | 2 |
| 7 | 163.com | news portal | 3 |
| 8 | renren.com | social networking | |
| 9 | weibo.com | social networking | |
| 10 | sohu.com | news portal | 4 |
| 11 | alipay.com | online payment | |
| 12 | google.com.hk | search engine | |
| 13 | 360buy.com | shopping | |
| 14 | yahoo.com | news portal | 5 |
| 15 | 51fanli.com | shopping | |
| 16 | 51job.com | job hunting | |
| 17 | ifeng.com | news portal | 6 |
| 18 | eastmoney.com | financial news | 7 |
| 19 | sogou.com | music downloading | |
| 20 | hoopchina.com | sports news | 8 |
| 21 | live.com | MSN service | |
| 22 | 126.com | email service | |
| 23 | zhaopin.com | job hunting | |
| 24 | ynet.com | news portal | 9 |
| 25 | 360.cn | anti-virus | |
| 26 | youku.com | video sharing | |
| 27 | douban.com | social networking | |
| 28 | admin5.com | technology | |
| 29 | google.com | search engine | |
| 30 | yihaodian.com | shopping | |

Regardless of cross-year differences, the most frequently visited pages were soft news pages (39.5%). The second most visited category is finance and economy news (30.0%), followed by social and political news (22.6%). The distribution of time spent for each news category was different from that of page visit frequency. Overall, users spent most of their time on “finance and economy” (48.3%), followed by “soft news” (23.3%) and “social and political news” (22.7%). By either measure, social and political news attracted less attention than soft-news and finance and economy news did.

Then we divided the users into three types: those who only visited one category of news, those who visited two types of news, and those who visited all three types of news. The majority of the users (52.17%) visited pages from all three news categories. About 24.76% of the users visited two types of news. About 23.06% of the users only visited one of the three news categories (9.94% soft news, 6.48% finance and economy news, and 7.24% social and political news). The percentage of individuals who visited more than two categories increased from 61.34% to 83.70% in 2009 and 2011, respectively.

RQ1b: How does news consumption vary across the past three years?

To have a better understanding of Shanghai Internet users' news consumption patterns, it is important to check whether and how online news reading behaviors changed over time. Table 2 shows the means of panelists' news page visit frequency and duration across years. As expected, a growing trend can be observed from the absolute values of visit frequency and duration. The total number of news page visits increased by 10 times from 2009 to 2011 while the total duration of news page visits increased by 9.1 times (block 1 and block 3, "all news" column). "Hard news" increased most rapidly over the three-year span: Economic and financial news increased 12.3 times, and social and political news increased 10.3 times in terms of visit frequency. In terms of duration, economic and finance news increased more than 22 times. In contrast with the CNNIC data (see Figure 1), which suggests a stagnant situation from 2009–2011, our data showed a monotonic increase.⁸

Table 2. Internet news use pattern (2009–2011).

| <i>DV</i> | | Soft News | Finance Economy | Social Political | All News | Total Visits | N |
|--|----------|-----------|-----------------|------------------|-----------|--------------|-----|
| <i>Block 1</i> | | + | + | + | + | + | |
| Visit (per person in a month) | 2009 | 21.73 | 12.17 | 9.75 | 48.71 | 530.03 | 166 |
| | 2010 | 57.83 | 47.20 | 47.64 | 169.12 | 1951.89 | 182 |
| | 2011 | 197.66 | 150.27 | 100.76 | 483.00 | 4444.57 | 186 |
| | <i>F</i> | 7.13** | 16.89** | 25.95** | 24.01** | 73.07** | |
| | Combined | 95.28 | 72.19 | 54.34 | 240.94 | 2377.23 | 534 |
| <i>Block 2</i> | | – | | | – | | |
| Visit% | 2009 | 6.21% | 3.72% | 2.87% | 15.43% | | 166 |
| | 2010 | 3.63% | 2.45% | 3.32% | 10.34% | | 182 |
| | 2011 | 3.57% | 3.59% | 4.61% | 12.67% | | 186 |
| | <i>F</i> | 5.61** | 1.39 | 1.57 | 4.12* | | |
| | Combined | 4.41% | 3.24% | 3.63% | 12.74% | | 534 |
| <i>Block 3</i> | | + | + | + | + | | |
| Duration (seconds per person in a month) | 2009 | 957.50 | 706.12 | 538.83 | 2440.71 | 23,847.98 | 166 |
| | 2010 | 2906.05 | 3402.93 | 3829.04 | 11,190.46 | 117,903.78 | 182 |
| | 2011 | 5926.16 | 15,969.42 | 5143.01 | 28,138.57 | 217,991.55 | 186 |
| | <i>F</i> | 8.12** | 6.25** | 13.71** | 12.40** | 75.89** | |
| | Combined | 3351.07 | 6939.55 | 3262.10 | 14,368.17 | 123,471.93 | 534 |
| <i>Block 4</i> | | – | | | – | | |
| Duration% | 2009 | 2.34% | 4.43% | 3.70% | 16.30% | | 166 |
| | 2010 | 1.02% | 2.48% | 3.67% | 10.06% | | 182 |
| | 2011 | 0.63% | 4.31% | 4.26% | 11.97% | | 186 |
| | <i>F</i> | 6.24** | 2.40 | 0.20 | 6.48** | | |
| | Combined | 1.29% | 3.73% | 3.89% | 12.67% | | 166 |

Note: Underlined entries indicate no significant difference. A positive sign indicates significant increases whereas a negative sign indicates significant decreases.

Although we have seen significant growth in news intake in terms of visit frequency and duration, it could be attributed to the general growth of Internet use. Therefore, it is necessary to examine how users allocate their time between news viewing and other activities on the Internet. Table 2 also shows that visit frequency and duration percentage declined significantly over the past three years (block 2 and block 4, “all news” column). Although users visited news web pages more frequently and spent more time on reading news than before, they allocated a smaller proportion of visits and time to news. For example, a typical user devoted 16.3% of his or her online time to news reading in 2009, but he or she only spent 11.9% in 2011, despite the fact that overall news viewing frequency and time were both on the rise.

Interestingly, a more detailed look at Table 2 will find that the overall decline was caused by soft news (Visits: $F = 5.61$, $p < .01$; Duration: $F = 6.24$, $p < .01$). Economy and finance news and social and political news did not experience any decline percentage-wise. Their rates of increase across time caught up with the overall growth rate of Internet use. In other words, the percentage of visits and time Shanghai Internet users devoted to social, political, economy, and finance news remained largely the same, if not hiked up a little.

RQ2a: Are there any news consumption gaps across sub-populations?

Table 3. Internet news use and demographic difference (2009–2011).

| | Visit | Visit% | Duration | Duration% |
|---|------------------|---------------|---------------------|---------------|
| <i>Within-Subjects Effects (F-ratio)</i> | | | | |
| Category | 132.64 ** | 10.86** | 88.77** | 2.25 |
| Category \times IVs ^a | | | | |
| <i>Between-Subjects Effects: F-ratio (estimated marginal means)</i> | | | | |
| Year | 23.93** | 22.47** | 17.57** | 34.70** |
| (2009/2010/2011) | (1.31/4.54/7.33) | (4.9/2.0/2.3) | (10.59/71.38/77.91) | (4.5/1.5/1.5) |
| Sex | 11.03** | 0.93 | 11.90** | 0.00 |
| (Male/Female) | (4.78/2.59) | (3.0/2.7) | (62.19/24.33) | (2.1/2.2) |
| Age | 13.92** | 0.01 | 17.91** | 0.10 |
| (Young/Old) | (2.40/5.16) | (2.9/2.8) | (20.51/73.77) | (2.2/2.1) |
| Education | 5.15* | 3.89** | 6.05** | 2.60 |
| (Low/High) | (2.79/4.44) | (3.2/2.6) | (26.80/56.47) | (2.4/1.9) |
| Income | 3.03 | 10.41** | 5.74* | 8.46** |
| (Low/High) | (4.22/2.93) | (2.4/3.4) | (56.25/26.90) | (1.8/2.6) |
| <i>R Square</i> | 0.78 | 0.60 | 0.81 | 0.66 |
| Year \times Sex | 2.03 | 6.19** | 3.13* | 7.61** |
| Year \times Age | 3.41* | 0.00 | 4.10* | 1.25 |
| Year \times Education | 0.59 | 2.86 | 1.07 | 0.35 |
| Year \times Income | 2.79 | 3.43* | 4.10* | 0.68 |
| <i>R Square</i> | 0.78 | 0.61 | 0.82 | 0.67 |

Note: ^a indicates the interaction terms between news category and other IVs were omitted here because they were treated as control variables. The dependent variables were log transformed to avoid skewed distribution.

We conducted a series of repeated measures applying GLMs (generalized linear models) on news viewing indicators across three categories. Table 3 shows that there were significant demographic differences in online news consumption. Male users visited news web pages more frequently and spent more time on news browsing than female users. Younger users visited news web pages more frequently and spent more time than elder users. Despite the gender and age differences in news page visit frequency and viewing duration, proportion-wise, gender and age did not make a difference (see Visit% and Duration% columns, Table 3).

Regarding social economic status, users with higher levels of education visited more news web pages and spent more time on reading them. However, they allocated a smaller proportion of visits to news web viewing (see Visit% column). Higher income users spent less time on online news viewing than the lower ones. But proportion-wise, users with higher income visited online news more frequently and spent more time.

RQ2b: Are the gaps closing or enlarging?

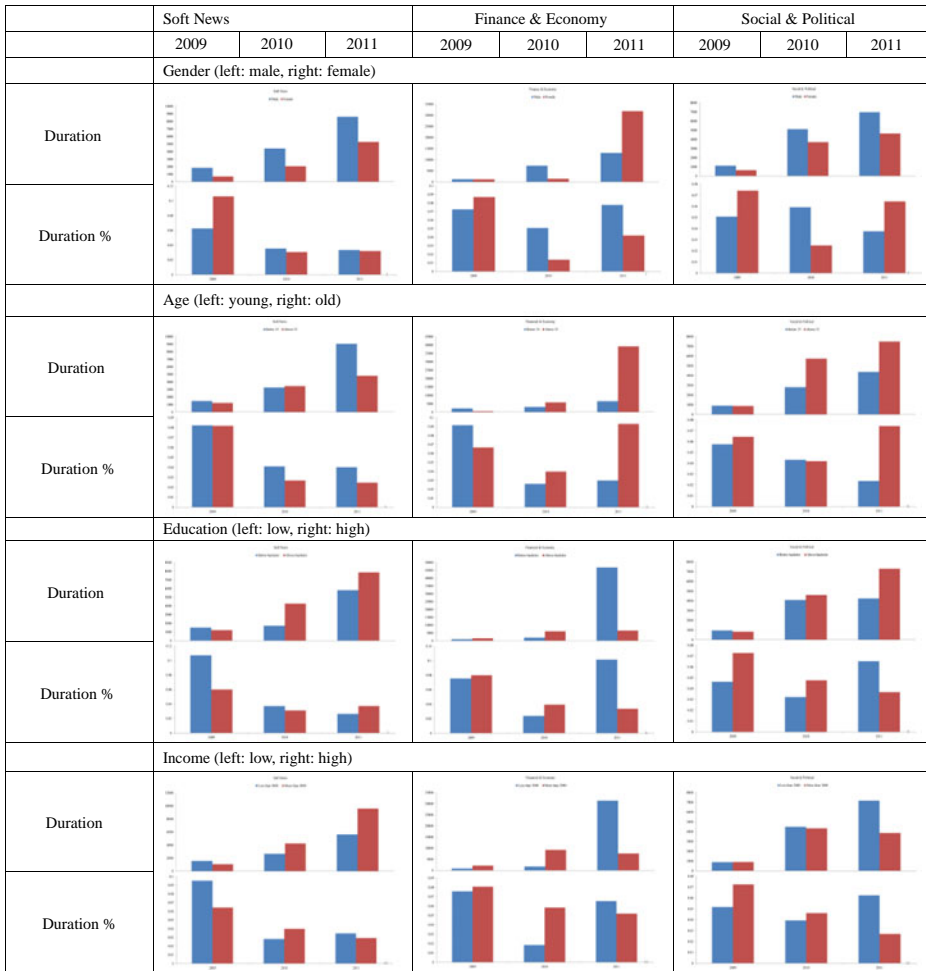


Figure 2. Internet news use by demographic groups (Duration and Duration%).

Downloaded by [] at 20:49 17 December 2017

Table 3 also reports the interaction effects between year and the four demographic variables on news consumption. The results suggest that the interaction terms contribute little to improving the model, as was demonstrated by the small change in R square. News consumption patterns across sub-populations did not change significantly over the years. Most of the interaction effects were not significant except for those on duration. Plus, no obvious and systematic patterns of change could be identified, according to Figure 2, which details the patterns in demographic differences in news use across years.

Conclusion and discussion

How the Internet is used by a society partially reflects the features of the society. This study aims to explore the patterns and trends of Internet news use in one of the biggest cities in China. We seek to present some evidence other than self-reported data, which are subject to the influences of limited memory capacity and social desirability, by analyzing online news-viewing data. Based on the empirical evidence at hand, we aim to identify the factors that could possibly influence different types of internet news use. Our findings could be summarized in the following manner.

Foremost, Internet users in Shanghai paid more attention to soft news and finance and economy news than to social and political news both in terms of visit frequency and in terms of viewing duration. Despite the imbalanced attention distribution, most users did expose themselves to more than one category of news. Second, demographic background has a significant influence on Internet news use. Males and young individuals are more likely to use Internet news in general, but education and income exhibited more complicated patterns. Third, the number of news page visits and the amount of time spent on news pages showed a clear monotonic growth pattern across all categories of news content. This should not come as a surprise because of the increase in the baseline – the total frequency and total duration of all online activities. Fourth, although the absolute number of visits and the time for news browsing were rising, the percentages of visits and time duration for news browsing were shrinking. Interestingly, the proportion of visits and time people devoted to entertainment and sports news declined significantly; however, “social and political news” and the “finance and economy news” did not experience any declines. Finally, there were existing gaps among different demographic groups in terms of online news use. But no clear patterns were identified concerning how the gaps developed over time. What substantive meanings could be extracted from these findings? We elaborate on the meanings of our findings in the following four themes.

Entertainment dominance

People allocate around a tenth of their online time to news, and a substantial portion of visits goes to soft news. Entertainment and sports news trump social and political news. Although the data we rely on came from Shanghai, we incline to consider our first finding generalizable to the whole country for two reasons. First, it resonates with Tewksbury's (2003) observation in the US, where sports news (26.0%), business & money (13.4%), and arts & entertainment (10.9%) were ranked higher than politics (5.4%). In addition, a survey of Beijing and Guangzhou Internet users a decade ago (Zhu & He, 2002) showed that the rating of Internet use for entertainment purposes is

higher than that for informational purposes. Compared to utility and surveillance needs, diversion is the dominant gratification Internet news users seek to obtain.

Demographic influences

Internet news use is closely related to one's demographic background. But we found most of the differences could be attributed to the differences in total Internet use time. As was shown in [Table 3](#), males and younger individuals visited news webpages more frequently and spent more time on them. Nevertheless, we did not find any significant difference between males and females and between young and old individuals in terms of the percentage of time they devoted to news. That is to say, the gender and age Internet gaps in news use could be accounted for by a parsimonious explanation that males and young individuals spend more time on the Internet.

Rapid growth

In response to the question we brought up at the beginning, "do people read more or less news online recently than before", our answer is "yes and no". A most obvious conclusion from our study is that Internet users' use of online news is growing rapidly. Our findings are different from the story based on the data from CNNIC ([Figure 1](#)) as user tracking data offers much more refined evidence than simply reporting "use" or "do not use" news online. However, the growth does not necessarily indicate the growth of surveillance needs of the public; instead, it was a reflection of the increasing amount of time people use the Internet. In 2009, the total amount of time an average Shanghai Internet user spent online was about 13 minutes a day while in 2011, this number became close to 2 hours (116 minutes). Put differently, compared to other web activities, such as online gaming, shopping, and social networking, the growth of news reading in general was slower.

Waning soft news

Once the total amount of time people spent online was taken into consideration, we found relative attention devoted to soft news was waning significantly across a three-year period whereas share of attention toward hard news, including social, political, economy, and finance news, did not experience any decrease. In 2009, soft-news consumption on average took 8.19% of all the time a user spent online, and social, political, finance, economy news took 9.98 % of the total time; in 2011, soft-news consumption took 3.27% of all the time a user spent online and social, political, finance, economy news took 9.07 % of the total time. This seems to be the most robust and consistent findings of our study (see [Figure 2](#), soft news column).

Did the spread of the Internet bring a more vibrant civic culture by encouraging netizens to attend to news? To elucidate this point, a causal statement might require much more evidence than our study has offered. But judging by the data we have, we conclude that the levels of Internet news use seem to be promising. If attention to hard news, social and political news in particular, is one of the indicators suggesting an individual's passion for civic engagement, the civic culture in metropolitan areas in China seems to be flourishing. Partly, this could be attributed to the commercializa-

tion of Chinese portal websites. In face of fierce competition, they have to lure in a larger audience by offering not only what entertains people but also what concerns their lives.

One has to be cautious of the limitations of the current study and avoid over-interpretation of our findings. First and most obviously, our data speak for the situation of Shanghai. Readers should generalize the findings to the whole country with special caution, as geographical gaps of communication technology adoption in China are severe. The penetration rate in urban areas is around 73% while in rural areas, the penetration is about 27%⁹ (a 46-point gap in between). Meanwhile, one should not go to the other extreme to take the case of Shanghai as purely idiosyncratic. Findings from Shanghai could to some extent represent the Chinese metropolitan population. Second, our operationalization of news page exposure is leaning toward the conservative end on a continuum in that news messages are not exclusive to news websites. For instance, when a user watches news video clips on video sharing websites, the tracking software of iResearch would record this as a video sharing website. Similarly, when a user logs onto Weibo, the Chinese Twitter-equivalent, reading a piece of news posted by his or her friends, the software will record the webpage category as social networking. But this does not invalidate our measure because visiting traditional news sites could be considered as possessing a strong motivation to seek news actively. Conceptually, this is different from visiting an online discussion forum and reading a piece of news inadvertently. Despite these limitations, our study offers a detailed look into the pattern of Internet news use in Shanghai and provides empirical evidence that Chinese people paid growing amount of attention to social and political news over a three-year timespan.

Notes

1. CNNIC, *The 28th Report on the Development of the Internet in China*, <http://www.cnnic.cn/dtygg/dtgg/201107/W020110719521725234632.pdf>
2. *Xinming Evening News*, January 3, 2012, <http://enjoy.eastday.com/e/20120103/u1a6290731.html>
3. Internet News Information Service Regulation, http://news.xinhuanet.com/politics/2005-09/25/content_3538899.html
4. People.com.cn, February 22, 2010, <http://media.people.com.cn/GB/40606/10997717.html>
5. *Beijing Morning News*, January 17, 2012, http://news.xinhuanet.com/tech/2012-01/17/c_122595694.htm
6. The authors wish to thank iresearch.com.cn for sharing the data set used for this study. See <http://www.iresearch.com.cn/>
7. Readers might find that the top news portal sites according to iResearch's news releases are Xinhua.com and People.com (e.g., <http://www.iresearch.com.cn/View/163306.html>). But neither of them is ranked high according to our findings. There are three likely explanations for this. First, iResearch did not define comprehensive commercial portal websites (e.g., qq.com, sina.com.cn, 163.com, sohu.com, and yahoo.com) as "news portal sites" in the analysis they described in their news releases despite the fact that a huge portion of information on these homepages is news. Second, iResearch's ranking is based on the number of unique visitors, but our ranking is based on absolute visiting frequency (i.e., if the same user visits the page two times, it will be counted as two visits). Third, our finding is based on users from Shanghai while the findings described in the news releases were based on national samples.

8. This could be attributed to both demographic and measurement differences. First, CNNIC surveys use a national sample but our data are based on Shanghai users, who in general have higher levels of education than the national average. Second, as mentioned earlier, CNNIC surveys employ a crude measure of online news use which only differentiates users from non-users, but does not capture the frequency and time people read news online.
9. CNNIC, *The 28th Report on the Development of the Internet in China*, 11.

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