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http://www.tandfonline.com/doi/abs/10.1080/1461670X.2017.1279028?journalCode=rjos20

NEWSPAPER CONSUMPTION IN THE MOBILE AGE
Re-assessing multi-platform performance and market share using 'time-spent'

Neil Thurman

Abstract

This article combines data from the British National Readership Survey, the Audit Bureau of Circulations, and comScore to calculate how much audience attention newspapers' print, personal computer (PC), and mobile platforms attract. The results show that, of the time spent with 11 UK national newspaper brands by their British audiences, 88.5 per cent still comes via their print editions, 7.49 per cent via mobiles, and just 4 per cent via PCs. The study reveals that the "share of consumption" of UK national newspaper brands (when measured by time spent) is less evenly distributed than commonly understood, conforming better to a logarithmic pattern than a linear one, and that a single brand—*The Mail*—has close to a 30 per cent market share. Such data should inform debates on, and the regulation of, media plurality. For publishers, this research calls into question the transition from print to online, showing how "dead-tree" editions are their most important platform. However, the circulation of print editions is in steep decline and newspapers' fortunes are falling almost as steeply. Unless the qualities that make newsprint so much more engaging than online journalism can be harnessed to propel a reading resurgence, newspapers' decline will continue, with important social, cultural, and political consequences.

Keywords

attention, audience measurement, comScore, engagement, mobile audience, newspaper readership, ratings analysis, time spent

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Introduction

The measurement of media audiences generates data that is crucial to media owners, advertisers, regulators, and legislators, as well as citizens and others in public life. Media owners use audience data to make micro-level decisions on editorial content (Cherubini and Nielsen 2016) as well as meso-level strategic decisions on investments, mergers, and acquisitions. Audience data is a "currency" used by advertisers, agencies, and media owners to evaluate and trade advertising media (BARB n.d.-a). For regulators and legislators, data on audiences' consumption of media brands informs assessments of media plurality (Ofcom 2015a) and the legislation of media mergers (DCMS 2014).

Media measurement has a long history, with independent audits of newspaper and magazine circulation provided by Audit Bureaux of Circulations since 1914 in the USA (AAM n.d.) and since 1931 in the United Kingdom (ABC n.d.). Since then, many other equivalent bodies have been established to measure radio and television audiences and even the consumption of out-of-home media such as billboards.[1]

While there tend to be just one or two officially recognised organisations responsible for the measurement of the longer-established, traditional media formats (Napoli 2003, 18), data on internet audiences is available in many forms from multiple sources:[2]

- Unlike with broadcast television or radio, the nature of the internet allows those who publish on it to collect usage data themselves. This is often done without the active cooperation of audience members through log file analysis and other methods (Bermejo 2007);
- Other approaches involve some degree of participation by the audience (Bermejo 2007). This can include taking part in surveys as well as allowing software "meters" to be installed that monitor internet consumption (Nielsen Online and comScore are two of the leading exponents).

In the pre-internet era it was uncommon, although not unknown,[3] for media brands to operate across multiple media platforms. There was, therefore, little demand for the bodies that measured or audited the separate media platforms to expand the services they provided. This changed as print publishers and broadcasters launched online editions. For example, by 1996 the Audit Bureau of Circulations (ABC) in the UK had an "electronic" subsidiary, ABCe, that offered certification of web traffic to clients including newspaper publishers (ABCe 2003). Gradually, the providers of data on audiences for other media formats have started to account for online consumption too, with, for example, plans to include internet streaming in the calculation of radio listening and TV viewing figures (RAJAR n.d.; BARB n.d.-b).

However, the metrics used in one medium are not always replicated in another, either for technical or commercial reasons, which can make the measurement of individual media brands' audiences across multiple platforms problematic. There is a particular issue in this regard where a media brand operates in print and online. Whereas a common measure of radio and TV audiences—time spent watching or listening—has an equivalent online, the most established measure of print audiences (the average number of copies circulated on a daily, weekly, or monthly basis) has no equivalent online, where visitors are only served copies of the pages they want to read. And although a metric that is potentially more comparable across print and online does exist—audience reach[4]—for newspapers (the subject of this article), reach has mostly been reported on a daily or weekly basis for their print editions and on a monthly basis for their online editions, making comparison impossible.[5]

In the UK, newspapers' print and online audiences were reported using different and impossible-to-compare metrics from at least as far back as 1996 (ABCe 2003) right up to 2012. It could be argued that publishers tolerated such a circumstance for so long because the data that emerged supported a convenient narrative: that though their print circulations were in decline, they were building large online audiences that would carry them forward into a bright digital future. For example, in 2011 *The Guardian* reported an average British readership per Monday–Saturday print issue of 1,120,000 (NRS 2016a) but a much larger monthly UK online audience: 18,297,426 unique browsers (ABC 2011a).

However, this incompatibility eventually proved unsustainable for both publishers and other stakeholders in the business of audience measurement (see, for example, Durrani [2014]), and September 2012 saw a fundamental change in the way that newspaper and magazine audiences were measured in the UK as the National Readership Survey (NRS) launched "Print and Digital Data" (PADD), an initiative that allowed, for the first time, direct comparison between online and print platforms. PADD "fuses" data on print audiences from the NRS and ABC with data about the online audience from comScore (NRS n.d.-a). According to the NRS this fusion is a "sophisticated technique for integrating [the] two … databases [while] maintaining the integrity of both. Participants from comScore [are] matched with participants from NRS on [the] basis of shared characteristics [creating] a third database [in

which] comScore website data are transferred to NRS participants" (NRS n.d.-b). PADD[6] now makes it possible to compare the reach of newspaper and magazine brands' print and online editions on a:

- daily and weekly basis (although the reach of online editions via mobile devices is not accounted for), and on a
- monthly basis (for this time period the reach of online editions via mobile devices *is* accounted for).

PADD has been used to provide evidence of the new audiences that print publishers have managed to reach via their online channels. For example, the NRS states that "on average mobile adds a further 107% audience reach to individual newsbrand footprints" (NRS n.d.-c). What is not so readily highlighted is what PADD reveals about the differing behaviour of newspapers' print and online readers, and the extent to which newspapers have managed to make visiting their online editions a daily ritual in the same way that reading their print editions has been for many. PADD shows that the—increasingly scarce—print reader is a more loyal consumer, and that newspapers' online editions are not a daily destination in the way that their print editions have been. For example, although, on a daily basis, UK national newspapers[7] have an average reach of 1,531,000 via their print editions, they have an average reach of just 578,000 via personal computers[8] (NRS 2016b).

PADD does then allow for better assessments to be made of newspapers' and magazines' audiences in a multiplatform environment. However, it is limited. By focusing exclusively on the metric of reach, PADD provides a partial—and, as this article will show, somewhat misleading—picture of newspapers' performance in a multiplatform environment.

Reach is a measure of whether someone has been exposed to a media brand but tells us nothing about how profound that exposure was. An audience member may have read a newspaper or visited a website, but how long did they spend with the brand that day, week, or month? And what impact did that exposure have? These questions of engagement and influence are becoming recognised as important additional, or even alternative, audience metrics. For example:

- The UK's media regulator, Ofcom, believes that "share of consumption is a good proxy for measuring the ability to influence in the news media market" (Ofcom 2015b, 11) and suggests that share be "calculated from *time spent* for each platform as measured by the industry measurement systems" (Ofcom 2015a, 5, emphasis added).
- In May 2015 the *Financial Times* announced a "new time-based system" for trading its advertising inventory and believes that "time-based metrics will benefit publishers" because they value "quality content over quantity, or real reader engagement over clicks" (FT.com 2015).
- The online publishing platform Medium, developed by Twitter's co-founder Ev Williams, uses "total time reading" as its "top-line metric" because, Williams says, it's "dumb" to try to measure the size or success of a website or app simply based on the "number of people who have 'used' it" over a given time period (Williams 2015).

This article responds to these developments by attempting to calculate the share of consumption achieved by national newspapers in the UK. This will be achieved, in line with Ofcom's recommendations, by analysing time spent on each platform (print, PC, and mobile) using standard industry measurement systems. The results will:

- allow for an assessment of how much audience attention newspapers' print, PC, and mobile channels attract and how that attention is distributed geographically; and
- help to assess the relative levels of influence the various UK national newspapers bring to bear on the news media market.

This article is an elaboration of a previous study the author conducted using data from 2011 (Thurman 2014). In addition to using more recent data (from 2015–16) there are three other important differences between the two studies:

- The availability of PADD removes the need to elaborate the earlier study's analysis of multiplatform reach.
- The internet audience data is supplied by comScore rather than Nielsen.[9]
- Data on the consumption of newspapers' mobile apps as well as website browsing from mobile devices is accounted for in this study. Such data was not available from any single source when the last study was conducted. Its addition represents a major advance in the accuracy of estimates of time spent with newspaper brands online.

This study's methodological approach and data sources are similar to PADD's. Data on newspapers' print audiences from the NRS and ABC is combined with online audience data from comScore. However, there are two important differences. Firstly, the main research question relates to newspaper brands' engagement with their audience (as measured by time spent) rather than their reach, and secondly, an attempt has been made to account for overseas readers and visitors (PADD focuses solely on British audiences). This was considered important because many UK national newspapers receive a majority of their monthly online visitors from outside the UK (see table 2).

Sample Selection and Titling

For the purposes of this study, national newspapers are considered to be popular, general interest daily or weekly newspapers appealing to a broad demographic and widely distributed in print and online formats in a British national market (England, Scotland, Wales, or the whole of Great Britain). In order to be included in the study, data on a national newspaper's print readership had to

be available via the NRS (this resulted in the exclusion of the *Western Mail* and the *Financial Times*). *The Independent* was also excluded because it ceased producing a print edition on 26 March 2016, during this study's sampling window. The *i* newspaper was excluded because it did not have its own separate website until 14 April 2016 (Johnston Press 2016)—after the sampling window closed. The *Sunday People*—a Sunday tabloid newspaper owned by Trinity Mirror Group—was excluded because it does not have its own separate website. These exclusions left 11 British national newspaper brands in the sample.

All the national newspapers included in the final sample publish a Monday–Saturday print edition, a Sunday edition, and online editions including websites and mobile apps. For example, what will be referred to as *The Guardian* is a newspaper brand made up of:

- *The Guardian*—the Monday–Saturday print edition,
- *The Observer*—the Sunday print edition,
- TheGuardian.com family of websites, and
- various mobile apps including "The Guardian app" and "The Guardian daily edition" app for tablets.

While it is straightforward to refer to newspaper brands' print editions, which have long-established titles, referring to their online editions is more difficult because of the range of websites and mobile apps involved. For this reason a single collective noun has been used to refer to each newspaper brand's various online editions, for example "Times Online" or "Telegraph.co.uk". For simplicity these collective nouns have been taken from comScore's "Dictionary", which the measurement company use to model the structure of the online "entities" they gather audience data about. The 11 newspaper brands that make up this study's sample—and the names used to refer to their various print and online editions and the brand as a whole—are listed in table 1.

Although their various print and online editions may have separate newsrooms, each newspaper brand included in this study's sample is a coherent entity as far as audiences are concerned, and also in terms of its business operations: for example, on its advertising website *The Telegraph* describes itself as a "fully integrated … multiplatform media group" offering newspapers, a website, and mobile channels as an "ideal solution to your advertising needs" (Telegraph n.d.).

TABLE 1
The sample of national newspapers used in this study

Brand	Monday–Saturday print edition	Sunday print edition	Collective noun for brands' online editions[1]
The Mail	*Daily Mail*	*The Mail on Sunday*	DailyMail.co.uk
The Sun	*The Sun*	*The Sun on Sunday*	The Sun Online
The Telegraph	*The Daily Telegraph*	*The Sunday Telegraph*	Telegraph.co.uk
Mirror	*Daily Mirror*	*Sunday Mirror*	Mirror Online
The Times	*The Times*	*The Sunday Times*	Times Online
The Guardian	*The Guardian*	*The Observer*	TheGuardian.com
Express	*Daily Express*	*Sunday Express*	Express.co.uk
Star	*Daily Star*	*Daily Star Sunday*	DailyStar.co.uk
Record	*Daily Record*	*Sunday Mail* (Scotland[2])	Dailyrecord.co.uk
The Herald	*The Herald*	*Sunday Herald*	HeraldScotland.com
The Scotsman	*The Scotsman*	*Scotland on Sunday*	Scotsman.com Network

[1] Taken from comScore's "Dictionary".
[2] Used to distinguish this title from *The Mail on Sunday*.

Methodology

Data Sources

This study relies on "time-spent-reading" and "reader-per-copy" data about newspapers' print editions from the NRS, and print circulation data from the ABC. It also uses data from the ABC on the number of unique users/browsers and page impressions registered by newspapers' websites and mobile apps. These data sources were used in the author's earlier study (Thurman 2014) and a full discussion of how this data is collected and its limitations are provided in that article and its methodological appendix. However, for convenience, it will be noted here that the NRS collect "time-spent-reading" data via a large-scale (n=33,000) representative survey of British adults. The survey is conducted face-to-face and asks "how long do you usually spend in total reading or looking at [the publication] by the time you've finished with it, including all the times you look at it and all the parts and sections?" (NRS 2015). Because the survey relies on recall there is a possibility that respondents will over- or under-estimate the time they spend with printed newspapers.

Data from comScore is used for the first time, which necessitates a description and evaluation of its methodology. To gather internet audience data, comScore use a methodology that integrates "person-centric data collection from a sample of … panelists, with server-centric census data" collected from "tags" placed on websites or mobile apps by publishers (comScore 2013). These tags are able to track activity, such as webpage views, video plays, or interactions with mobile apps. Publishers are able to place tags on their content via a "self-service interface" (ibid.) and view the data collected in order to check its completeness, although the extent of tagging varies between publishers and across platforms.

Panellists' internet use is tracked by software that resides on their computer or mobile device and the panels are "weighted and projected" (ibid.) in an attempt to make them representative of the entire population of internet users, both at home and at work. The composition of that population, in terms of demography and other variables, is estimated by the use of a telephone survey. Panellists are recruited via the internet, and monetary incentives are generally not offered to avoid skewing the panel. Non-monetary incentives, such as software, are, however, regularly provided. The software used to monitor panellists' internet use can access all internet traffic as well as detect, for example, whether a device is idle and which application or browser tab is active. In the UK, comScore have separate panels to track internet use from personal computers (PCs) and mobile devices.[10] The panel of PC users is "just over 72,000 people", the panel of iOS and Android smartphone users is 5,000, and the panel of iOS tablet users numbers 1,000 (Daniel Parsons, personal communication, 27 July 2016). There is no panel of Android tablet users.

Where possible, the panel and census (tagging) data is integrated to provide "more accurate estimates" of, for example, "the true number of unique persons or users visiting web entities" (ibid.). Where a website or app is not tagged, comScore rely on panellists to track usage. However, with "only" 1,000 iOS tablet panellists and 5,000 iOS and Android smartphone panellists, some relatively lightly used apps will not be observed in use or meet the minimum reporting standard.[11] This was the case, during this study's data collection period, for *The Times*'s mobile apps (understandable because they are behind a paywall) and also for the *Express*'s mobile app.

Data on the mobile consumption of websites and apps has been extremely limited, with comScore's Mobile Metrix® data only available since January 2015. It was the first continuous, comprehensive, and representative data set to become available. Despite being a huge step forward, it does, like any data set, have limitations:

- Online consumption from mobile platforms other than iOS and Android is not tracked. As explained in the methodological appendix, the exclusion of these other mobile platforms (such as Windows 10, Blackberry, and Kindle) is considered to have had little effect on this study's results because of their low user-base.
- The usage of some newspaper brands' iOS and Android apps is not tracked. Although some of these are legacy apps that are no longer supported, or niche apps (such as the *Mirror*'s "Bingo" app and the *Record*'s "Football" app), three newspapers have none of their apps tracked: *The Telegraph*, *The Herald*, and *The Scotsman*. As a consequence, this study's results underestimate the audience attention these three newspaper brands receive from mobile devices. It should be noted, however, that the browsing of these brands' websites from mobile devices *is* counted. Further details are given in the methodological appendix.

In addition to these limitations, inherent to the comScore data, this study was not able to access the data that comScore has about time spent watching video on mobile devices. As is discussed in the methodological appendix, evidence suggests that the omission of time spent viewing videos via mobile devices is likely to have had a relatively minor effect on this study's results.

Calculations

To estimate the total time, over a 12-month period, that British audiences spend reading each newspaper brand's print editions, data from the NRS and ABC was used. The NRS provided both the minutes of daily reading time (per person) and the daily readership figures for: the weekday (Monday to Friday), Saturday, and Sunday print editions, averaged over a 12-month period. The NRS calculate average daily readership figures by multiplying circulation by the number of readers per copy. The NRS collect readers-per-copy data from their own survey. Circulation figures come via the ABC. The following formula was used and applied to each newspaper brand's print editions to give the total print time spent reading over a 12-month period:

$$(a \times b \times c) + (d \times e \times f) + (g \times h \times i)$$

Where:

- a = The number of weekdays between April 2015 and March 2016 (from here on "the period").
- b = The average number of readers on a weekday.
- c = The average minutes of reading time per reader on a weekday.
- d = The number of Saturdays in the period.
- e = The average number of readers on a Saturday.
- f = The average minutes of reading time per reader on a Saturday.
- g = The number of Sundays in the period.
- h = The average number of readers on a Sunday.
- i = The average minutes of reading time per reader on a Sunday.

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Because no newspapers are printed on Christmas Day, Friday, 25 December 2015 was not included in (a). The NRS readership and time-spent-reading data covered readers aged 15+, whereas the comScore data on mobile usage also used in this study only covers those aged 18+. To make possible the combining of the data sets, an adjustment was made to the NRS data to remove the reading time of print readers aged 15, 16, and 17. Further details are provided in the methodological appendix.

In order to calculate the online (PC and mobile) reading time, data from comScore was used. Two data sets were consulted, MMX® Multi-Platform (MMX MP) and Mobile Metrix®. MMX MP provided, for each month of the study period, the total number of minutes audiences in the UK spent with the online editions of each newspaper brand. MMX MP includes time spent accessing brands' websites from PCs and mobile devices and the time spent using brands' mobile apps on iPhones, iPads, Android phones, and Android tablet computers. MMX MP also provided time spent watching videos from PCs, although not from mobile devices.[12] Mobile Metrix® provided the time spent accessing brands' websites and mobile apps from iPhones, iPads, Android phones, and Android tablet computers (although time spent watching video is not counted). The following formula was used and applied to the comScore online consumption data for each newspaper brand:

$$x - y = z$$

Where:

- x = The total number of usage minutes between April 2015 and March 2016 (from here on "the period") from MMX MP.
- y = The total number of usage minutes from mobile devices during the period (data from Mobile Metrix®).
- z = The total number of usage minutes from personal computers during the period.

The y and z variables are reported in the results section for each newspaper brand.

Because comScore's MMX MP and Mobile Metrix® data covers the entire adult population of the United Kingdom it did not, initially, match the coverage of the NRS data (which is Great Britain only with Northern Ireland excluded). In order that the comScore and NRS data sets could be combined, an adjustment was made to the comScore data to remove the time spent by Northern Irish users. Further details are provided in the methodological appendix.

Overseas Audiences

The results presented in figure 1 focus on newspaper brands' British audiences only, excluding reading time from print and online readers overseas. The primary reason for this is data limitations: the NRS provides no data on readers per copy or time spent reading for print readers outside Great Britain, and the data secured from comScore related only to the UK online audience.[13] This study's primary focus on British audiences, although driven by methodological limitations, does correspond to where newspaper brands' main commercial interests lie. For example:

- UK-based visitors to DailyMail.co.uk view over 400 per cent more pages per month than overseas visitors (Thurman, Cornia, and Kunert 2016).
- In a study of 28 US newspaper websites, Chyi and Sylvie (2010) found that "local" users were more interested in seeing, and more likely to visit, classified ads sections than were "long-distance" users.
- The Newspaper Association of America reported that "local advertising accounts for 90% or more of online newspaper revenue" (Chyi et al. 2010).

This said, newspaper brands in the UK, and elsewhere, have suffered from falls in the attention they receive from their national audiences (Thurman 2014) and, since going online, have been able to reach international audiences as never before. For example, in July 2001 when *The Mail* was only available in printed form,[14] 4 per cent of its print circulation was outside the UK (ABC 2001). By May 2016 it was receiving a majority—71 per cent—of its unique online browsers from overseas, a phenomenon found at other UK national newspaper brands (see table 2). Indeed, a 2015 survey of UK journalists found that 30 per cent of those working for UK national newspapers (n = 125) believed the main news outlet they worked for had a "transnational" rather than "national" reach (Thurman, Cornia, and Kunert 2016).

TABLE 2: Proportion of the unique browsers served by four UK national newspapers' online editions that come from outside the UK, May 2016

	Unique browsers from outside the UK (%)
DailyMail.co.uk	71
TheGuardian.com	69
Telegraph.co.uk	57
Mirror Online[1]	54

Source: ABC.
[1] Data also includes Dailyrecord.co.uk and www.irishmirror.ie.

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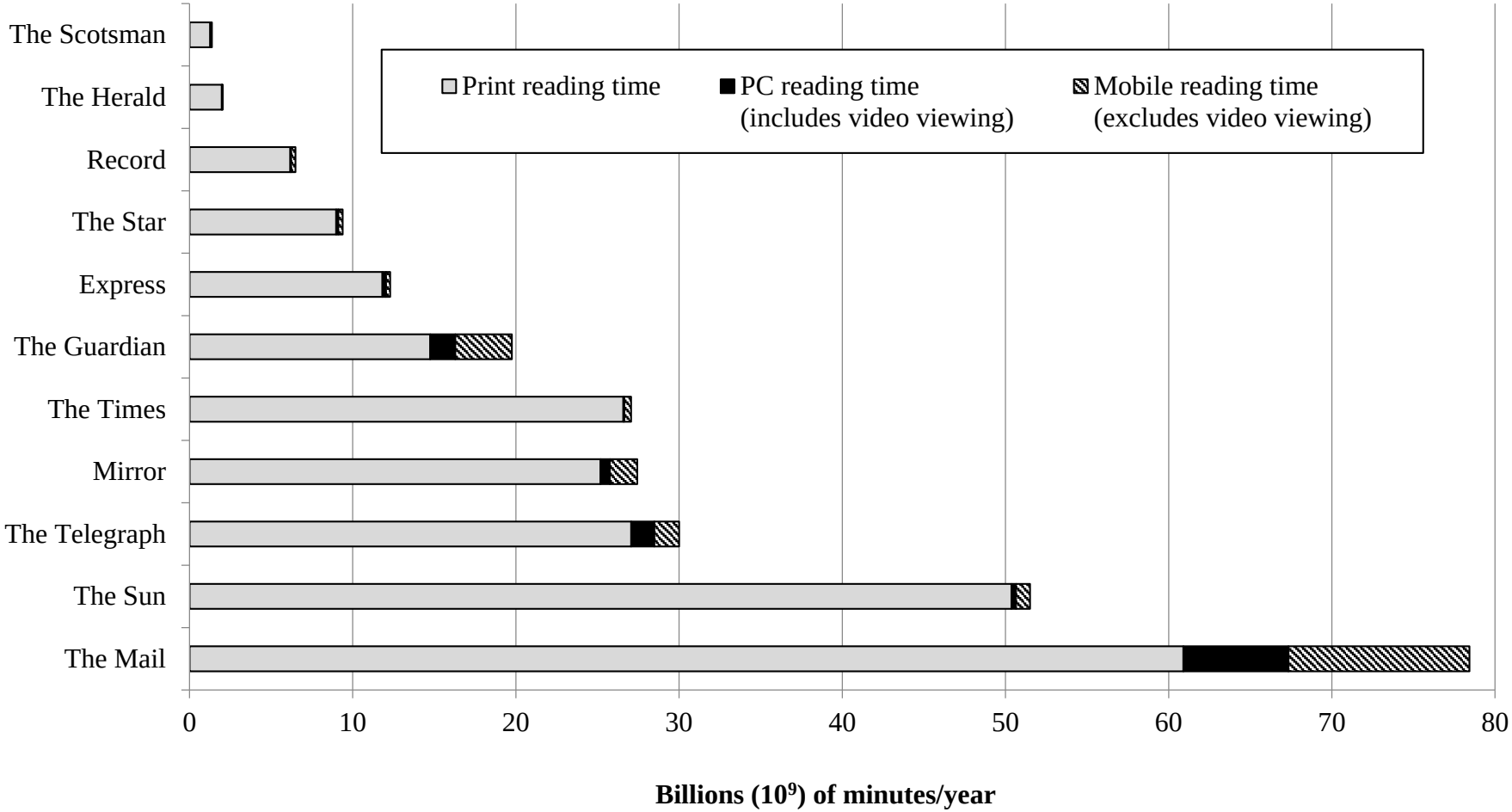
Figure 1: Estimated total minutes spent reading by the aggregated British print, PC, and mobile readerships of each of 11 British national newspaper brands, April 2015–March 2016 (inclusive)



Although, as has been discussed, overseas audience members could be considered to be—individually—less valuable than their domestic equivalents, they may still have value to news brands in aggregate. Indeed, Chyi and Sylvie (2001) have suggested that the "long-distance" online readers are a "substantial sub-market" for newspaper brands. Although it was not possible to estimate the time spent by overseas audiences using the same method used for British audiences, other methods have been used. Although not as precise, they do provide a useful estimation of how much time overseas audiences spend with newspaper brands. Further details are given in the methodological appendix.

Results

The Continued Importance of the Print Channel

The results show how important the print channel continues to be for UK national newspaper brands. Of the time spent with newspaper brands by their British audiences, 88.5 per cent is still in print with just 11.5 per cent online (see figure 1). There is some variation (SD=8), however, within this average. If we exclude *The Mail* and *The Guardian* (whose audiences spend 77.6 per cent and 74.7 per cent respectively with their print editions), the other nine newspaper brands in the sample rely on the print channel for over 95 per cent of the attention they receive

Looking at newspaper consumption through the lens of reading time reveals a very different picture from that drawn by the traditional reporting measures—print readership and online visitor numbers—where the wide reach of online channels disguises the relatively shallow engagement they inspire. The stark difference in engagement is vividly illustrated by the fact that UK national newspaper brands engage each of their online visitors for an average of less than 30 seconds a day, but their print readers for an average of 40 minutes (see table 3).

TABLE 3
Comparison of the time spent per day by online and print readers of 11 UK national newspaper brands

	Minutes	
	Online usage per visitor per day[1]	Print reading time per reader per day[2]
The Mail	2.00	43
The Guardian	0.68	39
The Sun	0.67	32
Mirror	0.35	37
Record	0.32	31
The Times	0.29	47
The Telegraph	0.29	53
Star	0.26	31
Express	0.20	39
The Scotsman	0.16	38
The Herald	0.15	50
Average	**0.49**	**40**

[1] Includes PC and mobile usage. The monthly figure for March 2016 (provided by comScore) was divided by 31 to arrive at an approximate daily figure. Data is for the UK audience. Numbers represent whole or fractions of minutes, not minutes and seconds.

[2] Source: NRS. Based on reading time for Monday–Friday editions (which is lower than for Saturday and Sunday editions). Data is an average for the period April 2015–March 2016 and for Great Britain.

More Engagement Via Mobile Devices Than PCs

The results also illustrate the growth in importance of the mobile channel in relation to personal computers (desktop and laptop computers). Consumption from mobile devices accounts for, on average, 7.49 per cent of the time British audiences spend with national newspaper brands against 4.05 per cent for consumption from PCs (see figure 1). This result is in line with online content consumption patterns more widely—comScore data shows that nearly 60 per cent of online dwell time is via mobile channels.[15] Again, however, there are variations (SD=5.36) between newspaper brands in the proportion of reading that comes from their mobile channels. *The Guardian* and *The Mail* once more stand out with a relatively high proportion, 17.5 per cent and 14 per cent respectively, while the other newspaper brands average 3.25 per cent.

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Shifts in Brands' Relative Popularity

Looking at the results we can see how focusing on a measure of engagement rather than simple reach changes the established hierarchy of newspaper popularity. Figures 2 and 3 allow a comparison to be made between the numbers of readers newspaper brands reach and the levels of engagement (as measured by reading time) they attract. By the new measure of reading time, *The Mail* remains the most popular title and *The Scotsman* the least. There is a minor positive change in position for *The Telegraph* and minor negative changes in positions for the *Mirror*, the *Express*, and the *Star*. There are, however, more dramatic changes for *The Guardian*, which moves down from second place to sixth, and for *The Sun* and *The Times*, which both move up three places. The data also allows us to look beyond how the time-spent metric changes the numerical position of newspaper brands in a popularity list. By plotting on continuous scales their audience reach and the engagement they attract, we are able to see how the engagement that newspaper brands attract fits well to a logarithmic distribution pattern with large differences between the most successful newspaper brands—such as *The Mail* and *The Sun*—and the least—such as the *Star* and the *Express* (see figure 2).

This pattern has been found in other studies of how humans allocate their interest or make selections. For example, Radicchi, Fortunato, and Castellano (2008) found that the success of scientific publications, as measured by the relative number of citations they receive, also follows a log-normal distribution. And another study, by two of the same authors, showed that the same pattern applies to how votes are cast in proportional elections. Fortunato and Castellano (2007) posited an underlying mechanism of social influence and suggested that the same mechanism could explain "other instances of collective social dynamics, such as the spreading of news … and the diffusion of … products".

By contrast, the varying monthly reach that newspaper brands achieve is distributed in a more linear fashion, with less pronounced difference between newspapers (see figure 3). This is to be expected given the relative ease with which an individual is counted as having been "reached" by a newspaper in a given month (they merely have to have either read or looked at the print edition for at least two minutes [NRS n.d.-d], whether or not they paid for the newspaper themselves, or to have visited one of its web or mobile editions for any length of time).

The Discussion section more fully elaborates on how measuring media consumption by time spent rather than reach has implications for the assessment and regulation of media plurality.

FIGURE 2: Distribution of annual multiplatform (print, PC, and mobile) reading time (in minutes) attracted by 11 UK national newspapers, April 2015–March 2016 (inclusive)

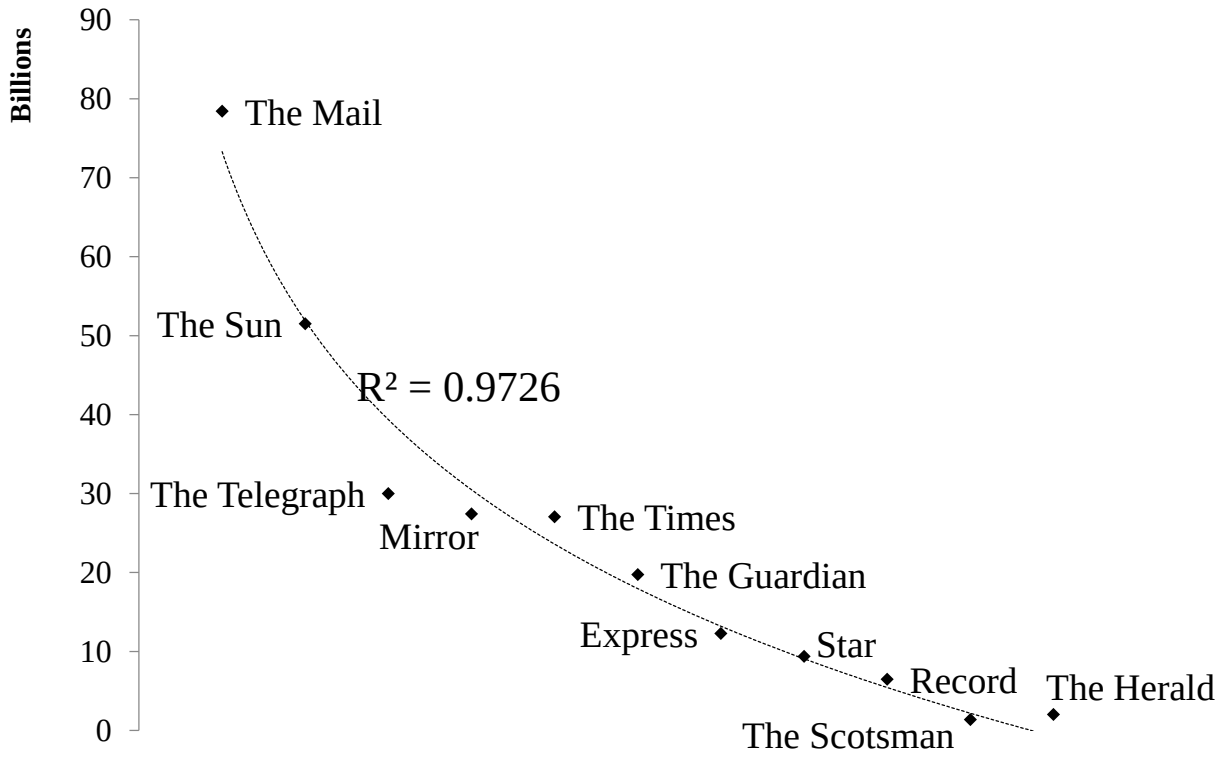

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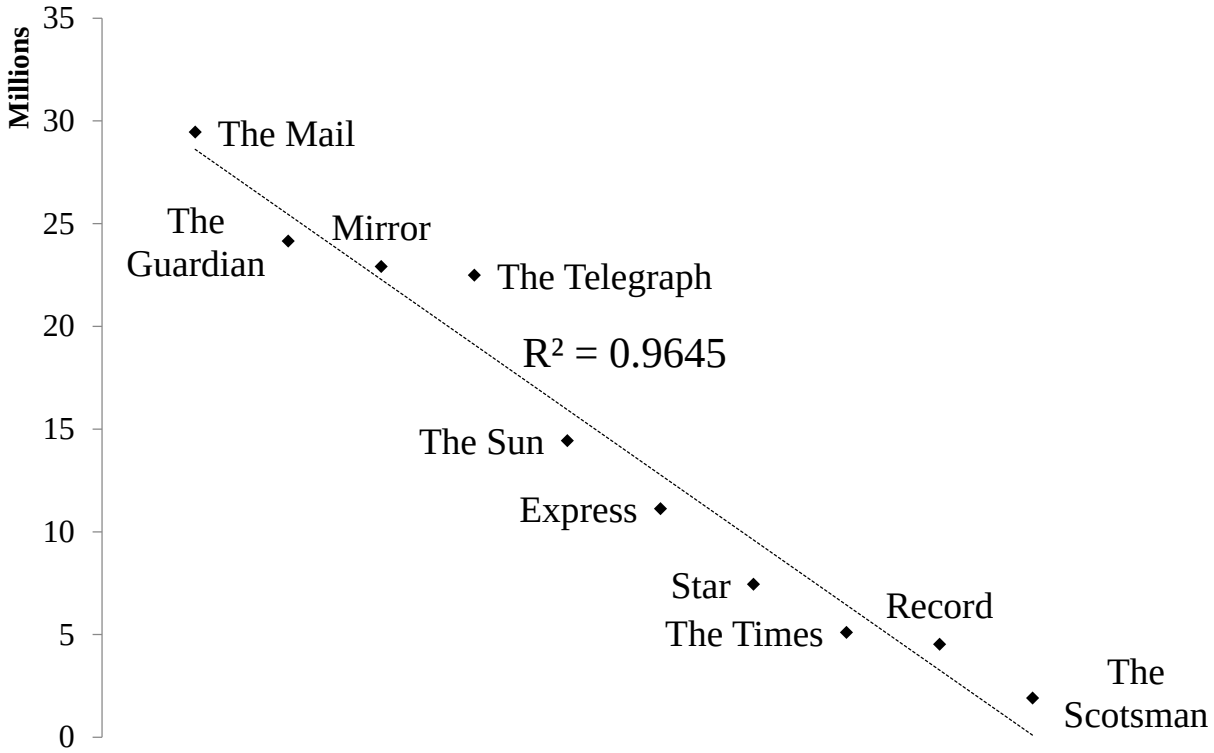
FIGURE 3: Distribution of the monthly deduplicated multiplatform (print, PC, and mobile) reach (readers per month) of 10 UK national newspaper brands



Finding an Audience Online

DailyMail.co.uk dwarfs the other newspaper brands with its success online, attracting more than three and a half times the annual online reading time of its closest rival, TheGuardian.com (see figure 1). However, *The Guardian*'s success online is noteworthy given its relatively small print readership. Indeed, if we look at online reading as a proportion of total reading time, *The Guardian* has the highest proportion, at 25 per cent, followed closely by *The Mail*. The other newspapers trail with less than 10 per cent (see table 4). The low proportion (1.7 per cent) at *The Times* is due to the paywall, which, when introduced, resulted in a 90 per cent reduction in online readers (Halliday 2010). The relatively low proportion of online traffic at *The Sun* is also influenced by their paywall, which was in place for eight of the twelve months of this study's sampling window (Sweney 2015).

TABLE 4
Proportion of total annual time spent with UK newspaper brands by their British audiences that comes via their online (PC and mobile) editions—as opposed to print

	%
The Guardian	25.3
The Mail	22.4
The Telegraph	9.8
Mirror	8.2
The Scotsman	7.2
Record	4.8
Star	4.2
Express	3.8
The Herald	2.8
The Sun	2.2
The Times	1.7

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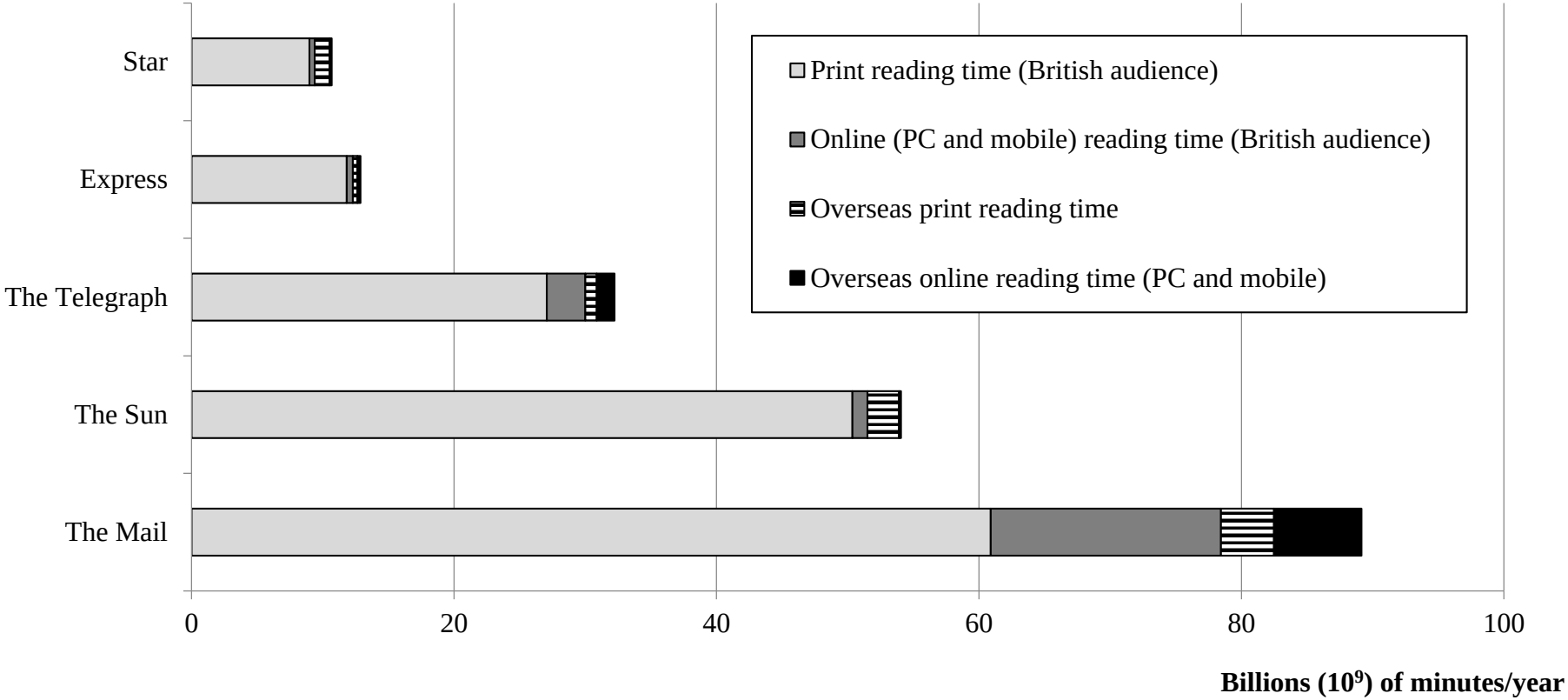
http://www.tandfonline.com/doi/abs/10.1080/1461670X.2017.1279028?journalCode=rjos20

FIGURE 4: Estimated total minutes spent reading by the aggregated British and overseas print and online readerships of each of five UK national newspapers, April 2015–March 2016 (inclusive)



Overseas Reading

The results show that, for the five newspapers about which data was available, more reading time (an average of 4.42 per cent of the total) was contributed by overseas print readers than overseas online visitors (4.3 per cent). When overseas reading is factored in, newspapers' print editions still represent 84 per cent of total reading time against 16 per cent for online. There were, of course, some differences between the newspaper brands, with the *Star* having a relatively high proportion of its reading time contributed by its overseas print readers (10.5 per cent) due to its high circulation in the Republic of Ireland, and *The Mail* and *The Telegraph* getting higher proportions of reading time (7.48 per cent and 4.19 per cent respectively) from overseas online visitors than *The Sun*, the *Express*, and the *Star* (see figure 4).

Discussion

This article has built on my earlier study (Thurman 2014) by incorporating newly available data on the consumption of newspaper brands via mobile devices, in particular via apps. The results are novel, showing the time audiences spend, in aggregate, on each of newspaper brands' main platforms: print, PC, and mobile. The UK's media regulator, Ofcom, believes that time spent is a good measure of "share of consumption" in the news media market (Ofcom 2015a, 5) and that if legislators wanted to "limit the amount of influence" exercised by any one newspaper proprietor, then setting "an absolute limit on market share" would be one way of doing so (Ofcom 2012). There has been much debate about whether any such limits should be imposed and, if so, what they should be, with various proposals aired at recent enquiries into media plurality in the UK. For example, the former leader of the British Labour Party, Ed Miliband, advocated a limit of between 20 per cent and 30 per cent (House of Lords 2013, 17), the UK's National Union of Journalists (NUJ) proposed 25 per cent (ibid., 639), and the campaign group Avaaz called for a lower ceiling of 20 per cent (ibid., 4).

This article shows that the share of consumption of UK national newspaper brands is less evenly distributed than previously thought. *The Mail* has over 50 per cent more share than its nearest rival—*The Sun*—which, in turn, has over 70 per cent more share than its closest competitor, *The Telegraph* (see figure 1). Indeed, *The Mail* has close to a 30 per cent share of the UK national newspaper market.

Although this new data can, and should, inform debates on, and the regulation of, media plurality, the speed of change in the media market and the slow gestation of new legislation means that calculations like those performed for this study need to be repeated at regular intervals. There are, however, no signs that this will happen, in the UK at least, via the industry's current state-of-the-art measurement system, PADD, or via its successor, AMP. Although, as this study has proved, there are no significant methodological impediments to reporting time spent across newspapers' various platforms, some of the "funding stakeholders"[16] in PADD and AMP may feel there are good commercial reasons not to.

Firstly, there is often reluctance to move to a new audience currency, even if it is demonstrably better, because of the upheaval it causes to both the buyers (advertisers) and the sellers (media outlets) of audiences (Napoli 2003, 19–20). Secondly, and as is further discussed below, the metric of time spent reveals an inconvenient truth about newspapers' online experiments. So, with the likely absence of regular data from the industry on share of consumption, intervention is required, perhaps from regulators, in order that legislators and other stakeholders in the media market can be properly informed.

In addition to the information this study provides about overall share of consumption, what conclusions should be drawn from its findings on the distribution of audience attention across newspaper brands' print and online platforms? Some of the results confirm relatively well-known phenomena: how mobile devices have overtaken PCs as the preferred means of accessing newspaper brands online; and how, online, the differences between the most and least engaging national newspaper brands are far greater than in print.

However, this article's other results are likely to surprise many, prompting questions about how newspapers allocate resources across their various content delivery platforms, and also about the wisdom of their expansion into new geographical markets. Although newspapers have spent decades investing in digital distribution, their online channels are not attracting anywhere near the levels of attention commanded by their print editions, even though those print editions have been suffering falls in circulation for decades and are offered at a premium price.

Iris Chyi sees newspapers as "stuck between a failing experiment with digital and a shrinking market for print", which she blames on both wider structural issues—the "many more sources [that] are providing news and entertainment"—and on decisions made by newspaper publishers. She criticises a "groupthink" mentality, not adequately informed by empirical research, which resulted in an emphasis on "delivery technology over quality content" (quoted in Vasquez [2015]).

That news in print is still preferred over versions available online says much about the inherent qualities of paper as a reading medium. Compared with most of the screens used to consume news online, newsprint has the physical advantages of better resolution, absence of flicker, and a contrast ratio that improves in strong ambient light (try reading news on your smartphone outside on a bright day). Added to that, its tangibility, Chyi and Tenenboim (2016, 17) suggest, may be another reason why information presented on paper makes deeper impressions (see, for example, Mangen and Kuiken [2014]) and is more easily recalled (see, for example, Mangen et al. [2014]). Newspapers have spent two centuries refining a design grammar that best exploits newsprint's physical properties, giving readers, writes Jack Shafer (2016), "subtle clues on what and how to read to satisfy their

news needs". Shafer also believes print's offline nature encourages prolonged attention—readers cannot click on a succession of links until they feel, in Shafer's words, like they are "tumbling through cyberspace like a marooned astronaut" (ibid.).

Can qualities like these, that make newsprint so much more engaging than online journalism, be harnessed to propel a reading resurgence? Without radical change of some sort, newspapers' decline will continue and, given their place as a key source of new information entering the public sphere (Pew 2010), that decline has important social, cultural, and political consequences.

Limitations and Future Studies

When calculating the attention newspaper brands attract, this study focused on their print, PC, and mobile platforms using industry-standard data. In its assessment of online—PC and mobile—platforms, it looked at the traffic newspaper brands pull to their own websites and mobile apps. Newspaper brands also "push" some of their content out via email newsletters, SMS alerts, social media platforms, RSS feeds, and even messaging services such as WhatsApp. Some of their content may also appear on aggregating websites and apps like Google News and Flipboard. Although news publishers' primary motivation in pushing content out is to get those who receive or view it to click the embedded links, bringing them back to the publishers' own outlets, many do not. For example, click-through rates for tweets are typically just 1–2 per cent (see, for example, Thompson [2015] and Ritson [2015]). This study did not account for the time readers of newspaper brands spend viewing this externally displayed content, which, although not usually monetised, does increase the time audiences spend exposed to newspapers' branding and viewing their content. Although most of the content that newspaper brands push to social media channels is abridged (typically comprising a headline, a photo, and a few lines of text), there are some exceptions, for example Facebook's "Instant Articles". Using "Instant Articles", publishers can host their content on Facebook's servers. The benefit to publishers, so Facebook claim, is a better user experience with faster load-times and a share of the revenue from the advertising displayed around that content (Facebook n.d.). Examining the time spent with these various external digital channels would provide a more complete picture of audiences' engagement with newspaper brands online.

Although UK national newspapers made up the sample used in this study, the data exists for the same method to be applied more widely, for example to magazine brands.

NOTES

1. In the UK, RAJAR (est. 1992) is the official body in charge of measuring radio audiences; BARB (est. 1981) provides official viewing figures for TV; and ROUTE (previously called Postar, est. 1996) produces audience estimates for out-of-home media. Their equivalents worldwide are usefully summarised in EMRO (2016).

2. Although there is a single official body—JICWEBS—that oversees the development of internet audience measurement standards in the UK.

3. For example, one of the first radio news programmes was broadcast by a station, 8MK, owned by the *Detroit News*, an E.W. Scripps newspaper (Abell 2010).

4. Expressed, for example, as "average issue readership" for print newspapers and magazines and "unique visitors" or "unique browsers" for websites and mobile apps.

5. Dividing monthly unique visitor numbers to a website by the number of days in the month does not give the number of daily online unique visitors because some audience members visit on more than one day per month. For similar reasons, multiplying the average issue readership of a daily print publication by the number of days in the month does not give the number of individual monthly readers because some readers consume the same print publication on more than one day per month.

6. By the end of 2017 or in early 2018 a variation of PADD (to be renamed AMP, Audience Measurement for Publishers) will supersede the National Readership Survey under the auspices of a new organisation, the Publishers Audience Measurement Company or PAMCo (AMP 2016).

7. *The Daily Telegraph*, *The Guardian*, *i*, *The Times*, *Daily Express*, *Daily Mail*, *Daily Mirror*, *Daily Record*, *Daily Star*, and *The Sun* for the period July 2015 to June 2016.

8. Usage of mobile apps and browsing from mobile devices is not counted by PADD in their calculations of daily reach.

9. At the time of writing (October 2016) comScore is the official supplier of online audience data to the NRS and the official data partner of the UK Online Measurement company—UKOM—which sets the standards for online audience measurement on behalf of UK online publishers and advertisers.

10. Personal computers (PCs) include both desktop and laptop machines, although comScore refer to their PC panel as the 'desktop' panel.

11. One study showed that smartphone users use just 25 different apps per month, and spend 78 per cent of the time using just three of those apps (comScore 2015, 22).

12. Although that data is available, it was not part of the subscription package utilised for this study.

13. Online consumption in 75 countries is reported on by comScore (comScore 2016) and, although those 75 countries are likely to represent the vast majority of digital audience activity, this leaves approximately 121 countries for which comScore gather no data on internet usage.

14. MailOnline launched in 2003, although prior to that date a site for women existed at www.femail.co.uk.

15. Data from September 2015 for the UK audience aged 18 years and older. Video viewing on mobile devices excluded from the analysis.

16. The News Media Association, which represents news brands; the Professional Publishers Association, representing the Magazine sector; and the Institute of Practitioners in Advertising (NRS n.d.-e).

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The Version of Record of this manuscript has been published and is available in *Journalism Studies*
http://www.tandfonline.com/doi/abs/10.1080/1461670X.2017.1279028?journalCode=rjos20

METHODOLOGICAL APPENDIX

Exclusion of Non-iOS/Non-Android Apps from comScore Mobile Metrix®

The Mobile Metrix® data set produced by comScore tracks online consumption from iOS and Android smartphone and tablet users, but other mobile platforms do, of course, exist. For example, TheGuardian.com have a version of their mobile app for Windows 10 phones. The usage of such apps is not recorded by Mobile Metrix® and is, therefore, absent from this study's results. Although missing, the usage of apps on platforms other than Android and iOS is very light and their non-inclusion has little effect on this study's results. For example, in newspaper brands' self-reporting of their online audience via the ABC, only one brand—DailyMail.co.uk—reported *any* traffic from a non-iOS/non-Android app during the study period: their Windows app, which, in March 2016, represented just 0.3 per cent of the newspaper brand's total monthly app page impressions (ABC 2016).

Comprehensiveness of Mobile Apps Tracked by comScore Mobile Metrix®

A second possible limitation of the Mobile Metrix® data is that not all of the iOS and Android apps that news brands make available in the Apple App Store or on Google Play may be tracked. In order for their usage to be recorded, a news brand's apps need to be listed in comScore's "Client Focus Dictionary". Comparing the entries listed in comScore's Dictionary with the apps that newspaper brands make available reveals that three newspapers had no apps listed: *The Telegraph*, *The Herald*, and *The Scotsman*. As a consequence, this study's results underestimate the usage of these three newspaper brands from mobile devices. It should be noted, however, that the browsing of these brands' websites from mobile devices is counted. Additionally, football and bingo apps from the *Mirror*, a football app from the *Record*, and an app—"Mail Plus"—from *The Mail* are unlisted, with the result that there could, theoretically, be some under-reporting of the mobile audience for these newspaper brands from mobile devices.

However, some unlisted apps, although still available in the App Store or at Google Play, may be legacy products, no longer supported or widely used. To check this, data from the ABC was consulted to see whether news brands were reporting any mobile traffic from these unlisted or non-reportable apps. Checking all relevant ABC reports from the start of this study's sampling window until May 2016 shows that most newspaper brands either do not break out usage of mobile apps from other forms of online traffic or, if they do, do not report traffic to particular apps separately. It was possible, however, to compare newspaper brands' own reports of their mobile app traffic with the comScore data used by this study for *The Mail*. In May 2016 DailyMail.co.uk reported 2,893,651 worldwide (UK and rest of the world) app unique browsers via the ABC. Given that we know DailyMail.co.uk gets 71 per cent of its total unique browsers (web and mobile) from outside the UK, comScore's figure for unique app visitors from the UK (1,965,000) is in line with expectations. So, in this one case at least, "Mail Plus" appears to be a legacy app with no significant traffic, meaning its unlisted status has no effect on this study's results.

Exclusion of Mobile Video Viewing from the Study

This study was not able to access the data that comScore's Mobile Metrix® has about time spent watching video on mobile devices. This is an omission worth exploring for two reasons. Firstly, newspapers' websites and apps have included video content for some time, with, in the UK, notable increases from 2007 onwards (Reevell 2007). Secondly, the popularity of watching video on mobile devices is increasing. For example, a 2014 diary study of 1,644 UK adults aged 16+ found that 11 per cent of respondents watched video on a tablet computer and 7 per cent watched video on a smartphone (compared with 14 per cent for laptops and 13 per cent for desktop computers) (Ofcom 2014). How significant, then, might this study's omission of video viewing on mobile devices be? Returning to the Ofcom diary study, we can see that those watching video on tablet computers only spent 3.9 minutes per week watching "short online video clips" of the type published by "news sites" (the figure was 5.4 minutes for smartphone users), and because short online video clips include those on YouTube and social networking sites (Ofcom 2014, 39), the average time spent watching video on newspaper brands' online editions is likely to be very short.

Other data also points to low levels of consumption of news-related video from mobile devices. Of the 2,024 regular online news consumers in the UK surveyed by YouGov for the *2016 Reuters Institute Digital News Report*, only 24 per cent said they watch online news video *at all*, and did so "mostly" via news brands (as opposed to social networks), and "mostly" on a mobile device (Reuters Institute/YouGov 2016). When asked about their behaviour in the previous week, even fewer—22 per cent—said they had viewed an online news video *on any device* (Kalogeropoulos, Cherubini, and Newman 2016, 10).

Triangulating this survey data with audience metrics data from news brands confirms that online news consumers spend relatively little time consuming online news video. Using data from 30 news publishers, Kalogeropoulos, Cherubini, and Newman (2016) found that just 2.5 per cent of average visit time was spent on video pages, although this figure is not broken down further by device. To sum up, the available evidence suggests that the omission of time spent viewing videos via mobile devices is likely to have had a relatively minor effect on this study's results: even if mobile usage time has been underestimated by as much as 5 per cent, because mobile usage time represents just 7.49 per cent of the total time spent with newspaper brands, the results presented in figure 1 would be out by less than 0.4 per cent.

Converting the NRS Sample to Those Aged 18+

The NRS readership and time-spent-reading data covered readers aged 15+, whereas the comScore data on mobile usage also used in this study only covers those aged 18+. In order to allow the combining of the data sets, an adjustment was made to the NRS data to remove the reading time of print readers aged 15, 16, and 17.

To do this the NRS database was queried for each newspaper brand to find the proportion of print readers aged 15–17. These values ranged from 4.9 per cent (for *The Sun*'s Monday–Saturday editions) down to less than 1% for the *Daily Star*'s. The average proportion of 15–17 year old readers for newspapers' Monday–Saturday print editions was 1.33 per cent (SD=1.51), and 1.23 per cent (SD=1.4) for the Sunday editions. Using these values the total aggregated reading time was reduced proportionately for each newspaper brand. Although this was not a perfect method of removing the reading time of the 15–17 year olds (because any differences in reading time between this demographic and those aged 18+ were not taken into account) the relatively small numbers involved mean that any potential error is insignificant.

Converting the comScore Sample to Great Britain Only

Because comScore's MMX MP and Mobile Metrix® data covers the entire adult population of the United Kingdom, it did not, initially, match the coverage of the NRS data (which is Great Britain only with Northern Ireland excluded). In order that the comScore and NRS data sets could be combined, an adjustment was made to the comScore data to remove the time spent by Northern Irish users. To do this the comScore database was queried and the proportion of minutes contributed by Northern Irish users established. Due to data limitations, figures were only available for January, February, and March 2016. For the MMX MP data, the average proportion across these three months for the separate newspaper brands' online offerings varied between 9.2 per cent for DailyStar.co.uk to less than 1 per cent for TheGuardian.com, with an average of 1.88 per cent (SD=2.71). With the Mobile Metrix® data, it was also found that the proportion of reading time from users from Northern Ireland was greatest at DailyStar.co.uk (12.3 per cent), although the average across all titles was 2.24 per cent (SD=3.6) with some titles—such as TheGuardian.com—getting less than 1 per cent of their total mobile usage minutes from the province.
These values were used to reduce the total time spent with each brand proportionately. Although this was not a perfect method of removing the reading time of Northern Irish users (because the proportion of reading time they contributed in January, February, and March was taken as representative of the whole 12-month study period), the relatively small proportions involved mean that any potential error is insignificant.

Accounting for the Overseas Audience

To estimate the time overseas online readers were spending with newspaper brands, data was collected from the ABC. Five newspaper brands in the study's sample published data (via the ABC) on the proportion of page impressions received from UK and overseas visitors to their websites and mobile apps. As shown in Table A, an average of 38 per cent of the annual page impressions came from overseas. If The Sun Online, which is something of an outlier, is excluded then the average rises to 45 per cent. If it is assumed that overseas and domestic visitors spend approximately the same amount of time per page impression, then these proportions allow estimates to be made of the time online audiences from overseas spend with newspaper brands.

TABLE A
Proportion of page impressions received from UK and overseas visitors to the online editions of five UK national newspapers, April 2015−March 2016

	UK (%)	Overseas (%)
Express.co.uk	49	51
Telegraph.co.uk	54	46
DailyStar.co.uk	56	44
DailyMail.co.uk	62	38
The Sun Online*	87	13
Average	**62**	**38**

* Data for The Sun Online only covers the period July 2015−March 2016.
Source: ABC.

TABLE B
Proportion of average Monday−Saturday print circulation coming from outside the United Kingdom for five UK national newspaper brands, April 2015−March 2016

	%
Daily Star	12.53
Daily Mail	6.64
The Sun	4.78
The Daily Telegraph	3.24
Daily Express	2.83
Average	**6**

Source: ABC.
Note: Sunday editions are excluded. The Republic of Ireland is outside the United Kingdom.

To estimate the time overseas print readers are spending with newspaper brands, data from the ABC was again consulted. It was found that, for the same five newspaper brands, an average of 6 per cent of their print circulation was outside the UK (see Table B). This may not sound very much, but an average print reader is an order of magnitude or two more attentive than the equivalent online reader, meaning that even these relatively small proportions of overseas print readers may, for some newspapers, contribute more attention than their overseas online visitors. To test whether this was the case, the proportions reported in Tables A and B were used to estimate the total aggregated reading time contributed by overseas print readers and online visitors. Three assumptions were made when making these estimations. Firstly, that overseas online visitors spend the same amount of time per page as domestic online visitors. Secondly, that each print edition distributed overseas has the same average number of readers per copy as print editions distributed domestically. And, thirdly, that print readers overseas spend the same amount of time reading newspaper titles on a daily basis as print readers in Great Britain.

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