An Information Economy Without Data

J. Howard Beales, Ph.D.
Andrew Stivers, Ph.D.
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About the Authors

Dr. Beales is an Affiliated Academic in NERA's Communications, Media, and Internet Practice and Professor Emeritus of Strategic Management and Public Policy at George Washington School of Business. He was Director of the Federal Trade Commission's Bureau of Consumer Protection from 2001 to 2004, where he was instrumental in refocusing the Commission's privacy protection program on preventing adverse consequences from information use. During his tenure, the Commission proposed and implemented the National Do Not Call Registry. He also served at the FTC in various capacities from 1977 to 1986 and as Branch Chief in the Office of Information and Regulatory Affairs in the Office of Management and Budget in 1986 and 1987. He taught in the GW Business School from 1988 to 2019.

Dr. Stivers is an Associate Director in NERA's Antitrust Practice. He was Deputy Director for Consumer Protection in the Bureau of Economics at the Federal Trade Commission from 2014-2021, where he led the Commission's economic analysis of liability and harm from alleged privacy violations and general consumer protection matters. He also served at the Food and Drug Administration overseeing a variety of public health information and data projects for the food program and evaluating costs and benefits of regulatory initiatives. Prior to his service in the federal government Dr. Stivers was an assistant professor of economics at Oregon State University, where he researched the regulation of information.

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Executive Summary

This paper reviews available research to provide an overview of the role of advertising and digital data in supporting the wealth and diversity of content online, and in supporting competition online and off. The review emphasizes the empirical work on existing advertising practices and on regulatory initiatives that seek to throttle the use of personalized advertising through data restrictions.

Limiting online advertising's access to data about audience interests and demographics substantially reduces revenue to online content providers, by 50 to 70 percent. Limits will disproportionately affect small publishers and small advertisers and have the unintended effect of strengthening the competitive advantage of large platforms. Revenue losses will threaten the financial foundation of free services that have been estimated to be worth $30,000 per year to the typical consumer in 2017. Our specific findings are outlined below, and later explored in detail.

- Conventional media, like digital media, have long depended on audience information to sell advertising and support content. For example, a recent study of television advertising found that ad pricing could vary by close to 300 percent based on customer demographics.

- The competitive advantage of online advertising is better information. Rather than seeking out particular publishers that *attract* audiences with their desired characteristics, online advertisers generally use available data to *assemble* an audience they think will be interested in their message through whichever publisher that audience may happen to visit.

- User-derived information increases the value of digital advertising three-fold or more. A study of Google advertising that experimentally blocked publishers' ability to access user data found that the average publisher lost more than half of ad revenue, and the median publisher lost 64 percent. The UK Competition and Markets Authority (CMA) Digital Advertising Market Study estimated that publishers would lose 70 percent of revenue.

- User identification is essential for measurement, or attribution, frequency capping, and relevance. Compared to personalized ads, there was a 21 percent increase in the number of users that chose to close a non-personalized ad in the Google study. A Deloitte survey reported that 6 in 10 consumers would be more satisfied with their viewing experience if ads were more targeted and more relevant to them. Inability to link advertising to ultimate sales due to restrictions on data flows raised median customer acquisition costs 37 percent.

- Contextual targeting will not replace the revenue losses from data restrictions in the short run and is unlikely to do so in the long run. Context is a complement, not a substitute for demographic and interest information. The CMA concluded that "personalised advertising increase[s] publisher's revenue as opposed to contextual advertising, when both are available." Context alone is only about one third as effective as using context with user's data to predict behavior.

- Advertising funds the internet. Digital advertising revenue reached $189.3 billion in 2021, 64 percent of total advertising spending in the United States. That revenue funds content, including maps, email, and search that the median consumer in 2017 valued at $30,000 per year. Allowing individual consumers to choose between a pure subscription model where they pay for content and an alternative with some advertiser support at a lower price benefits consumers. Proposals that outlaw conditioning price or quality on consent to data sharing risk prohibiting exactly this choice, likely harming both consumers and the availability of content.

- Data-driven advertising is especially vital to small publishers. Along with other government studies, the UK's Digital Advertising Market Study concluded that "[t]he inability of smaller platforms and publishers to access user data creates a significant barrier to entry."

- Advertising is vital to the competitive process. Decades of studies validate the role of advertising in promoting competition, reducing prices, encouraging innovation, and narrowing differences among demographic groups. Restrictions on personalized digital advertising will increase the effective cost of reaching consumers, undermining the benefits of advertising as a driver of competition.

- Less information means less competition, as shown by experience under the EU's General Data Protection Regulation (GDPR), and with private initiatives to curtail the flow of digital data. The market share of large ad services firms significantly increased after GDPR took effect. A study of companies in a broad range of industries found that firms with an exposure to GDPR restrictions experienced an 8 percent drop in profits.

- Initiatives to block the flow of data favor incumbents and encourage the formation of content fortresses, where data collection and use occur within a closed, first party data ecosystem. Smaller firms were more likely to have experienced a significant drop in sales due to GDPR restrictions than larger firms.

- Allowing consumers concerned about privacy to opt out of information use is a preferable approach to accommodating consumer preferences. Consumers make rational choices about how to allocate their time and attention. Judging from their behavior, most consumers are willing to share their information in exchange for free content. Given the value of advertiser supported services to consumers, this is a reasonable tradeoff for consumers to make. These consumers are likely to follow the default rule, putting the financial support for valuable internet content at risk.

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I. Introduction

The rise of the worldwide web has greatly enriched our lives. We have instant communication with anyone, anywhere. We have access to all the world's information literally at our fingertips, needing only a search engine and a mouse and or a touchscreen. We can avoid traffic jams as we follow the directions of our virtual assistant to navigate to a destination knowing only the address. We can play games, alone or with others, enjoy the latest meme, watch entertaining kittens or puppies, listen to the latest music, or stream a hit movie. And, best of all, most of this alluring and amazing content is available "for free."

Well, not quite. As we all know, TANSTAAFL—there ain't no such thing as a free lunch—an acronym popularized by science fiction writer Robert Heinlein.[1] Early internet content was financed by venture capitalists who maximized their "burn rate" in a pure pursuit of growth as they pioneered new innovations, but the collapse of the .com bubble at the turn of the century proved what should have been obvious: sustained growth requires a return on capital. Internet content providers turned to the model that centuries of use had proven in conventional media: content is provided in exchange for our attention, which is then sold to advertisers who have a message they want us to hear. Often, that message is commercial, but in election years, a sizeable fraction of advertising, both online and in conventional media, is political.

Which advertiser is most willing to pay for our attention has always depended on who we are, and therefore advertising markets have always depended on data. In conventional media, advertising prices depend on information about the audience. Whether on television or radio, or in magazines and newspapers, prices depend not only on the size of the audience, but also on the demographic characteristics and interests of that audience. An advertiser choosing that audience believes that enough viewers will respond to their message to make a profit. By its nature, however, everyone viewing a conventional media product sees the same advertisement, even though many of them have no interest in the subject.[2]

The dynamic of online advertising markets is different. Each viewer can be served a different advertisement. Rather than using content to *attract* an audience with desired characteristics (the origins of the soap opera, for example), online advertisers can *assemble* an audience that is likely to be interested in their message, enabled by data on the viewer's behavior and interests.[3]

Compared to conventional media, online information is collected differently, but the underlying question is the same: is this viewer likely to be interested in my message? The core advantage of online advertising is its greater ability to identify the appropriate audience for a given message, based on information about the viewer. One scholar likened it to "replacing a sledgehammer with a scalpel."

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[1] David R. Henderson, TANSTAAFL, *There Ain't No Such Thing as a Free Lunch*, ECONLIB ARTICLES, (March 3, 2014), https://www.econlib.org/library/Columns/y2014/Hendersontanstaafl.html.

[2] Conventional media markets are discussed in Section II.A.

[3] The ability of online media markets to benefit from more information is discussed in Section II.B.

Access to the data necessary to personalize advertising is particularly important to small businesses.[4] Although large businesses account for most digital advertising spending, the overwhelming majority of online advertisers are small businesses, who need to find the specific group of customers most likely to be interested in their product among the billions of internet users.

Without fairly specific location information, for example, a local pizzeria cannot profitably advertise to a viewer who may be literally anywhere in the world. A congressional campaign has little interest in advertising to those in a different district. A different small business might also use the ability to identify likely buyers to sell its product worldwide. Authoritative government reviews of digital advertising markets in the United Kingdom (UK) and Australia have noted that online advertising has opened up business opportunities that were formerly available only to large companies to a "long tail of small businesses . . . that may otherwise not have been viable,"[5] and that for many small enterprises, a key part of the business model is building a brand and a following "entirely through social media."[6]

The empirical evidence is clear that advertising is more valuable, to advertisers, to consumers, and to publishers if it is linked to information about the viewer. The price per impression of an advertisement with user information is 3 times higher than if no information is available. Without the ability to link an advertising exposure to a sale, which requires both an identifier and the ability to share information between cooperating websites, the median cost of acquiring a new customer increases 37 percent. Some persistent user identifier is necessary to provide the most relevant advertising, to measure its effectiveness, and to cap the frequency with which a particular viewer is served the ad. The UK's Digital Advertising Market Study reached the same conclusion—advertising linked to user information is more valuable.[7]

The availability of data to personalize advertising produces important, and substantial, consumer benefits. As noted above, advertising funds the internet. Considering only search, email, and maps, one study estimated the benefits of this free content to the median consumer in 2017 at $30,000 per year.[8] A randomized trial of advertisements with and without viewer information estimated that the average publisher would lose 52 percent of total revenue in the absence of viewer information, and the median publisher would lose 64 percent of revenue.[9] The Digital Advertising Market Study's estimate was even higher, concluding that publishers would lose 70 percent of

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[4] See the discussion in Section II.C.

[5] COMPETITION AND MKT. AUTH., ONLINE PLATFORMS AND DIGITAL ADVERTISING: MARKET STUDY FINAL REPORT ¶¶ 2.0 (2020), https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study [hereinafter DIGITAL ADVERTISING MARKET STUDY].

[6] AUSTRALIAN COMPETITION & CONSUMER COMM'N, DIGITAL PLATFORMS INQUIRY: FINAL REPORT 132 (2019), https://www.accc.gov.au/system/files/Digital%20platforms%20inquiry%20-%20final%20report.pdf. [hereafter DIGITAL PLATFORMS INQUIRY: FINAL REPORT].

[7] See the discussion in Section III.

[8] Erik Brynjolfsson, Avinash Collis & Felix Eggers, *Using Massive Online Choice Experiments to Measure Changes in Well-Being*, 116 PROC. NAT'L ACAD. SCI. 7250 (2019). See also DIGITAL ADVERTISING MARKET STUDY ¶ 2.7, Box 2.1.

[9] Deepak Ravichandran & Nitish Korula, *Effect of Disabling Third-Party Cookies on Publisher Revenue* GOOGLE WHITE PAPER (2019), https://services.google.com/fh/files/misc/disabling_third-party_cookies_publisher_revenue.pdf [hereinafter Ravichandran & Korula].

revenue.[10] Revenue losses of that magnitude would pose a significant threat to the rich and diverse internet content available now.

Some contend that targeting advertising based on the context of the page on which it appears can offset these losses. Certainly, some publishers may attempt to do so. However, the evidence is clear that contextual information is a complement to user-based information, not a substitute for it. Models based on context information alone are less than half as effective as those based on user information alone at predicting advertising click-through rates (CTRs), and only about one third as effective as models using both context and user information.[11]

Data-driven advertising is particularly important to small publishers—the "long tail" of niche websites that make browsing the internet such an interesting activity. Large publishers have a great deal of information about users based on what they do on the publisher's own site and may have their own sales force. Small publishers cannot afford a sales force, have less data of their own, and are far more dependent on information from third parties. Indeed, the data advantages of large platforms and publishers are an important barrier to entry into advertising markets. Context is also likely to be a poor substitute for user data for niche sites, both because their audiences change over time and because the visitor to a site specializing in, say, quilting, has other interests that may be far more varied—and valuable—to advertisers other than sellers of quilting supplies.[12]

Advertising itself is a valuable activity, not a harmful one, because it plays an important role in keeping the markets for products and services competitive. Telling consumers about previously unknown options facilitates competition. Advertising lowers product prices, encourages product innovation, and narrows the differences in access and price for goods between demographic groups.[13]

Overly broad and rigid restrictions intended to protect privacy can have serious adverse consequences for competition and for the value of services consumers receive. In Europe, the General Data Protection Regulation has reduced funding for innovative new technology companies. It has reduced the revenues of internet publishers and reduced ecommerce sales. It has increased concentration in technology services markets and fortified the dominant positions of incumbent platforms. Apple's "opt in" requirement for apps on iOS to share information with anyone other than Apple similarly impairs the effectiveness of in-app advertising through any other provider and entrenches Apple's power as a gatekeeper. More generally, restrictions on the use of third party data favor incumbents and encourage the creation of "content fortresses.[14]

To be sure, there are some consumers who are particularly concerned about the use of information to provide personalized advertising. The question is how best to provide those consumers with

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[10] *See* DIGITAL ADVERTISING MARKET STUDY app. F ¶ 44. These studies and other evidence are discussed in Section V.A.

[11] See the discussion in Section III.C.

[12] See the discussion is Section IV.B.

[13] See the discussion in Section IV.C.

[14] See the discussion in Section V.

easy-to-use tools to address their concerns while also protecting the significant benefits to those users who value ad-supported services.[15]

Default rules should be designed to impose the costs of transactions on consumers who think these costs are worth paying. In other words, those who receive the benefits should bear the costs. Broad default restrictions on digital data flows instead impose those costs on all consumers. If particular uses of certain information create harms, then the appropriate response is to restrict that particular use of that information. It is the particular use of the information that creates the harm, not the fact that the information is shared with another party.

Online, most consumers do in fact share information. Given the value of advertiser supported services they receive in exchange, this is rational choice. If the default rule is "opt in," these consumers would likely defer to the default, as they do now. Any benefit they receive is, in their view, not worth the cost of making a more considered decision. But if they follow the default, the financial support for valuable internet content is at risk. As the FTC has previously noted: "if consumers were opted out of online advertisements by default (with the choice of opting in), the likely result would include the loss of advertising-funded online content."[16]

Experimental evidence suggests that in fact, those who care most about privacy make consistent decisions whatever the default rule, but the default rule tends to determine the outcome for those who care less.[17] That finding argues for an "opt out" rule for information that is not subject to specific restrictions. If we must choose, then the people who care about the issue have shown themselves willing to take the time necessary to consider the best choice, while those who are not concerned do not have to face the costs of making a decision. That is an appropriate allocation of effort, because those who are not concerned are happy to defer to the default rule. As this paper details, however, the default rule is crucial to the support of online advertising markets, and in turn to the principal funding mechanism for the internet content we all enjoy.

II. Competitive, Dynamic Markets Have Always Depended on Information-Driven Advertising

There is a tendency to think of information-based advertising as a new phenomenon, driven by the widespread availability of digital data. In fact, however, consumer data has always been a key feature of advertising markets in offline media such as broadcast radio or television, magazines, or newspapers.

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[15] See the discussion in Section VI.

[16] FTC Staff Comment to the NTIA: Developing the Administration's Approach to Consumer Privacy, Docket Number 18021780-8780-01 (November 9, 2018). https://www.ftc.gov/system/files/documents/advocacy_documents/ftc-staff-comment-ntia-developing-administrations-approach-consumer-privacy/p195400_ftc_comment_to_ntia_112018.pdf

[17] Yee-Lin Lai & Kai-Lung Hui, *Internet Opt-in and Opt-out: Investigating the Roles of Frames, Defaults and Privacy Concerns*, PROCEEDINGS OF THE 2006 ACM SIGMIS CPR CONFERENCE ON COMPUTER PERSONNEL RESEARCH, 253 (2006). On the other hand, among consumers who were less concerned about privacy, the default rule mattered.

Among the essential first steps in planning any advertising campaign are identifying the appropriate audience for the message and determining how best to reach them. For obvious reasons, sellers try to reach consumers who are likely to be interested in their offering. Identifying such customers is the task of marketing research which collects information about who will buy, and where they are. Companies often seek to reach consumers who "look like" their current customers in identifiable characteristics, such as age, gender, income, and other demographic characteristics. Companies may also be able to identify potential customers based on interests inferred from shopping behavior with third parties. Publishers develop data about the composition of their audience using these same observable demographics and interests, often based on surveys of one form or another. For example, a publisher may survey new subscribers for demographic information, or may pay a third-party market research company for existing data on those customers. Advertisers then seek to plan their advertising campaigns to reach consumers through publishers with their desired demographics as efficiently as possible. Both advertisers and publishers frequently turn to third parties with specialized skills and capabilities to conduct these data-driven tasks.

A. Conventional Media Depend on Audience Information About Audience Demographics.

By its nature, all viewers of a conventional advertising vehicle such as a television program are exposed to the same advertisements. From the advertiser's point of view, many of those exposures are simply wasted – they reach consumers who are not part of the audience that is most likely to be interested in the product. For example, a personal care product advertisement in a popular print newsmagazine may have a built in inefficiency in its audience: in general, men have far less interest in cosmetics than women, and women are far less likely to be interested in facial shaving products. Exposures to the "wrong" gender are unlikely to be productive. For this reason, in both television[18] and magazines,[19] there is a premium for audiences that are more gender specific, and a discount for mixed audiences. Similarly, print media delivered to an address has commonly contained inserts that are targeted to specific zip codes, or other areas determined by consumers' location data.[20] Magazines began introducing regional and demographic editions to better compete with television, particularly local television, in the 1950s.[21] Cable TV was viewed as a disruptive competitor in the 1970s and 1980s in part because of the opportunity for "narrowcasting" where advertisements could be served to both more specialized and more localized audiences.[22]

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[18] RONALD GOETTLER, Advertising Rates, Audience Composition, and Competition in the Network Television Industry, (unpublished working paper, Feb. 9, 2012), http://goettler.simon.rochester.edu/research/papers/adrates.pdf [hereinafter GOETTLER].

[19] *See* Martin A. Koschat & William P. Putsis Jr., *Audience Characteristics and Bundling: A Hedonic Analysis of Magazine Advertising Rates*, 39 J. MKTG. RSCH. 262 (2002) [hereinafter Koschat & Putsis].

[20] Mark Fitzgerald, *Mailrooms and Microzoning*, EDITOR & PUBLISHER, (May 4, 1996), at 32. Regional editions of national print publications are also commonplace.

[21] RICHARD CAMPBELL, CHRISTOPHER R. MARTIN AND BETTINA FABOS, *The Organization and Economics of Magazines,* MEDIA & CULTURE: AN INTRODUCTION TO MASS COMMUNICATION (10th Edition, 2016) p. 333, https://www.macmillanhighered.com/BrainHoney/Resource/6700/digital_first_content/trunk/test/mediaculture10eupdate/mediaculture10eupdate_ch9_5.html

[22] Roland Rust & Naveen Donthu, *A Programming and Positioning Strategy for Cable Television Networks*, 17 JOURNAL of ADVERTISING. 6 (1988).

The result is that the demographic characteristics of an audience are key determinants of the price of advertising, with substantial differences in the value of different audiences. A recent study of television advertising found that the price per thousand viewers for the highest-price demographic (higher income men over 50) was more than 3.7 times the price of the cheapest demographic (lower income women under 18).[23] Observed price differences reflect, in part, the different value to advertisers of consumers with different characteristics, but they also reflect differences in the ease of reaching various audiences.[24]

Other studies of television advertising have found similar results. Although the price rises with the total audience, size alone accounts for less than 6 percent of variation in the price per viewer.[25] Historically, price per viewer increased significantly when the fraction of the audience aged 25 to 49 increased. Audiences with less dispersion in ages also commanded higher prices.[26]

Even where context is narrow and well defined, such as niche magazines, demographics matter a great deal. A study of 100 leading consumer magazines found that circulation and key demographic measures accounted for "more than 90 percent" of the variation in advertising rates.[27] Magazines with a larger share of readers aged 29-39 commanded a significant price premium, as did those with more higher income readers.[28] Readerships that were more concentrated in either men or women commanded a premium over magazines with a mixed audience. The estimated price premium if readers of each sex could be sold separately ranged from 10 to almost 50 percent.[29] The estimated revenue gain for the publisher if the audiences could be "sold separately," rather than bundled in a single price, ranged from just under 6 percent for *Field and Stream* to just over 50 percent for *Cosmopolitan*.[30]

In fact, audience demographics are an important determinant of programming, and thus context. Recognition that programming choices depend on advertiser demand is longstanding.[31] Publishers seek to attract the audiences that advertisers most value and design their offerings accordingly. Soap operas, for example, were developed in the 1930s when advertising agencies representing the soap industry, among others, undertook the task of designing programming to attract a female

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[23] LU LIAO, ALAN SORENSEN & ANDREY ZUBANOV, *Measuring the Value of Targeted Television Advertising,* (unpublished working paper, permission to cite granted by authors, June 2020), https://www.ssc.wisc.edu/~sorensen/papers/targeted_advertising_jun2020.pdf. The reported estimates are for an "average" television advertisement, and do not allow for the premium for larger audiences that many other studies have found.

[24] For example, it is easier, and therefore cheaper, to reach audiences that use television more heavily. *See* Matthew Gentzkow et al., *Pricing Power in Advertising Markets: Theory and Evidence* (Nat'l Bureau of Econ. Rsch., Working Paper No. 30278, 2022), https://www.nber.org/system/files/working_papers/w30278/w30278.pdf.

[25] GOETTLER. The study used monthly data from 1992.

[26] GOETTLER at 23, Table 2.

[27] Koschat & Putsis. To avoid confounding with changes in the way magazine advertising was sold, the study used data from 1990.

[28] Koschat & Putsis. at 267, Table 2. Higher income consumers were those with incomes greater than $56,000.

[29] Koschat & Putsis. at 269.

[30] Koschat & Putsis. at 270, Table 3.

[31] For an early economic treatment *see* Michael Spence & Bruce Owen, *Television Programming, Monopolistic Competition, and Welfare*, 91 Q.J. ECON. 103 (1977).

audience, first on radio and later on television.[32] Indeed, empirical studies suggest that advertiser preferences have more influence on television network programming choices than do viewer preferences.[33]

To some extent, advertisers can rely on the context in which ads will appear – i.e., on the nature of the programming that attracts the audience.[34] Both the empirical results on the price of advertising, and the recognition that programs are designed to attract valuable audiences, however, makes clear that context is likely a proxy for audience characteristics, rather than an independent determinant of the value of the audience. Actual measurements of those characteristics are both more accurate and more efficient methods for making advertising decisions.

Because advertisers understand the incentives of publishers to present their audiences as larger and more relevant, and thus subject to price premia, conventional media markets rely on third parties, such as Nielsen (television) or Alliance for Audited Media (magazines), for audience measurement and validation, based on samples of consumers. Such methods are inherently limited in their ability to measure smaller audiences. In the magazine industry, for example, of some 7,000 print magazines in the U.S.,[35] standardized measuring services covered fewer than 200 titles, and estimated audiences even for these were hard to pin down, with average differences from sample to sample varying between 8-10 percent.[36] With literally millions, if not billions, of websites, sample-based approaches to audience measurement are plainly not feasible.

B. The Competitive Advantage of Online Advertising Is Better Information.

The central role of information about the audience characterizes both conventional and online advertising. The ease with which data can move online distinguishes online advertising, however, and is the source of its competitive advantages. Rather than seeking out particular publishers that *attract* audiences with their desired characteristics, online advertisers generally use available data to *assemble* an audience they think will be interested in their message through whichever publisher that audience may happen to visit. That assembled audience could be found anywhere from microblogs to the most well-known websites. Moreover, a different advertisement can be served to each viewer. Online advertising can thereby minimize the problem of "wasted" exposures inherent in traditional media by narrowing the focus. Online advertising also allows more objective and transparent measurement of the performance of an advertiser's investment.

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[32] M.P. Porto, *Soap Opera/Telenovela*, *in* INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL & BEHAVIORAL SCIENCES 14205 (Neil J. Smelser & Paul B. Baltes eds., 2001), https://doi.org/10.1016/B0-08-043076-7/04379-5.

[33] Kenneth C. Wilbur, *A Two-Sided, Empirical Model of Television Advertising and Viewing Markets*, 27 MKTG. SCI. 356 (2008).

[34] Perhaps the clearest example of the importance of context was the old airline practice of pulling their advertising from the evening news when there was a plane crash.

[35] MPA – The Association of Magazine Media, *Number of Print Consumer Magazines in the United States from 2002 to 2020*, STATISTA (Sept. 2021), https://www.statista.com/statistics/238589/number-of-magazines-in-the-united-states/ (last visited Sept. 20, 2022).

[36] That is, standardized services could not capture a large enough sample of many of these magazines to create reliable estimates. *Magazine Audience Measurement: Its Evolution and Pitfalls*, *in* MAG. DIMENSIONS 80, 90 (2006), https://www.mediadynamicsinc.com/uploads/2015/05/magazine_audience_measurements--IY.pdf.

Much of the data used to assemble an appropriate audience is derived from the consumer's online behavior—the websites they visit, the products they search for, or the emails they sign up for. Advertisers often seek to enrich online data with other data, either derived from their own interactions with the customer or from third-party data sources that provide additional information.[37] The wealth of information available reduces the transactions costs of matching merchants with consumers. In effect, as one scholar noted, "the new techniques replace a sledgehammer with a scalpel."[38] The UK Competition and Markets Authority's (CMA) Digital Advertising Market Study concluded that access to extensive user data was a significant competitive advantage for Google and Facebook, and that the inability of smaller platforms to access data was a significant barrier to entry.[39]

In a market where all advertisers rely on information about audience demographics and interests to identify the relevant audience for their messages, it is particularly perverse to restrict the use of such information in online advertising only, where it can be used most effectively. Such a restriction would eliminate the key advantage of online advertising over the conventional media outlets, and the primary financing mechanism for the wealth and diversity of content online: the greater ability to identify the appropriate audience for a message.

C. Personalized Advertising Is Particularly Important to Small Advertisers.

The ability to tailor the audience to the advertising is especially important to small or niche businesses. A product that everyone potentially purchases has far fewer wasted exposures than products tailored to a narrow audience. A local business, for example, especially needs geographic information, since a website viewer could be literally anywhere. General advertising would be largely wasted. Similarly, larger advertisers can spread the risk that a particular ad impression will generate no response, because they purchase many impressions and can rely on achieving the average result over time. If, for example, there is a 1 percent chance that a consumer exposed to an advertisement will purchase, an advertiser who purchases 1,000 impressions can expect 10 sales. A small advertiser, however, who only purchases 10 impressions, may get lucky, but the most likely outcome is no sales at all. As the Australian Competition & Consumer Commission notes in their recent report on digital platforms, "For some small to medium businesses, online advertising has become a significant part of their business models, and many have become successful through an online only focused strategy, building a brand and following entirely through social media."[40]

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[37] Notably, such inferences appear to be more accurate for consumers with a more extensive web presence. *See* NICO NEUMANN ET AL., *Data Deserts and Black Box Bias: The Impact of Socio-Economic Status on Consumer Profiling*, (unpublished working paper, 2022), https://www-2.rotman.utoronto.ca/userfiles/brownbags/marketing/files/DataDeserts_AccuracyHeterogeneity_Coverage_Bias_2022(1).pdf.

[38] David S. Evans, *The Online Advertising Industry: Economics, Evolution, and Privacy* 3 (April 2009) (working paper, subsequently published in 23 J. ECON. PERSP. 37 (2009)), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1376607 [hereinafter Evans].

[39] DIGITAL ADVERTISING MARKET STUDY ¶¶ 41, 43.

[40] DIGITAL PLATFORMS INQUIRY: FINAL REPORT.

The CMA's Digital Advertising Market Study concurred, noting that online advertising made it "substantially easier for businesses to reach and serve adverts to consumers all around the world, in a way that was only previously possible for large companies," opening opportunities "for a long tail of small businesses. . . that may otherwise not have been viable."[41] By the numbers, small advertisers dominate digital advertising, precisely because online advertising offers the opportunity for low cost outreach to potential customers. Google has over 1 million advertising customers in the UK, and Meta has over 200,000, but the top 5 to 10 percent account for 85 percent of total revenue.[42] The large number of small advertisers is likely not unique to these platforms.

One example of this strategy that has directly benefited consumers through increased competition is the burgeoning direct-to-consumer retail sector. Brands like Warby Parker in eyeglasses, Hubble in contact lenses and Casper in mattresses, have been able to build significant new market share using online tools and the ability to find customers that behavioral and demographic data supports.[43] The ability to increase efficiency in advertising matters most to smaller and emerging advertisers with limited budgets. For example, a recent survey found that 70 percent of small businesses invest in social media advertising because of its ability to "hyper-target," and its cost effectiveness.[44] A Meta experiment on the effects of blocking off-site data found an increase in cost for all advertisers, but the increase was greatest for small scale advertisers. While larger advertisers had higher customer acquisition costs and experienced an increase, "small scale advertisers have more effective ads, but they also tend to lose more without offsite data…"[45]

III. User-linked Information is Vital to Online Advertising Markets

As the last Section lays out, customer information increases the efficiency of advertising generally, and digital advertising can potentially improve substantially on those efficiency gains. Advertisers can take advantage of the decreased costs of collecting and using that information and are willing to pay more for advertising that provides higher returns.[46] Advertisers and content providers can use the efficient feedback mechanisms available in digital networks to validate those returns for advertisers, and to increase relevance and engagement for users. Small advertisers, in particular, benefit from the user information that allows them to narrowly focus their campaigns to those users most likely to respond and follow through with a purchase of their products. In turn, those benefits

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[41] DIGITAL ADVERTISING MARKET STUDY ¶ 2.9.

[42] *Id.* ¶ 2.57. The report identifies the top advertisers as "[5-10%]" to avoid revealing confidential information.

[43] V. Kasturi Rangan, Daniel Corsten, Matt Higgins, and Leonard A. Schlesinger, *How Direct-to-Consumer Brands Can Continue to Grow*. HARVARD BUSINESS REVIEW (Nov.-Dec. 2021) https://hbr.org/2021/11/how-direct-to-consumer-brands-can-continue-to-grow.

[44] Anna Peck, *2022 Small Business Advertising Report*, VISUAL OBJECTS (Mar. 14, 2022), https://visualobjects.com/advertising/blog/small-business-advertising-2022.

[45] Nils Wernerfelt et al., *Estimating the Value of Offsite Data to Advertisers on Meta* 4 (Becker Friedman Inst. for Econ. at the Univ. of Chi., Working Paper No. 2022-114, 2022), https://bfi.uchicago.edu/wp-content/uploads/2022/08/BFI_WP_2022-114.pdf [hereinafter Wernerfelt et al.]. The experiment is discussed in more detail in Section III.B below.

[46] Because digital media have also greatly expanded the supply of advertising, the typical price per 1000 impressions online is lower than in conventional media. See https://www.socialaxcessconsulting.com/2019/05/07/digital-marketing-vs-traditional-media-the-cost-differences-cpm/. Nonetheless, advertisers are willing to pay more for impressions that offer a higher expected return.

to smaller advertisers encourage diverse content and innovation, as the costs of reaching an audience, particularly a small or specialized one, are lowered.

A. User-Derived Information Substantially Increases the Price of Digital Advertising.

The critical role of user data in determining publisher revenue was made clear in a large, randomized experiment that Google conducted in 2019. The study disabled access to cookies for a small fraction of randomly selected users of the top 500 publishers who use the programmatic portion of Google's Ad Manager and compared the revenue to another random sample of users where bidders had access to cookies.[47] The experiment included at least 2 to 3 million impressions.[48] Google reported that for the top 500 publishers, average revenue declined by 52 percent.[49] The median publisher lost 64 percent of revenue, meaning that half of publishers lost at least that much of their revenue, with some losing over 75 percent.[50]

The UK's CMA obtained the underlying data from the Google experiment as it pertained to UK users and websites and conducted its own analysis as part of its Digital Advertising Market Study. In particular, it noted that considering only revenue *per impression* would understate the impact of losing identifier data because fewer ad slots would get filled when user identification was suppressed, further reducing publisher revenue from the user.[51] Aggregating that data to the level of "queries" (a user request for a web page) and considering other possible biases in the experiment, the CMA concluded that "UK publishers earned around 70 percent less revenue when they were unable to sell personalized advertising but competed with others who could."[52] Separately, individual publishers also reported substantial revenue reductions.[53]

These CMA conclusions about revenue are consistent with an earlier study by Beales that found that prices for advertisement slots that were directed to viewers were 2.68 times higher.[54] Similarly, Beales and Eisenach found that the average impression price paid for personalized ads was 60 percent to 200 percent higher. Ads for which cookie-related information is available are 3 to 7

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[47] Ravichandran & Korula.

[48] DIGITAL ADVERTISING MARKET STUDY app. F ¶ 183, Table F.8.

[49] A widely cited study by Marotta and her colleagues finds that for the single publisher they studied using 2016 data, revenue would decline by only 4 percent in the absence of cookies. See Veronica Marotta, Vibhanshu Abhishek & Alessandro Acquisti, *Online Tracking and Publishers' Revenues: An Empirical Analysis* (May 2019) (unpublished working paper). That finding is consistent with the Google experiment, which reported that 7 of the 500 publishers did not lose revenue. Plainly, however, it is not representative. Not all publishers will lose revenue, but most will, and the amounts lost will likely be substantial.

[50] Ravichandran & Korula.

[51] *See* DIGITAL ADVERTISING MARKET STUDY app. F ¶ 167.

[52] DIGITAL ADVERTISING MARKET STUDY ¶ 44.

[53] DIGITAL ADVERTISING MARKET STUDY app. F ¶ 120.

[54] J. HOWARD BEALES, NETWORK ADVERTISING INITIATIVE, THE VALUE OF BEHAVIORAL TARGETING (2010), https://www.ftc.gov/sites/default/files/documents/public_comments/privacy-roundtables-comment-project-no.p095416-544506-00117/544506-00117.pdf.

times more valuable.[55] Johnson, Shriver and Du examine the effects of the AdChoices self-regulatory initiative that offered users a choice to opt out of online behavioral advertising. The authors found that advertisements to viewers who opted out and, therefore, could not receive tailored advertising generated 52 percent less revenue than comparable ads that could be directed to viewers.[56] Wernerfelt et al., discussed more fully in the next section, found that cost of customer acquisition rises significantly when off-site data is blocked from Meta: "We find a median cost per incremental customer using business as usual targeting techniques of $43.88 that under the median loss in effectiveness would rise to $60.19, a 37% increase."[57]

As the CMA notes, the 70 percent reduction in revenue is a short run effect, and advertisers and publishers will strive to improve the alternatives to cookie-based advertising decisions. While longer term effects are still being studied, the Meta experiment found that "analyzing purchasing behavior six months after our experiment, ads delivered with offsite data generate substantially more long-term customers per dollar, with a comparable delta in costs."[58] More significantly, prices remain substantially lower for impressions served to browsers that block third party cookies such as Safari or Firefox. After close to a decade of experience serving that inventory, no magic bullets have been found, and publishing executives note that ad prices on those browsers can be half of the rate where user data is available.[59] We therefore see little reason to believe that longer run adjustments will substantially reduce the revenue impact of the loss of user data.

B. User Identification Is Essential for Measurement, Frequency Capping, and Relevance.

Digital information flows are essential to measurement, or attribution, and frequency capping, as well as relevance. The Digital Advertising Market Study noted that the measurement of advertising effectiveness was "an important driver" of decisions about where advertisers spend their money, and that "to measure effectiveness, advertisers need to be able to track user actions online."[60] This information helps make sure that advertising is effective for the advertiser, and appropriate and relevant to the viewer.

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[55] J. HOWARD BEALES & JEFFREY A. EISENACH, NAVIGANT ECON. (ON BEHALF OF THE DIG. ADVERTISING ALL.), AN EMPIRICAL ANALYSIS OF THE VALUE OF INFORMATION SHARING IN THE MARKET FOR ONLINE CONTENT (2014), https://digitaladvertisingalliance.org/sites/aboutads/files/files/DAA_images/fullvalueinfostudy%20-%20Navigant.pdf. Prices were three times higher for "new" cookies, and as much as 7 times higher for users with a cookie at least 90 days old.

[56] Garrett A. Johnson, Scott K. Shriver & Shaoyin Du, *Consumer Privacy Choice in Online Advertising: Who Opts Out and at What Cost to the Industry?*, 39 MKTG. SCI. 33 (2020) [hereinafter Johnson, Shriver & Du].

[57] Wernerfelt et al. at 1.

[58] Wernerfelt et al. at 1.

[59] Tim Peterson, *Publishers Feel the Crunch of Cookieless Browsers Like Apple's Safari*, DIGIDAY (Sept. 27, 2022), https://digiday.com/media/publishers-feel-the-crunch-of-cookieless-browsers-like-apples-safari/.

[60] DIGITAL ADVERTISING MARKET STUDY ¶ 45.

Consumers view the general presence of advertising in different ways, from "enjoyment to offense."[61] But the specific experience of that advertising depends in large part on relevance.[62] Relevance has both presentation and frequency elements.[63] Being served an ad that is more likely to be clicked on by definition means that it was more attractive and more valuable to the audience, advertiser and publisher. The Google experiment provides direct evidence that users were less satisfied with non-personalized advertising. Google ads offer the opportunity to click on an "X" to close advertisements. There was a 21 percent increase in closing the ad for users served ads when their cookies were disabled, compared to those served personalized ads. There was a similar 21 percent increase in those who chose "Not interested in this ad" as the reason to stop seeing it.[64]

However, once served an ad that attracts a click, subsequent service of that ad is less likely to be relevant, and more likely to detract from the viewer's experience.[65] An ad that does not attract a click on first viewing may still be relevant for some subsequent views, but repeated viewings will rapidly decrease in relevance to the audience.[66] In addition to "wearout," where ads lose their effectiveness after multiple viewings, excessive frequency can annoy consumers and reduce effectiveness.[67] In the Google experiment, there was a 29 percent increase in users clicking on "Seen this ad multiple times" as the reason for closing it for users served non-personalized ads.[68]

Survey evidence also indicates that relevance and frequency are important determinants of the consumer experience. A study by Deloitte found that social media ads "are less disruptive to the user experience and are often precisely tailored and targeted to an individual's preferences." They had higher net positive scores (more memorable than annoying) than, for example, ads from social media influencers or ads in games.[69] The study also found that "six in 10 consumers say they'd be

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[61] Sharon Shavitt, Pamela Lowrey & James Haefner, *Public Attitudes Toward Advertising: More Favorable Than You Might Think*, 38 J. ADVERT. RSCH., no. 4, July 1998, at 7 [hereinafter Shavitt, Lowrey & Haefner].

[62] Damon E. Campbell & Ryan T. Wright. *Shut-Up I Don't Care: Understanding the Role of Relevance and Interactivity on Customer Attitudes Toward Repetitive Online Advertising*, 9 J. ELEC. COM. RSCH. 62 (2008).

[63] Susanne Schmidt & Martin Eisend, *Advertising Repetition: A Meta-Analysis on Effective Frequency in Advertising*, 44 J. ADVERT. 415 (2015).

[64] Ravichandran & Korula.

[65] Steffen Försch & Evert de Haan, Targeting Online Display Ads: Choosing Their Frequency and Spacing, 35 INT'L J. RSCH. MKTG. 661 (2018).

[66] Harmony Murphy, *Welcome to the New Era of Real-Time Relevance*, THE DRUM (June 19, 2020), https://www.thedrum.com/opinion/2020/06/19/welcome-the-new-era-real-time-relevance. Advertisers have long distinguished between reach, the number of unique viewers who see an ad, and frequency, the number of times a viewer sees the ad. Because reach is more valuable, larger television audiences, for example command a price premium. See also GOETTLER.

[67] Inyoung Chae, Hernán A. Bruno, and Fred M. Feinberg. *Wearout or weariness? Measuring potential negative consequences of online ad volume and placement on website visits* JOURNAL OF MARKETING RESEARCH 56, no. 1 (2019): 57-75. https://journals.sagepub.com/doi/pdf/10.1177/0022243718820587.

[68] Ravichandran & Korula.

[69] Sayantani Mazumder, Hanish Patel and Brooke Auxier *Memorable vs. annoying: How consumers experience ads on digital platforms* DELOITTE INSIGHTS (Nov. 4, 2021) [hereafter, Deloitte Survey] https://www2.deloitte.com/xe/en/insights/industry/technology/ad-experience-advertising-effectiveness.html.

more satisfied with their viewing experience if the ads were more targeted and relevant to them."[70] Eight in 10 thought there was too much ad repetition.[71]

Whether it is providing more relevant advertising initially or limiting excessive repetition, information flow about a consumer's ad exposure and interaction helps to simultaneously reduce distraction from the audience's experience of the content they are accessing and increases the value of the ads that are served.[72] That is, information about user interaction with an ad allows the publisher, advertiser and audience to obtain the greatest possible value from the portfolio of ads served. As the Digital Advertising Market Study concluded, "more relevant and better targeted adverts can be expected to result in more purchases, increasing consumer and producer welfare as a result."[73]

The Meta experiment conducted by Wernerfelt and colleagues examined the effect of removing off-site data that follows actions of consumers in apps and online that are not directly visible to Meta, included purchase behavior. "Specifically, [the authors] take ads whose delivery is being optimized for sales (an offsite signal) and compare outcomes when the ads are only optimized for link clicks (an on platform outcome)."[74] Without that direct feedback about who actually completes a purchase, advertising becomes less effective, as shown by the 37 percent increase in cost per new customer cited above.

Measurement of the effectiveness of ads allows a firm to refine the profile of who it attempts to reach. Irrelevant advertisements provide no benefit to either the advertiser or the audience – both would prefer they did not happen. Feedback and measurement, including attribution of sales, allow the advertiser to drop consumer segments that prove to be unresponsive. The Meta experiment makes clear that the ability to target only on clicks, which the platform can observe directly, rather than sales, which depend on sharing data with the advertiser, substantially increases the cost of acquiring a customer.

The alternative, where advertisers cannot efficiently stop showing ads to uninterested audiences, both decreases the return on advertising investments to the firm and increases cost to the audience—either directly, because the ad load becomes more burdensome, or indirectly, because the information most valuable to the audience was not provided in the advertisements served.

C. Context Is a Complement, Not a Substitute for Demographic and Interest Information.

Contextual information is also available for potential online advertising slots. Although programmatic sales have continued to increase, some publishers, especially large ones, sell part of their inventory directly to advertisers, rather than through exchanges or networks. Context is

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[70] Deloitte Survey

[71] Deloitte Survey

[72] PRZEMYSŁAW IWAŃCZAK & MATEUSZ RUMIŃSKI, *The Future of Frequency Capping in Privacy-Centric Digital Advertising,* (unpublished working paper, Jan. 31, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3985974.

[73] DIGITAL ADVERTISING MARKET STUDY ¶ 2.8.

[74] Wernerfelt et al. at 2.

certainly part of the argument for such purchases. Vertical advertising networks are also available, assembling advertising availabilities from sites with specific content, such as automotive sites or food and wine sites.[75] The fact that data on online behavior nevertheless increases the value of advertising, discussed above, is clear evidence that contextual information is a complement to interest and demographic information, not a substitute.

A study of mobile advertising in a large Asian country provides evidence of the complementarity of demographic and interest information with contextual information.[76] The study examined machine learning predictions of CTRs using different information sets, assessing predictions by the relative information gain criterion widely used in machine learning research. Predictions using only contextual information performed less than half as well as predictions using only behavioral (user-based) information. Predictions using both contextual and behavioral information performed better still, but contextual information alone was less than one third as effective as the full model using all information. In part, the performance difference arises because information varies a great deal more across the 700,000 users in the study than across the 1,200 different contexts.[77] Considering context alone effectively ignores the primary source of differences that affect the price of an advertisement.

Advertising offered to bidders through auction markets includes some information about where the ad will appear, although some publishers provide only a high level domain name. In 2020, a substantial majority, 80 percent, included the specific URL where the advertisement would appear, as the Interactive Advertising Bureau has recommended since at least 2016, and an additional 5 percent included the subdomain as well.[78] A study of a large European private ad exchange[79] examined a policy change to supplement user-based information with additional context information beyond a "channel" (e.g., news, automotive, finance) in the form of subdomain information.[80] It found that providing subdomain information as a complement to consumer data increased the average CPM by €0.154 for sites with many buyers (a 14 percent increase), but only €0.004 (2 percent) for sites with few buyers.[81]

However, even the complementary value of contextual data may vary across publishers. Theoretical studies of auctions indicate that, when markets are thin, with few bidders, additional

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[75] Abby Miller, *The Value of Vertical Ad Networks*, DMNEWS (Sept. 8, 2008), https://www.dmnews.com/the-value-of-vertical-ad-networks/.

[76] Omid Rafieian & Hema Yoganarasimhan, *Targeting and Privacy in Mobile Advertising*, 40 MKTG. SCI. 193, 206 (2021). [hereafter, Rafieian & Yoganarasimhan]

[77] Rafieian & Yoganarasimhan

[78] Sita Ada, Nadia Abou Nabout & Elea McDonnel Feit, *Context information Can Increase Revenue in Online Display Advertising Auctions: Evidence from a Policy Change*, 59 J. MKTG. RSCH. 1040, 1041 (2022) [hereinafter Ada et al.].

[79] Real-time bidding began on open exchanges but concerns about fraud and brand safety led premium publishers to create private exchanges. In a private exchange, both advertisers and sites are vetted before they can participate. *See* Ada et al.. at 1045.

[80] A subdomain might be, for example, https://www.nytimes.com/section/business.

[81] The article identifies this price change as "per impression," but consistent with most of the analysis in the article, it appears to be the cost per thousand impressions (commonly referred to as CPM (cost per mille)). If it were really "per impression," the CPM would be over €1,000, orders of magnitude greater than any other value reported in the paper.

information may reduce prices and thus ad network and publisher revenue.[82] Publishers of such sites may prefer to make their offering indistinguishable from others in order to realize higher prices.[83] The European ad exchange study found that while revenue increased or did not change significantly for most publishers with the addition of contextual information this effect was not consistent. One publisher experienced a statistically significant revenue loss, and perhaps a dozen others showed revenue losses that were not statistically significant; on average, prices increased far less for publishers with thin markets.[84] A few sites gained substantially, particularly those with more bidders before the policy change and smaller volume, high quality sites.[85] Thus, the study provides evidence of both the value of adding context to behavioral information, and the potentially divergent interests of publishers. As the authors note, "exchanges with reputable publishers, particularly smaller volume, high quality sites," should provide context information.[86] But it also suggests that some publishers may find it in their interest not to offer such information.

Contextual targeting is currently a popularly touted substitute for more effective behavioral advertising, and a search online for "contextual targeting" returns ads for service providers and articles by still other providers promoting the possibilities. Much of this attention is likely prompted by uncertainty about future regulatory requirements. In the absence of the current set of identifiers—cookies, Google Advertiser Identification (GAID), Identifiers for Advertisers (IDFA)—there is little alternative, and the hype around contextual targeting may be little more than a plea by those offering digital advertising to not abandon digital in favor of conventional media. Nevertheless, absent digital identifiers, some advertising may either cease or be moved to conventional media. To date, there is no evidence that contextual advertising has substantially reduced short term revenue losses associated with actions that block personalization. Moreover, the CMA's Digital Advertising Market Study concluded that "personalised advertising increase[s] publisher's revenue as opposed to contextual advertising, when both are available."[87]

IV. The Free Flow of Digital Information Produces Substantial Consumer Benefits

The free flow of digital information is vital to consumer access to services and content, and, in particular, relevant services and content. As summarized in an Economic Issues paper by the Federal Trade Commission's Bureau of Economics, consumers place a high value on the free online content supported by personalized advertising, and economic analysis shows that personalized advertising benefits consumers in complex ways.[88] Therefore, it is important to

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[82] Jonathan Levin & Paul Milgrom, *Online Advertising: Heterogeneity and Conflation in Market Design*, 100 AM. ECON. REV. 603 (2010).

[83] *Id.*

[84] Ada et al. at 1051, Figure 4.

[85] Ada et al. at 1053.

[86] Ada et al. at 1040.

[87] DIGITAL ADVERTISING MARKET STUDY app. F ¶ 123.

[88] YAN LAU, FED. TRADE COMM'N, A BRIEF PRIMER ON THE ECONOMICS OF TARGETED ADVERTISING (2020), https://www.ftc.gov/system/files/documents/reports/brief-primer-economics-targeted-advertising/economic_issues_paper_-_economics_of_targeted_advertising.pdf.

understand these substantial consumer benefits and economic relationships in deciding whether and how to regulate the digital information flows that enable personalized advertising.

A. Advertising Funds the Internet

The internet has allowed an unprecedented diffusion of information to consumers. Among a nearly infinite variety of possibilities, consumers can now obtain answers to nearly any question, listen to radio broadcasts, watch television programs, read the daily paper, or just hang out with their friends online. Attempts to estimate the value of these services have yielded varying results. However, all of them suggest consumers place significant value on these services. For example, in a study cited by the CMA, Brynjolfsson, Collis and Eggers estimate that the median consumer in 2017 valued search engine services at $17,530 per year, email at $8,414 per year, and digital maps at $3,648 per year. Content was also valuable, with video, social media, and music worth $1,663 to the median consumer. Adding in e-commerce ($842) and messaging ($155) brings the total value to $32,252, a 26 percent increase from 2016.[89]

Many aspects of internet content are what economists call "public goods," because they are not used up in consumption.[90] The classic example is art: five centuries of viewing have still not exhausted Mona Lisa's smile. Online, the page one viewer visits remains available for other viewers as well. In many circumstances, markets will provide too low a quantity of public goods.

Conventional media markets face the same public good issue and offer valuable insights into successful models for the provision of content. Television, for example, can always add another viewer, without reducing the value of the program to other users, and print publications can easily be passed along to another reader. Long before the internet, publishers developed effective mechanisms to finance content that consumers wanted despite the public good nature of their product, without the need for government to subsidize content directly. These same strategies are used by online publishers as well.

One strategy for providing content is to sell it to viewers, where the value of the content determines consumer willingness to pay, which in turn determines the resources available to produce more content. This is the essential business model of, for example, Home Box Office (HBO), the original Netflix, or satellite radio.

A different strategy, however, predominates in conventional media markets. Content is used to attract viewers, whose attention is then sold to advertisers. The purest example of this strategy is broadcasting, where advertising is virtually the only source of revenue. In this strategy, it is the value of viewers that determines what advertisers are willing to pay, and, as discussed in Section II, both the number of viewers and their characteristics are important. Giving away content is a very effective mechanism for attracting viewers, but it is only viable if there are advertisers willing

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[89] Erik Brynjolfsson, Avinash Collis & Felix Eggers, *Using Massive Online Choice Experiments to Measure Changes in Well-Being*, 116 PROC. NAT'L ACAD. SCI. 7250 (2019). *See* DIGITAL ADVERTISING MARKET STUDY ¶ 2.7, Box 2.1.

[90] In contrast, most goods are used up in the consumption process: the steak a consumer purchases for dinner is not available to anyone else.

to pay to talk to those viewers. In turn, the value of viewers determines the resources available for developing additional content.[91]

Dual revenue strategies are also commonplace. For example, cable television depends on both subscription and advertising revenue, as do newspapers and magazines. In fact, some products that appear at first glance to depend solely on selling the content directly, such as movies, ultimately realize significant revenue from licensing the rights to advertiser supported outlets.[92]

As it has in conventional media, advertising financing has dominated the provision of internet content. Digital advertising revenue reached $189.3 billion in 2021.[93] Digital spending was 64 percent of total advertising spending in the U.S. in that year, more than triple its 21 percent share in 2012.[94] Revenues are highly concentrated on large publishers, with the 10 largest publishers accounting for 78.6 percent of advertising revenue and the top 25 accounting for 85.1 percent.[95]

Streaming services such as Netflix were initially entirely subscription based, but quickly provoked competition from cheaper, advertising-supported services such as Discovery+, Peacock, and

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[91] The business of producing content and selling advertising is a "two-sided" or "platform" market. Content must attract an audience, but the platform must also attract advertisers. In some circumstances, such as directories or fashion magazines, advertising may increase the overall value of the product to consumers. In other circumstances, however, advertising is a nuisance: Too much advertising, or advertising that is too intrusive or offensive to consumers, may drive away some of the audience, thereby reducing the number of advertising exposures that can be sold. The publisher must consider both sides of the market in deciding what content to provide and how much advertising to offer.

[92] *See, e.g.*, TUBI, https://tubitv.com/ (last visited Sept. 13, 2022) ("Tubi is the leading free, premium, on demand video streaming app. We have the largest library of content with over 40,000 movies and television shows, the best streaming technology, and a personalization engine to recommend the best content for you. Available on all of your devices, we give you the best way to discover new content, completely free … To keep our service free and legal, we include ads, which monetize the content that our partners, such as MGM, Lionsgate, and Paramount, provide to us!"); Todd Spangler, *Fox's Tubi Inks Exclusive Lionsgate Deal to Stream 30 Films for Free*, VARIETY (June 14, 2022, 12:00 PM), https://variety.com/2022/digital/news/tubi-lionsgate-free-streaming-exclusive-1235294087/; Todd Spangler, *Tubi Plans to Spend Over $100 Million Licensing Content in 2019 for Free Streaming Service*, VARIETY (Jan. 30, 2019, 7:00 AM), https://variety.com/2019/digital/news/tubi-content-spending-100-million-licensing-free-streaming-1203122081/; AMAZON FREEVEE, https://www.amazon.com/adlp/freevee-about (last visited Sept. 13, 2022) ("Amazon Freevee is a premium free streaming service. Watch thousands of hit movies, shows, Freevee Originals, and live 24/7 entertainment channels to match/meet your mood."); *Why Am I Seeing Advertisements on Amazon Freevee?*, AMAZON, https://www.amazon.com/gp/help/customer/display.html?nodeId=GH2W6ZRQPD3ZY4DE (last visited Sept. 13, 2022) ("Amazon Freevee is a free, ad-supported streaming service. Amazon Freevee content includes advertisements that run while watching content on Freevee. These ads allow us to provide a premium selection of movies and TV shows for free."); *IMDb TV Announces a Rebrand to Amazon Freevee and Its First Original Movie*, AMAZON ADS (Apr. 13, 2022), https://advertising.amazon.com/blog/introducing-amazon-freevee.

[93] PRICEWATERHOUSECOOPERS & INTERACTIVE ADVERTISING BUREAU, INTERNET ADVERTISING REVENUE REPORT: FULL-YEAR 2021 RESULTS 17 (2022), https://www.iab.com/wp-content/uploads/2022/04/IAB_Internet_Advertising_Revenue_Report_Full_Year_2021.pdf [hereinafter IAB 2021 RESULTS].

[94] S&P GLOBAL MARKET INTELLIGENCE, GLOBAL ADVERTISING EXPENDITURE FORECAST, JUNE 2022 (2022), https://www.capitaliq.spglobal.com/web/client?auth=inherit##news/docviewer?id=62040275.

[95] IAB 2021 RESULTS at 16.

Hulu.[96] Even Netflix plans to launch a cheaper advertising supported service,[97] perhaps as early as November 2022.[98] In 2022, adoption of ad-supported streaming services by U.S. households increased by 29 percent, compared to 21 percent for subscription based services.[99] With advertising as a critical revenue source, the value of advertising is a key determinant of the total resources available to support content, whether entirely free or partially subscription funded.

How much internet advertising revenue is at stake? Display advertising and digital video, account for just over half of total revenue, and are likely to be most heavily affected by restrictions on personalized advertising.[100] Data, is crucial in buying and selling this advertising and as discussed above adds substantially to the resources available to providers hosting content.

Although contextual information is useful, it will support less content than interest and demographic information. Better contextual targeting may reduce the revenue loss, but it cannot nearly offset it all. If context information alone is only one third as effective as user-based information, that would suggest long run revenue losses approaching 50 percent.[101] That would constitute a substantial reduction in the resources available to support internet content, with inevitable adverse consequences for the quality of content that users have come to expect. D'Annunzio and Russo demonstrate this process, linking reductions in ad revenue to less content and thus lower consumer benefits.[102]

One potential strategy for offsetting revenue losses is to serve more advertisements, and, potentially, more intrusive advertisements that consumers cannot avoid. As digital advertising expert Eric Seufert noted about options for offsetting losses, "only ad load can be adjusted quickly to react to market shocks and other operating headwinds."[103] YouTube has been experimenting with more "unskippable" ads in its free service since at least the beginning of 2022.[104] Meta has

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[96] Such services have been experimenting with different advertising loads to determine the best balance. *See* Tim Peterson, *Ad-Supported Streaming Services Assess How Many Ads to Show Viewers*, DIGIDAY (Dec. 6, 2021), https://digiday.com/future-of-tv/ad-supported-streaming-services-assess-how-many-ads-to-show-viewers/.

[97] Todd Spangler, *Netflix Aims to Launch Cheaper, Ad-Supported Plan in 2023*, VARIETY (July 19, 2022, 1:39 PM), https://variety.com/2022/digital/news/netflix-ad-supported-plan-launch-1235320040/.

[98] Josh Taylor, *Netflix to Launch Cheaper Ad-Supported Subscription Tier in November*, THE GUARDIAN (Sept. 4, 2022, 11:27 PM), https://www.theguardian.com/media/2022/sep/05/netflix-to-launch-cheaper-ad-supported-subscription-in-november.

[99] Bevin Fletcher, *Ad-supported streaming adoption rate outpacing SVOD in U.S.: ComScore* FIERCEVIDEO (June 17, 2022) https://www.fiercevideo.com/advertising/ad-supported-streaming-adoption-rate-outpacing-svod-us-comscore

[100] IAB 2021 RESULTS. Search advertising, 41.4 percent of the total, is dominated by Google and would not likely be significantly affected by restrictions on targeting. The CMA estimated Google's share of the UK search advertising market at over 90%. *See* DIGITAL ADVERTISING MARKET STUDY ¶ 5.46. The data advantage in search stems largely from the ability to use query and click data to build a better search algorithm. It is the search term itself that provides the critical context. *Id.* app. F ¶ 70.

[101] *See* discussion *supra* Section III.C.

[102] Anna D'Annunzio & Antonio Russo, *Ad Networks and Consumer Tracking*, 66 MGMT. SCI. 5040 (2020).

[103] Eric Benjamin Seufert, *The inevitability of widespread ad load increases*, MOBILE DEV MEMO (October 12, 2022), https://mobiledevmemo.com/the-inevitability-of-widespread-ad-load-increases/. [hereafter Seufert: *Ad load*]

[104] Chandraveer Mathur, *YouTube just spared free users from death by unskippable ads,* ANDROID POLICE (Sept. 16, 2022) https://www.androidpolice.com/free-youtube-more-ads/.

also increased the number of ads on Instagram and other services.[105] Either change would likely be considered worse by most consumers.

Publishers may attempt to offset the losses from context-only advertising by implementing the dual strategy of advertising and subscription noted above. Researchers examining how central European websites have adapted to GDPR requirements for opt-in data sharing found that publishers adopting paywalls as a substitute for personalized ads charged between €36-€75 per year per user.[106] However, they also found that very few of the reviewed sites used this strategy, noting the legal ambiguity of such practices under GDPR. Many statutes and proposals, including GDPR and the California Consumer Privacy Act (CCPA), specifically outlaw conditioning price or quality on whether a user opts in or out of data sharing. It is not clear how such restrictions will affect, for example, Netflix's plans to introduce a cheaper version with advertising support, which would presumably employ user data to serve appropriate advertising. Thus, publishers may have to either forego a payment model entirely, or shift to subscription for all users, even those that accepted personalized advertising. Either option is likely to significantly curtail the publisher's ability to monetize their content, and thus is likely to degrade the content available.

One important segment of content at risk is news sites, which had been forced to rely more heavily both on subscriptions and display ads because of the loss of classified advertising revenue to online services such as Craigslist.[107] In studying this change, Seamans and Zhu found a 20.7 percent decrease in classified-ad rates when Craigslist entered a market and at least $7.5 billion (2022 dollars) in savings to classified-ad buyers in the 2000-2007 period.[108] A vigorous press provides important social benefits in a democratic society. As the Digital Advertising Market Study noted, if news outlets obtain less revenue from digital advertising, it "is likely to reduce their incentives and ability to invest in news and other online content, to the detriment of those who use and value such content and to broader society."[109] News, however, offers little in the way of context to facilitate targeting: there are surely few advertisers who think a story about hurricane devastation in Florida or wildfires in California is the appropriate context for their brand. Consistent with the limited possibilities for context, the Google experiment found larger revenue losses for news sites than for publishers as a whole, an average revenue reduction of 62 percent, compared to 52 percent for all publishers.[110] Although there is controversy about the precise role of personalized

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[105] Seufert: *Ad load*

[106] Victor Morel et al., Your Consent Is Worth 75 Euros A Year – Measurement and Lawfulness of Cookie Paywalls, *in* 2022 Ass'n for Computing Mach. Conf. on Computer and Communications Security, Proceedings of the 21st Workshop on Privacy in the Electronic Society, Nov. 7, 2022, https://arxiv.org/pdf/2209.09946.pdf.

[107] *Craigslist – Newspaper Killer,* SFIST.COM (Dec. 29 2004) ("Craigslist is taking away at least $50 to $65 million dollars in job ad losses alone from Bay Area newspapers.") https://sfist.com/2004/12/29/craigslist_newspaper_killer/. Robert Seamans and Feng Zhu, *Responses to entry in multi-sided markets: The impact of Craigslist on local newspapers,* MANAGEMENT SCIENCE 60, no. 2 (2014): 476-493. ("Historically, revenues from classified ads accounted for 40% of a newspaper's total revenues on average." "[T]he effect of Craigslist's entry on newspapers with classified-ad managers leads to a decrease of 20.7% in classified-ad rates.") [hereafter, Seamans and Zhu].

[108] Seamans and Zhu

[109] DIGITAL ADVERTISING MARKET STUDY ¶ 2.85.

[110] Ravichandran & Korula.

advertising in the decline of newspapers revenue, reducing their ability to use personalized advertising to monetize their content can only make things worse.

The rise of the web, with its simultaneous reductions in the cost of providing and finding information has introduced considerable diversity in services, content, and viewpoints available to users.[111] However, sustaining such diversity, even with these lowered costs, requires an ability to market the audience to advertisers. Because niche audiences may not be stable,[112] the ability of niche publishers to attract advertisers depends on identifying users through the flow of data about their interests and demographics. The chilling effect on diversity and innovation from restrictions on the flow of user data and personalized advertising has been acknowledged by scholars that grapple with privacy issues,[113] and the available evidence shows that this is a significant concern.

B. Data-Driven Advertising Is Especially Vital to Small Publishers

Increasingly, digital advertising is sold programmatically, sold through real-time bidding platforms, and delivered via automated placement or optimization of some particular objective, such as sales or CTR. The IAB reports that 89 percent of non-search advertising was sold programmatically in 2021,[114] up from 41 percent in 2014.[115] Nevertheless, direct placement remains significant. A Digiday survey of 119 publisher executives found that half said that directly sold advertising was a "large or very large source of revenue for them."[116] Larger advertisers typically use advertising agencies, in part because of the preferred trading arrangements that agencies negotiate.[117] The very largest publishers offer their own self-service interfaces to allow advertisers to engage in programmatic trading.[118]

Smaller publishers cannot afford the cost of maintaining a sales force or their own interface and are therefore less likely to derive significant revenue from direct sales. Instead, they must rely on intermediaries to sell their advertising availabilities.[119] In 2012, the largest websites by Quantcast rank sold just under half of their advertising directly, while the smallest sites, ranked 3500-4000, sold about two thirds of their advertising through intermediaries.[120] As programmatic advertising

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[111] Chetan Kumar, John B. Norris & Yi Sun, *Location and Time Do Matter: A Long Tail Study of Website Requests*, 47 DECISION SUPPORT SYS. 500 (2009).

[112] Harsh Taneja, *The Myth of Targeting Small, but Loyal Niche Audiences: Double-Jeopardy Effects in Digital-Media Consumption*, 60 J. ADVERT. RSCH. 239 (2020) [hereinafter Taneja].

[113] Marvin Ammori & Luke Pelican, *Media Diversity and Online Advertising*, 76 ALB. L. REV. 665 (2012).

[114] IAB 2021 RESULTS at 21.

[115] PRICEWATERHOUSECOOPERS & INTERACTIVE ADVERTISING BUREAU, IAB PROGRAMMATIC REVENUE REPORT 2014 RESULTS 6 (2015), https://www.iab.com/wp-content/uploads/2015/07/PwC_IAB_Programmatic_Study.pdf; PRICEWATERHOUSECOOPERS & INTERACTIVE ADVERTISING BUREAU, IAB INTERNET ADVERTISING REVENUE REPORT: 2015 FULL YEAR RESULTS 13 (2016), https://www.iab.com/wp-content/uploads/2016/04/IAB_Internet_Advertising_Revenue_Report_FY_2015-final.pdf.

[116] Monojoy Bhattacharjee, *Publishers Still Rely on Traditional Revenue Streams, Research Shows*, WHAT'S NEW IN PUBLISHING (Nov. 20, 2019), https://whatsnewinpublishing.com/publishers-still-rely-on-traditional-revenue-streams-research-shows/.

[117] DIGITAL ADVERTISING MARKET STUDY ¶ 5.14.

[118] The Digital Advertising Market Study estimated that between them, Google and Facebook accounted for approximately 80% of UK digital advertising revenue in 2019. *See* DIGITAL ADVERTISING MARKET STUDY ¶ 16.

[119] DIGITAL ADVERTISING MARKET STUDY ¶ 5.30.

[120] Beales & Eisenach at 15, Figure 3.

has grown generally, the dependence of smaller publishers on intermediaries has likely increased as well.

Perhaps the biggest advantage of larger publishers is their own data on user behavior. A publisher with numerous pages can observe how consumers use the site and the kinds of products that might interest them based on which pages they visit and how much time they spend there. Yahoo, for example, has its own data about consumer visits to its home page, finance, sports, tech pages, and many others. Large platforms have access to user data that is more extensive and richer than many other publishers. CMA's Digital Advertising Market Study concluded that: "The inability of smaller platforms and publishers to access user data creates a significant barrier to entry."[121]

Smaller publishers are therefore dependent on information from third parties. Indeed, the wealth of "trackers" on most web pages stems from the efforts of numerous third parties to build the knowledge base that larger publishers already possess to enable more effective competition for advertising dollars. Restricting that data would harm competition in the advertising marketplace. Although most publishers make use of third party data sources, restrictions would be especially detrimental to the small publishers that solely rely on them.

Context is a particularly poor substitute for demographic and interest information for the small, niche publishers that make the internet such a vibrant and interesting information environment. As discussed above, personalized advertising assembles rather than attracts an audience. In studying the audiences for niche sites, Taneja found that those audiences changed over time, and therefore targeting those sites based on context could not replace targeting users for advertisers.[122] Moreover, the user constantly visiting, say, quilting sites has other interests that are likely far more varied, and valuable, to advertisers other than sellers of quilting supplies. Many niche sites are also likely to have advertiser markets with few bidders, where, as noted above, context information may actually reduce value to the publisher.

C. Advertising Is Vital to the Competitive Process

As we noted earlier, individual consumers view advertising differently, from "enjoyment to offense."[123] The ability to advertise, however, is critical to maintaining effective competition in markets for goods and services. In the words of Nobel Laureate George Stigler, "advertising is an immensely powerful instrument for the elimination of ignorance."[124] Informed consumers drive the competitive process, benefitting all consumers as sellers compete for the informed minority.[125]

The competitive effects of advertising are important because personalized online advertising has reduced the cost for companies to reach the consumers likely to be interested in their products. Effectively, the ease of online information flow means the cost of the advertising necessary to attract an additional customer has declined significantly. As we noted in Section II, online

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[121] DIGITAL ADVERTISING MARKET STUDY ¶ 43.

[122] Taneja.

[123] Shavitt, Lowrey & Haefner.

[124] George J. Stigler, *The Economics of Information*, 64 J. POL. ECON. 213, 220 (1961).

[125] *See, e.g.*, Alan Schwartz & Louis L. Wilde, *Intervening in Markets on the Basis of Imperfect Information: A Legal and Economic Analysis,* 127 U. PA. L. REV. 630 (1979).

advertising has "replace[d] a sledgehammer with a scalpel."[126] Goldfarb and Tucker found that advertising effectiveness declined when new privacy regulations limited the use of personalized ads,[127] amounting to an increase in the cost of acquiring a new customer. And, like any other product or service, an increase in the price of advertising will lead to fewer advertisements and less information provided to consumers about available products and services. A study of the relationship between advertising tax rates and advertising expenditures in Austria confirm this effect, finding that advertising expenditures decrease as the cost rises: "advertising expenditures of firms move quickly in the opposite direction of the marginal costs of advertising."[128] The Meta experiment discussed above makes clear that restricting third-party information would substantially increase the effective cost of advertising in digital channels, and given this has been seen as the most cost effective way to reach customers, would likely lead to significant reductions in advertising overall.

Advertising has three primary effects in competitive markets: It leads to lower prices for consumers, it encourages product innovation, and it reduces the differences between different demographic groups. We discuss each effect in turn.

Numerous economic studies have shown that restrictions on advertising increase prices to consumers, even when advertising does not mention price.[129] The earliest studies examined prohibitions on advertising by professional groups and found that prices for eyeglasses were 25 percent higher in states that prohibited advertising.[130] Similarly, U.S. states that prohibited advertising of the retail prices of prescription drugs had higher prices.[131] Price advertising has been found to lower prices in studies of retail gasoline markets,[132] prescription drugs, and retail liquor stores.[133]

Subsequent restrictions on advertising were more subtle, but still had adverse effects on market performance. Attorney advertising restrictions, for example, varied considerably, with restrictions on broadcast advertising in some states, prohibitions on the use of pictures in others, and requirements that advertising must be "dignified." States with more restrictions on advertising had

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[126] Evans at 3.

[127] Avi Goldfarb & Catherine E. Tucker, *Privacy Regulation and Online Advertising*, 57 MGMT. SCI. 57 (2011).

[128] Ferdinand Rauch, *Advertising Expenditure and Consumer Prices*, 31 INT'L J. INDUS. ORG. 331 (2013). The change was a move to a uniform national tax on advertising, resulting in advertising price increases in some Austrian states and price decreases in others.

[129] The FTC itself has summarized the empirical evidence regarding the impact of advertising on prices. *See* Polygram Holding, Inc., 136 F.T.C. 310, 355 n.52 (2003).

[130] The first study was Lee Benham, *The Effect of Advertising on the Price of Eyeglasses*, 15 J.L. & ECON. 337 (1972). A number of other studies of markets for eyeglasses and optometric services have reached similar conclusions. See, for example, John E. Kwoka, Jr., *Advertising and the Price and Quality of Optometric Services*, 74 AM. ECON. REV. 211 (1984); Deborah Haas-Wilson, *The Effect of Commercial Practice Restrictions: The Case of Optometry*, 29 J.L. & ECON. 165 (1986).

[131] JOHN F. CADY, RESTRICTED ADVERTISING AND COMPETITION: THE CASE OF RETAIL DRUGS (1976).

[132] ALEX MAURIZI & THOM KELLY, PRICES AND CONSUMER INFORMATION: THE BENEFITS FROM POSTING RETAIL GASOLINE PRICES (1978).

[133] Jeffrey Milyo & Joel Waldfogel, *The Effect of Price Advertising on Prices: Evidence in the Wake of 44 Liquormart*, 89 AM. ECON. REV. 1081 (1999).

higher prices for routine legal services.[134] Restrictions on types of media where advertising is otherwise permitted lead to higher prices as well. [135]

The price-reducing effects of advertising do not depend on whether advertisements actually include price information, which is rare in examples studied. The critical factor is the general competitive effects of advertising, rather than the specific effects of price advertising.

Pro-competitive effects of advertising are particularly likely in the case of online advertising. Because of its high cost, conventional advertising has generally been dominated by a relatively small number of large firms. Online, the ability to personalize advertising has opened the door to an enormous number of small advertisers, all competing for the consumer's dollar. As noted above, for example, most large platform advertisers are small businesses.

Advertising also stimulates innovation. If sellers cannot advertise innovative products, or if they cannot tell consumers why new product characteristics are important, there is less incentive to make improvements in the first place.[136] One of the best studied examples involves Kellogg's 1984 claims for All Bran cereal, conveying the then novel recommendation of the National Cancer Institute (NCI) that diets high in fiber may reduce the risk of some cancers.[137] The science, which was based largely on epidemiology rather than human clinical trials, was uncertain. Citing these uncertainties, the Food and Drug Administration (FDA) threatened to seize All Bran as an unapproved new drug. When the Federal Trade Commission (FTC) and the NCI defended Kellogg, the FDA changed course.[138]

An FTC Staff Report documented the impact of the Kellogg campaign and its aftermath.[139] Increased advertising about fiber content and its relationship to cancer risks led to significant changes in cereals.[140] Claims about the relationship between diet and disease increased elsewhere as well, with similar marketplace impacts. For example, claims about the relationship between diet and heart disease rose from less than 2 percent of food advertising in 1984 to more than 8

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[134] John R. Schroeter, Scott L. Smith & Steven R. Cox, *Advertising and Competition in Routine Legal Service Markets: An Empirical Investigation*, 36 J. INDUS. ECON. 49 (1987).

[135] See e.g. Robert L. Steiner, *Does Advertising Lower Consumer Prices?*, 37 J. MKTG. 19 (1973).; C. Robert Clark, *Advertising Restrictions and Competition in the Children's Breakfast Cereal Industry*, 50 J.L. & ECON. 757 (2007).

[136] Advertising is an intangible investment, whose value can only be recovered through repeat sales. Sellers invest in and maintain product quality to generate repeat business. See Phillip Nelson, *Advertising as Information*, 82 J. POL. ECON. 729 (1974).

[137] The Kellogg incident is discussed in J. Howard Beales III, Timothy J. Muris & Robert Pitofsky, *In Defense of the Pfizer Factors*, *in* THE REGULATORY REVOLUTION AT THE FTC: A THIRTY-YEAR PERSPECTIVE ON COMPETITION AND CONSUMER PROTECTION 83 (James C. Cooper ed., 2013).

[138] For a more detailed discussion of the evidence on health claims, see J. Howard Beales III, *Health Related Claims, the Market for Information, and the First Amendment*, 21 HEALTH MATRIX 7 (2011).

[139] PAULINE M. IPPOLITO & ALAN D. MATHIOS, FED. TRADE COMM'N, HEALTH CLAIMS IN ADVERTISING AND LABELING: A STUDY OF THE CEREAL MARKET (1989), https://www.ftc.gov/sites/default/files/documents/reports/health-claims-advertising-and-labeling-study-cereal-market/232187.pdf [hereinafter . IPPOLITO & MATHIOS (1989)].

[140] For example, the fiber content of new cereals increased 52 percent, and the weighted average content of cereals (reflecting both product changes and changes in consumer choices) increased at a significantly higher rate than before health claim advertising began. *Id*. at 29-34, 45.

percent in 1989;[141] consumption of fat and saturated fat, the primary dietary risk factors for heart disease, fell far more sharply after 1985.[142] Again, advertising led to beneficial changes in diet. Direct-to-consumer (DTC) advertising of prescription drugs has also led to significant health benefits.[143]

Advertising is particularly important to less advantaged groups. Some people have more time and inclination to search for information from numerous sources than others. Advertising tends to make key information more widely available, which particularly benefits those who are less willing or able to search. The FTC Staff Report documented that although fiber consumption increased for all groups in the wake of the Kellogg advertising campaign, it increased more among racial minorities and single parent households.[144] Studies of restrictions on advertising for eyeglasses found that the least educated paid the highest prices when eyeglass advertising was restricted.[145] Thus, advertising can help to reduce demographic disparities in access to and the use of information.

Online advertising can be expected to have similar effects to any other advertising, and those effects are generally good for consumers. Rafieian and Yoganarasimhan find that behavioral rather than contextual consumer information can significantly increase ad targeting efficiency.[146] Restrictions that impair its effectiveness and raise its effective costs are likely to reduce competition and the substantial benefits it provides for consumers.

V. Less Information Means Less Competition

As discussed above, the rise of digital advertising enriched the audience information available to advertisers and fueled a wealth of diverse content and services. While advertising industry participants have developed their own self-regulatory programs and guidelines, such as the AdChoices program mentioned above, regulators have also begun to impose restrictions on this market. Opponents of personalized advertising have also been arguing for greater restrictions. When implemented, regulations restricting the flow of customer information have created significant adverse effects on competition among advertising platforms and networks.[147] The

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[141] PAULINE M. IPPOLITO & JANIS K. PAPPALARDO, FED. TRADE COMM'N, ADVERTISING NUTRITION & HEALTH: EVIDENCE FROM FOOD ADVERTISING 1977–1997 (2002), https://www.ftc.gov/sites/default/files/documents/reports/advertising-nutrition-health-evidence-food-advertising-1977-1997/advertisingfinal.pdf.

[142] PAULINE M. IPPOLITO & ALAN D. MATHIOS, FED. TRADE COMM'N, INFORMATION AND ADVERTISING POLICY: A STUDY OF FAT AND CHOLESTEROL CONSUMPTION IN THE UNITED STATES, 1977–1990 (1996), https://www.ftc.gov/reports/information-advertising-policy-study-fat-cholesterol-consumption-united-states-1977-1990.

[143] For a review of the evidence, see J. Howard Beales III, Health Related Claims,, the Market for Information,, and the First Amendment, 21 Health Matrix: The Journal of Law and Medicine 7-3- (2011).

[144] IPPOLITO & MATHIOS (1989) at xvii.

[145] Lee Benham & Alexandra Benham, *Regulating Through the Professions: A Perspective on Information Control*, 18 J.L. & ECON. 421 (1975).

[146] Rafieian & Yoganarasimhan.

[147] Ronan Shields, *Tension Between Privacy and Competition Exposed in Google's Latest Regulatory Probe*, ADWEEK (Jan. 13, 2021), https://www.adweek.com/programmatic/tension-between-privacy-competition-exposed-google-regulatory-probe/.

available data show that those efforts have indeed reduced competition, helping to entrench content fortresses.

A. European Union General Data Protection Regulation (GDPR) Increases Concentration and Chills Innovation.

To date, the most comprehensive regime regulating digital information flows is the European Union (EU) General Data Protection Regulation (GDPR), passed in April 2016 and effective in May 2018. It affects all companies operating in the EU and serving its residents. The regulation gives consumers rights to exercise various kinds of control over the data that relate to them. Specifically, it requires explicit consent for many uses of data, including for marketing purposes.

A growing literature documents the negative impacts of GDPR on both firm revenues and competition in the web technology services market. Johnson, Shriver, and Goldberg show that online web traffic has decreased after GDPR while market concentration has increased in website technology support services.[148] Their research documents a 15 percent drop in the number of web technology vendors websites used within the first week of GDPR enforcement. Websites were more likely to stop using smaller firms, further increasing market concentration. In subsequent research, the same authors examined online site traffic measured by website pageviews, which determine the number of advertising impressions available for sale, and e-commerce revenue for 1,084 online firms. They found a reduction of 12 percent in both page views and revenue following GDPR, likely due at least in part to less effective advertising.[149]

Peukert et al. also found evidence of reductions in the number of third-party web technology providers used by websites and increased market concentration. Using data on more than 110,000 websites for 18 months in 2017 and 2018, they found that websites reduced the number of connections to web technology providers. The authors found that the market share of Google, the largest firm in many of the relevant web technology markets, significantly increased after GDPR took effect.[150] The reductions in connections were particularly pronounced for those involving personal data, leading to a decrease in the number of third-party cookies. Aridor, Che and Salz studied the effect of GDPR cookie restrictions on firms that rely on third-party data for advertising and attribution in the online travel booking industry. They found an immediate decrease in the total number of clicks or impressions and a corresponding fall in associated revenue after the

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[148] GARRETT JOHNSON, SCOTT SHRIVER & SAMUEL GOLDBERG, Privacy & Market Concentration: Intended & Unintended Consequences of the GDPR, (unpublished working paper, Jan. 31, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3477686.

[149] SAMUEL GOLDBERG, GARRETT JOHNSON & SCOTT SHRIVER, Regulating Privacy Online: An Economic Evaluation of the GDPR, (unpublished working paper, June 1, 2022), [hereafter, GOLDBERG, ET.AL.] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3421731. Note that fewer page views also means that publishers have fewer advertising impressions to sell, in addition to price reductions.

[150] Christian Peukert et al., *Regulatory Spillovers and Data Governance: Evidence from the GDPR*, 41 MKTG. SCI. 318 (2022).

introduction of GDPR, though recovering somewhat over time.[151] As discussed above, they also noted that small advertisers, who are more dependent on third-party data, are at a disadvantage relative to large companies that can rely on their first-party ecosystems for data collection. Chen, Frey and Presidente also present empirical evidence of the negative revenue effects of GDPR, particularly on small companies, using a general sample of companies across 61 countries and 34 industries.[152] Overall, they found that firms with exposure to GDPR restrictions experienced an 8 percent reduction in profits in 2018 and a 2 percent drop in sales. The authors note that this suggests that across all companies in their sample, profit loss is likely more attributable to increased costs. However, further segregation of their data into small (less than 500 employees) and large firms showed that while profit losses are only slightly higher for small firms, sales losses for small firms appear to be driving the overall sales losses. Large firms in their data show a statistically insignificant 1.9 percent drop in sales while small firms show a statistically significant 2.7 percent drop.

Work by Lefrere and co-authors presented at the Federal Trade Commission's 2022 PrivacyCon suggests more uncertainty about longer run effects.[153] Studying both eco-system and website specific effects, the authors found re-entry by web services firms and weak or mixed effects on plausible proxies for content quality and quantity over the roughly year and a half after the introduction of GDPR. However, the authors note that "we were not able to rule out the possibility that EU websites (and the EU data ecosystem as a whole), after an initial decrease in tracking, over time reached levels of tracking comparable to pre-GDPR levels." If so, the implementation of GDPR may be imposing significant compliance and competition costs without delivering the privacy benefits promised.

GDPR has also led to reductions in new investments in technology firms, an effect that is likely to impede innovation. Using data from 2014 to 2019, Jia, Jin and Wagman studied the short-run effects of GDPR on investment in new and emerging technology firms, finding a 26.1 percent decrease in the number of monthly venture deals by EU firms relative to U.S. firms.[154] The

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[151] Guy Aridor, Yeon-Koo Che & Tobias Salz, *The Effect of Privacy Regulation on the Data Industry: Empirical Evidence from GDPR* (Nat'l Bureau of Econ. Rsch., Working Paper No. 26900, 2022), https://www.nber.org/system/files/working_papers/w26900/w26900.pdf. The study uses a novel dataset from an anonymous intermediary that covers the travel industry. The data link consumers' behavior, in anonymized and aggregated form, over time and across websites using cookies, except for consumers who opted out under GDPR, and include revenues from keyword-based online advertising as well as the output of a proprietary machine learning algorithm that predicts the likelihood of a consumer buying from a given website.

[152] Chinchih Chen, Carl Benedikt Frey & Giorgio Presidente, *Privacy Regulation and Firm Performance: Estimating the GDPR Effect Globally* (The Oxford Martin Working Paper Series on Tech. and Econ. Change, Paper No. 2022-1, 2022), https://www.oxfordmartin.ox.ac.uk/downloads/Privacy-Regulation-and-Firm-Performance-Giorgio-WP-Upload-2022-1.pdf.

[153] Lefrere, Vincent, Logan Warberg, Cristobal Cheyre, Veronica Marotta, and Alessandro Acquisti, *Does Privacy Regulation Harm Content Providers? A Longitudinal Analysis of the Impact of the GDPR.* (SSRN working paper October 5, 2022). Available at https://www.ftc.gov/system/files/ftc_gov/pdf/PrivacyCon-2022-Cheyre-Does-Privacy-Regulation-Harm-Content-Providers.pdf

[154] Jian Jia, Ginger Zhe Jin & Liad Wagman, *The Short-Run Effects of the General Data Protection Regulation on Technology Venture Investment*, 40 MKTG. SCI. 661 (2021).

reductions are more pronounced for firms that rely on user data, at 31 percent. The reduction in investments in new and emerging firms further entrenches incumbents.

One reason for the adverse effects of GDPR on competition may be the way large platforms chose to interpret and implement it. As the Digital Advertising Market Study noted, large "platforms have an incentive to interpret data protection regulation in a way that entrenches their own competitive advantage, including by denying third parties access to data that is necessary for targeting, attribution, verification and fee or price assessment while preserving their right to use this data within their walled gardens."[155] For example, some have alleged that large platforms may use unnecessarily strict interpretations of GDPR to impose restrictions on their vendors and users of their advertising systems. Google's consent tool, for example, limited publishers to a maximum of 12 ad tech vendors, where many had previously used more.[156]

Ultimately, the large and growing body of literature on the effects of GDPR data flow restrictions is consistent in finding negative impacts on competition, favoring and further entrenching dominant platforms. While the U.S. does not have an overarching regulatory structure comparable to GDPR, individual states have begun developing their own restrictions on consumer-related data flow,[157] Congress has proposed a variety of potential statutes,[158] and the U.S. Federal Trade Commission has begun its own rulemaking process in privacy.[159] The GDPR results suggest that these efforts will impose significant costs on the American economy.

B. Apple's App Tracking Transparency (ATT) Increases Gatekeeper Power and Decreases Open Web Revenues.

Apple's App Tracking Transparency (ATT) framework was announced in June 2020 during the Worldwide Developers Conference (WWDC) and took effect in April 2021 with the launch of iOS 14.5. ATT restricted digital information flows by requiring consumers using apps on iOS devices to opt in to allow third-party tracking through IDFAs.[160] This limits advertisers' ability to use the IDFA to link user data across apps. In particular, unless consumers opt in, advertisers can no longer use web links to track the results of their advertising, a use that was studied in the Meta experiment.[161] Apple's policy is enforced primarily through the threat of potential exclusion from

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[155] DIGITAL ADVERTISING MARKET STUDY ¶ 5.316.

[156] James Hercher, *Google's GDPR Consent Tool Will Limit Publishers to 12 Ad Tech Vendors*, ADEXCHANGER (May 3, 2018, 1:22 PM), https://www.adexchanger.com/online-advertising/googles-gdpr-consent-tool-will-limit-publishers-to-12-ad-tech-vendors/. *See also* Jessica Davies, *'The Google Data Protection Regulation': GDPR Is Strafing Ad Sellers*, DIGIDAY (June 4, 2018), https://digiday.com/media/google-data-protection-regulation-gdpr-strafing-ad-sellers/.

[157] David Strauss, *State Data Privacy Legislation: Takeaways from 2022 and What to Expect in 2023*, INT'L ASS'N OF PRIV. PRO.: THE PRIVACY ADVISOR (Aug. 23,2022), https://iapp.org/news/a/state-data-privacy-legislation-takeaways-from-2022-and-what-to-expect-in-2023/.

[158] Müge Fazlioglu, *US Federal Privacy Legislation Tracker*, INT'L ASS'N OF PRIV. PRO. (Apr. 2022), https://iapp.org/resources/article/us-federal-privacy-legislation-tracker/.

[159] *Commercial Surveillance and Data Security Rulemaking*, FED. TRADE COMM'N (Aug. 11, 2022), https://www.ftc.gov/legal-library/browse/federal-register-notices/commercial-surveillance-data-security-rulemaking.

[160] *User Privacy and Data Use*, APPLE, https://developer.apple.com/app-store/user-privacy-and-data-use/, (last visited Aug. 25, 2022).

[161] Wernerfelt et al. See discussion *supra* Sections II.C, III.A, III.B.

Apple's app store, though there is evidence of enforcement issues.[162] Fortune reported that the change had erased $142 billion in stock market value from Meta, Snap and other large tech firms.[163] Lotame, a data management company, quantified the potential revenue effects of the policy. The report indicated that the privacy changes could cost up to $16 billion in revenue, with Meta experiencing most of the drop at $12.8 billion.[164]

With ATT, app developers and advertisers are dependent on Apple's own attribution methodology, SKAdNetwork, to measure the success of advertising campaigns.[165] Although Apple has improved the initial system, information is provided only with a 24-hour delay, which makes it impossible to track real-time impressions.[166]

The introduction of ATT is a shift that has been defended as a means to protect privacy. However, the change may also highlight the costs to competition of this kind of policy change. Although ATT restricts third-party data, it does not restrict first-party data. Consequently, ATT advantages Apple, which can rely on its extensive first-party data while preventing competitors from combining data with others.[167] One industry participant suggested there was "probably 30 percent truth in that they're doing it for privacy reasons, and it's 70 percent that they're doing it because it's what's good for Apple."[168]

The implementation of ATT shows how restrictions on advertising affects how apps generate revenue as discussed above. Kesler analyzed the impact of ATT on app monetization using data on 580,000 apps and found an increase in paid apps and an increased shift towards in-app payments post ATT.[169] Apple shares in these revenue streams. The impact is largest for apps that are reliant on Apple as a platform and for those that employ the third-party data targeting affected by ATT.

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[162] Konrad Kollnig et al., Goodbye Tracking? Impact of iOS App Tracking Transparency and Privacy Labels (2022), *in* 2022 Ass'n for Computing Mach. Conf. on Fairness, Accountability, and Transparency, June 21-24, 2022, https://arxiv.org/pdf/2204.03556.pdf [hereinafter Kollnig et al.].

[163] Robert Hackett & Declan Harty, *Apple's Ad Changes Wiped $142 Billion off Snap, Facebook, and Other Online Ad Giants*, FORBES (Oct. 22, 2021, 9:16 PM), https://fortune.com/2021/10/22/apple-snap-facebook-earnings-google-twitter-pinterest-ad-tracking/.

[164] *IDFA and Big Tech Impact – One Year Later*, LOTAME (Apr. 21, 2022), https://www.lotame.com/idfa-and-big-tech-impact-one-year-later/ (last visited Sept. 15, 2022).

[165] *SKAdNetwork*, APPLE DEVELOPER, https://developer.apple.com/documentation/storekit/skadnetwork (last visited Aug. 25, 2022).

[166] *Receiving Ad Attributions and Postbacks*, APPLE DEVELOPER, https://developer.apple.com/documentation/storekit/skadnetwork/receiving_ad_attributions_and_postbacks/ (last visited Sept. 29, 2022). *See also* Eric Benjamin Seufert, *Apple to Ad Tech: "Fingerprinting Is Never Allowed"*, MOBILE DEV MEMO (June 10, 2022), https://mobiledevmemo.com/apple-to-adtech-fingerprinting-is-never-allowed/.

[167] John Koetsier, *Apple Just Crippled IDFA, Sending an $80 Billion Industry Into Upheaval*, FORBES (June 24, 2020), https://www.forbes.com/sites/johnkoetsier/2020/06/24/apple-just-made-idfa-opt-in-sending-an-80-billion-industry-into-upheaval/?sh=318101ea712c.

[168] Nick Jordan, Founder of Narrative I/O, quoted in Reed Albergotti & Elizabeth Dwoskin, Apple Makes a Privacy Change, and Facebook and Advertising Companies Cry Foul, WASH. POST (Aug. 28, 2020), https://www.washingtonpost.com/technology/2020/08/28/facebook-apple-ios14/.

[169] Reinhold Kesler, The Impact of Apple's App Tracking Transparency on App Monetization (Apr. 14, 2022) (unpublished working paper), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4090786. The study used a differences-in-differences approach with data before and after ATT went into effect for apps in the Apple app store compared to the control group of apps on Google.

The advantage to Apple is evident from the emerging literature on the effects of ATT. Kollnig et al. analyze 1,759 iOS apps from the UK App Store and find that the privacy restrictions reinforce the existing market power of gatekeeper companies, such as Apple, with access to large troves of first-party data.[170] Li and Tsai find that ATT reduces average new app downloads and entry, potentially decreasing market competition in the long run due to fewer market entrants and less app activity.[171]

C. Initiatives to Block the Flow of Data Favor Incumbents and Encourage Content Fortresses.

GDPR, ATT and other efforts to block or slow the flow of user data favor incumbents with access to existing data and established customer relationships. These efforts also encourage the further entrenchment of content fortresses, where data collection and use occur within a closed, first party data ecosystem. Both of these factors work to squeeze the open web/app ecosystem that has driven so much of the wealth and diversity of content and services in the digital age.

Existing companies have preexisting relationships with users and customers, and in many cases may have established trust and transparency about the use of that data for marketing purposes. Consumers agree to provide access to a wealth of data when they use sign-in services across a range of services from subject-specific niche forums to large platforms. User facing and established brands are more likely to get consent from new customers, and more likely to have existing customers that will confirm consent to data collection already in place.[172] While explicit consent requirements will reduce revenue overall, the effects are greater for small sites. Garrett Johnson and his colleagues has shown that "smaller e-commerce sites see almost twice the decline in recorded revenue (-16.7%) than larger sites (-7.9%)"[173] due to GDPR, because smaller sites have a more difficult time obtaining consent for data use. As one of the authors of this paper noted in testimony to the U.S. House Subcommittee on Digital Commerce and Consumer Protection, many independent companies operating in open web advertising are not customer facing, have no name recognition, and thus are likely to have similarly disproportionate declines in their ability to compete.[174]

Anticompetitive consequences arise in part because current privacy initiatives give an advantage to first party data—user data collected and used by and within the same entity—over data that is

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[170] Kollnig et al.

[171] Ding Li & Hsin-Tien Tsai, Mobile Apps and Targeted Advertising: Competitive Effects of Data Exchange (unpublished working paper, June 21, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4088166.

[172] Verena M. Wottrich, Peeter W.J. Verlegh & Edith G. Smit, The role of customization, brand trust, and privacy concerns in advergaming, INTERNATIONAL JOURNAL OF ADVERTISING, (2017) 36:1, 60-81. https://www.tandfonline.com/doi/pdf/10.1080/02650487.2016.1186951

[173] GOLDBERG, ET.AL.

[174] *Understanding the Digital Advertising Ecosystem: Hearing Before the Subcomm. on Digit. Com. & Consumer Prot. of the H. Comm. on Energy & Com.*, 115th Cong. 50 (2018) (statement of J. Howard Beales III, Professor of Strategic Management and Public Policy, George Washington School of Business). For example, the first four members on the alphabetical list of the Network Advertising Initiative (NAI) members are 33Across, AcuityAds, AddThis, and Adform. None of these are household names. See *Members*, NETWORK ADVERTISING INITIATIVE, https://thenai.org/about/members/ (last visited Sept. 30, 2022). NAI is a self-regulatory association of third-party digital advertising companies.

transferred between different entities. First parties generally have broad permission to use their data as they see fit, but there are additional requirements for sharing information with someone else – a "third party." From a privacy perspective, however, there is little difference between these scenarios. Whatever consequences regulators (or consumers) are hoping to prevent depend on the information and how it is used, not whether that use is by a "first" or "third" party. Both first and third parties may create risks by failing to provide adequate security for information, and either may potentially use the information in a way that is harmful to the consumer.

The relevant economic question is the most efficient way to organize the information economy to allow companies to obtain the information necessary for competitive success. If first party information use is valuable, it is just as valuable and no more of a risk to privacy if the most efficient way to use the information is to provide it to a third party who actually does the analysis.[175] Similarly, if the most efficient way to organize credit card transactions is to employ specialized intermediaries who are entirely unknown to the consumer, requiring the consumer's specific agreement to each intermediary raises costs for all involved without any perceptible benefits.

Because they create advantages for first parties, restrictions on information sharing also likely increase the consolidation of content and services within integrated, large competitors.[176] The result is content fortresses, which are "collection[s] of first-party (and potentially second-party) content that is supported by owned ad tech infrastructure such that reliance on external sources of new users or data is minimized."[177] With larger pools of users, and greater ability to leverage data for marketing to those users than small or emerging content providers, these content fortresses are likely to be more attractive to advertisers, and to command premiums relative to content on the open web.

Reduced competition will reduce the creation of consumer benefits, degrading the quality and quantity of content and services offered as companies invest less in attracting users. However, as we show in Section IV, regulating the flow of digital information also will directly reduce the creation of consumer benefits.

VI. Allowing Consumers to Opt Out of Information Sharing Is the Proper Approach

That the economy has been radically altered by technological advances in information processing is obvious to all of us. This paper has reviewed the empirical studies that examine the effects of

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[175] *See* Michael S. Gal & Oshrit Aviv, *The Competitive Effects of the* GDPR, 16 J. COMPETITION L. & ECON 349 (2020) for a discussion of the potential impact of privacy regulation on the choice between internal collection and sharing.

[176] Eric Benjamin Seufert, *Content Fortresses and the New Privacy Landscape*, MOBILE DEV MEMO (July 12, 2021), https://mobiledevmemo.com/content-fortresses-and-the-new-privacy-landscape/.

[177] Eric Benjamin Seufert, *The Profound, Unintended Consequence of ATT: Content Fortresses*, MOBILE DEV MEMO (Feb. 15, 2021), https://mobiledevmemo.com/the-profound-unintended-consequence-of-att-content-fortresses/.

restricting the flows of information that underlie much of the new digital economy. That research indicates that restrictions on information flow put the benefits of the digital economy at risk.

Consumer data has always been central to advertising decisions. Conventional media depend on audience demographics for both placing advertisements and for creating content to attract to the viewers advertisers want to reach. The advantage of online and mobile advertising is its better information that allows assembling an audience with the desired characteristics. That in turn enables more firms to take advantage of that data, at a smaller scale, allowing small and emerging firms to compete more easily for customer attention. Such firms would be disproportionately affected by restrictions on data flows. Contextual information can complement user information, but it cannot replace it.

User-derived information substantially increases the price that advertisers are willing to pay for advertising. It is essential for measuring advertising effectiveness and preventing excessive repetitions of an advertisement that only annoy consumers. The digital information flows that increase the value of online advertising are a principal funding source for an enormous amount of digital content. Consistent with other studies, the Digital Advertising Market Study estimated that publishers could lose 70 percent of their revenue. Smaller publishers would be disproportionally affected.

The approach of current privacy initiatives has been shown to significantly reduce the benefits of the digital ecosystem. Restrictions like those in the GDPR or ATT significantly increase costs and increase concentration in affected industries. They favor incumbents and encourage firms to turn away from the open web and app ecosystem that has created so much wealth and diverse content. Alternative approaches can both better preserve those benefits and provide protections to users who are concerned about privacy.

As we have discussed, the use of information to personalize ads offers substantial benefits to individual consumers, and to consumers and the marketplace as a whole. Judging from their behavior, many consumers find privacy tradeoffs in the current digital ecosystem to be acceptable. As noted in a seminal overview of the economics of privacy, "At the same time as they profess their need for privacy, most consumers remain avid users of information technologies that track and share their personal information with unknown third parties."[178] They are in fact often willing to share information in exchange for small benefits. For example, in experiments, Athey, Catalini and Tucker found that only a small amount of money was needed to induce disclosures of personal information.[179] In addition, the authors found that the outcome of the experiment could be manipulated by relatively minor changes in the information provided or in the experimental process. These results suggest that many consumers do not have strong or generally applicable preferences for privacy over benefits that sharing information may bring. In a 2018 review of consumer attitudes toward privacy choices, Gerber and colleagues find that the most important

[178] Acquisti, Alessandro, Curtis Taylor, and Liad Wagman, *The Economics of Privacy*, JOURNAL OF ECONOMIC LITERATURE 54, no. 2 (2016): 442-92.

[179] SUSAN ATHEY, CHRISTIAN CATALINI AND CATHERINE E. TUCKER, *The Digital Privacy Paradox: Small Money, Small Costs, Small Talk* (MIT Sloan Research Paper No. 5196-17, Stanford University Graduate School of Business Research Paper No. 17-14, April 8, 2018). Available at SSRN: https://ssrn.com/abstract=2916489.

factor in predicting choice appears to be a "privacy calculus" where consumers weigh the expected benefits from information sharing.[180] Again, this argues against a blanket prohibition against information flows in general or against the use of information in marketing.

Nevertheless, some consumers have strong privacy preferences over marketing uses of user information. The relevant policy question is how best to enable those consumers who value privacy highly to protect the privacy they seek.

In a modern economy, no consumer can process all the available information about all of the decisions they must make, ranging from the mundane (what to have for breakfast) to the life altering (should I get married). As has been recognized for decades, attention is a scarce resource, and consumers—with their individually variable needs and desires—make rational decisions about where they should pay attention.[181] Unsurprisingly, those who consider a particular decision more important devote more attention to it.

For consumers to make choices to protect privacy or allow use of information a consumer must first *decide* to allocate attention to it. Because consumers literally have (at least) hundreds of ways that they can use their time, to care about choices regarding their information they must overcome both the costs of decision-making and the opportunity cost of not using their time elsewhere. The most important cost of exercising choice may well be the cost of considering the issue at all. Reading and understanding privacy notices is a cost that most consumers choose not to incur.[182] The perceived benefits are simply too low. Simpler notices are always possible, but any notice that provides meaningful information about the actual uses of information in the modern economy will necessarily impose costs on consumers who must read and process the information. Consumers may rationally decide to spend their scarce attention elsewhere, particularly when the stakes are small. As Richard Posner notes, "When the consequences of making a 'correct' decision are slight, ignorance is rational."[183] In such circumstances, the default rule is therefore likely to dominate choices.

The stakes for most consumers in decisions about personalized advertising are small indeed. The probability of some adverse event occurring from such information use generally is remote at best. If particular uses of certain information create harms, then the appropriate response is to restrict that particular use of that information. It is the use of the information that creates the harm, however, not the fact that the information is shared with another party.

To be sure, most consumers are unaware of the details of how information is used in online advertising markets, or, for that matter, anywhere else. They are likely unaware of the identities, or even the number, of the parties with whom their information is shared to process an ATM or a credit card transaction. Few, if any, would argue that such ignorance means the choice to use an

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[180] Gerber, Nina, Paul Gerber, and Melanie Volkamer, *Explaining the Privacy Paradox: A Systematic Review of Literature Investigating Privacy Attitude and Behavior*, COMPUTERS & SECURITY 77 (2018): 226-261.

[181] See e.g. Herbert A. Simon, Models of Bounded Rationality (MIT Press, 1982).

[182] See the discussion of consumer engagement with privacy policies in DIGITAL ADVERTISING MARKET STUDY ¶¶ 4.85-4.90.

[183] Richard Posner, *Organ Sales – Posner's Comment*, THE BECKER-POSNER BLOG (Jan. 1, 2006), http://www.becker-posner-blog.com/2006/01/page/2/.

ATM or a credit card is made solely as a result of asymmetric information, or that it is not a "real" choice because those services are important features of modern life. It is instead a perfectly reasonable allocation of time and attention. Nor should consumers need to understand those details. They should be, and generally are, protected from adverse consequences that may result from misuse or abuse of information given existing regulation.

The notion that consumers have no "real" choice because certain digital services are "essential" in the modern world is similarly flawed. Such services are only "essential" because they offer value to consumers that is greater than the cost of allowing the use of information that finances the provision of the service. Electricity is certainly an "essential" service, but it would quickly become unavailable if we let consumers "opt in" to paying for it. The fact that the online transaction is barter – an exchange of the consumer's information and attention for services rendered – rather than in legal tender does not change its fundamental nature.

For most consumers, the consequences of information sharing for personalized advertising are slight, at best. In most instances, the *only* consequence is receiving advertising that is more likely to be of interest. Nor are consumers likely to incur costs to obtain more relevant advertising, and many are unaware that the larger benefits of free internet services and content are dependent on advertising revenue.[184] If the default regarding use of information to personalize advertising is no use of information, most consumers will end up without it. That was the FTC's conclusion in 2018: "if consumers were opted out of online advertisements by default (with the choice of opting in), the likely result would include the loss of advertising-funded online content."[185]

Default rules should be designed to impose the costs of transactions on consumers who think these costs are worth paying. An "opt-out" default rule means that consumers who think that the stakes are low, and the costs of a considered decision are not worthwhile can avoid those costs. Consumers with stronger preferences, however, will face the costs of making a decision. In contrast, broad default restrictions on digital data flows instead impose costs on all consumers.

Opt out has proven to be a workable and beneficial rule, even for information that is undeniably sensitive. The Fair Credit Reporting Act restricts the use of credit report data to a list of "permissible purposes." In 1996, Congress amended the act to codify lenders' ability to use a credit report to make prescreened offers of credit or insurance, allowing consumers to opt out of this use of information. Prescreened offers quickly became a principal mechanism of competition

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[184] For example, the Digital Advertising Market Study noted that only about half of consumers recognized advertising as the primary funding source for search engines. *See* DIGITAL ADVERTISING MARKET STUDY ¶ 4.67.

[185] FTC Staff Comment to the NTIA: Developing the Administration's Approach to Consumer Privacy, Docket Number 18021780-8780-01 (November 9, 2018). https://www.ftc.gov/system/files/documents/advocacy_documents/ftc-staff-comment-ntia-developing-administrations-approach-consumer-privacy/p195400_ftc_comment_to_ntia_112018.pdf

in the credit card industry in particular, "injecting intense price and service competition into the credit card market which had not been historically noted for either."[186]

Of course, those who care more are more likely to be willing to think about the issue, whatever the default rule. Experimental evidence, although limited, indicates that those who care most about privacy make the same choice about whether to share information whether the default rule is opt in or opt out.[187] That finding argues for an "opt out" rule, if we must choose, because the people who care more about the issue are willing to take the time necessary to consider it. They are also the ones who receive a benefit from doing so. Those who are not concerned do not have to face the costs of thinking about it, because they are happy to defer to the default rule.

The challenge of effective privacy regulation is to identify the particular uses of specific information that create adverse consequences for consumers, and then identify effective policies to reduce the risk of those consequences. Broad requirements for consent to information sharing may create the illusion of protection, but they do nothing to prevent the exact same consequences from the use of the data by the party who obtained it initially. As we have detailed in this paper, however, the default rule is crucial to the support of online advertising markets, and in turn to the principal funding mechanism for the internet content we all enjoy.

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[186] Cate, Fred H., Robert E. Litan, Michael Staten, and Peter Wallison *Financial Privacy, Consumer Prosperity, and the Public Good: Maintaining the Balance*, In FEDERAL TRADE COMMISSION WORKSHOP ON INFORMATION FLOWS: THE COSTS AND BENEFITS TO CONSUMERS AND BUSINESSES OF THE COLLECTION AND USE OF CONSUMER INFORMATION, (2003), at 12.

[187] Yee-Lin Lai & Kai-Lung Hui, *Internet Opt-in and Opt-out: Investigating the Roles of Frames, Defaults and Privacy Concerns*, PROCEEDINGS OF THE 2006 ACM SIGMIS CPR CONFERENCE ON COMPUTER PERSONNEL RESEARCH, 253 (2006). On the other hand, among consumers who were less concerned about privacy, the default rule mattered.

NERA
ECONOMIC CONSULTING

NERA Economic Consulting
2112 Pennsylvania Ave. NW
4th Floor
Washington D.C. 20037
Tel: 1 (202) 466-3510 Fax: 1 (202) 466-3605
www.nera.com