Hassle Costs and Consumers' Voice: Evidence from a Website Redesign*

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Abstract

We examine how hassle costs affect complaining using a natural experiment in which the Federal Trade Commission (FTC) modernized its website for consumer complaints, making complaints easier to file. Using a regression discontinuity approach, we find that complaints to the FTC jumped by 40%, driven by increases in completion rates, and that consumers submitted more detailed information. Complaints increased the most among older and white consumers. Finally, the marginal complaint induced by the redesign was less likely to report monetary losses after the redesign, and was also shorter and easier to read.

Keywords: fraud, complaints, consumer protection, hassle costs

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1 Introduction

Policymakers increasingly learn about problems in the marketplace from consumer reports and complaints.[1] In 2021 alone, the Consumer Sentinel Network received almost 6 million complaints from consumers concerning several billions of dollars in losses.[2] Such complaints provide evidence for law enforcement actions and raise consumer awareness of bad actors, and thus generate positive externalities to society.

Very few consumers complain about fraud and other deceptive practices, however, with surveys finding only 5% of consumers affected by fraud complain to a government agency or the Better Business Bureau (BBB) (Anderson, 2021). The private benefits to consumers to complaining might be small, especially if there is no clear link between consumers' complaint and recoupment of their losses. On the other hand, filing a complaint requires significant time costs in learning about which agency accepts complaints, gaining access to a computer or internet connection, and submitting the appropriate information.

Unfortunately, reducing these costs may not provide policymakers better information. Economists have long known that the "hassle" costs required for entry affect which individuals select into a government program (Akerlof, 1978; Nichols and Zeckhauser, 1982). Hassle costs create two countervailing effects. A costly application process could screen out low value participants, and so target program resources to individuals who have the most to benefit from them. On the other hand, application and enrollment costs can often be high for disadvantaged participants with much to gain for the program.

In this article, we examine how reducing hassle costs affects the complaints that policymakers receive through a natural experiment. In October 2020, the Federal Trade Commission (FTC) released a redesigned version of its online interface for logging consumer

[1] We refer to consumers' voluntary submission of information about fraud and other scams as "complaints" throughout this article. The FTC now describes this information as "reports", in order to emphasize the problems that consumers may observe as opposed to whether the consumers were directly affected or lost money as a result.

[2] See https://www.ftc.gov/enforcement/consumer-sentinel-network for more details on the Consumer Sentinel Network.

complaints, making the process of filing a complaint substantially easier. The new online interface was unanticipated by consumers. The process of calling the FTC to complain, or complaining to other government agencies or the BBB, remained unchanged. This sudden reduction in hassle costs allows us to examine the interplay of the two countervailing effects of hassle costs.

Using a regression discontinuity analysis, we first show that the FTC's redesign led to a larger number of complaints. In the month following the redesign, the number of completed online complaints increased by 40 percent. This jump in complaints comes exclusively from the completion margin, as consumers who began a complaint were 4 percentage points more likely to submit it after the redesign. We do not find any change in the number of overall or new users to the FTC's desktop or mobile complaint sites, as we would expect from an unanticipated redesign.

The quality of the complaint records also improved after the redesign. Most fields are optional when lodging a complaint, even though this information can be valuable to policymakers. We find a nine percent increase in the share of complaints that voluntarily included consumer geographic information and a 10 percent increase in the share of consumers who reported their age.

We then examine how the redesign affected the composition of complaining consumers. Policymakers are especially interested in protecting older adults from fraud (Federal Trade Commission, 2022*a*). While the number of consumers in all age categories increase, the largest increases were for consumers aged 70 to 79 and over 80.

On the other hand, the decrease in the hassle costs of complaining did not rectify the large disparities in complaining between white and non-white consumers found in Raval (2020*b*).[3] We impute consumers' race and ethnicity using the first name and surname that all consumers report and find slightly lower increases in Latino complaints compared to white

[3]Using data on consumers affected by nine consumer protection law enforcement actions, Raval (2020*b*) found that residents of heavily Black and Latino areas who lost money in the cases were about half as likely to complain as residents of heavily White areas.

and Black complaints after the redesign.

We find evidence for both of the countervailing effects of reducing hassle costs found in the literature. First, the length of the text in the complaints consumers submitted falls substantially, as does the grade level and readability of the texts themselves. Less sophisticated consumers might write less, and also write using a simpler writing style. Alternatively, because the redesigned site elicited more information from consumers in other fields, they might have written less in the open-ended comments.

However, the share of consumers reporting a monetary loss on desktops decreases by 2.6 percentage points, so the easier complaint process brought in consumers for whom the monetary harm was likely smaller. In addition, consumers were less likely to use words related to an online purchase in their complaint after the redesign, which is consistent with a lower probability of a monetary loss. A lower probability of loss is consistent with hassle costs limiting complaints to consumers with worse problems.

We then use these estimates to compare how the marginal complaints induced by the reduction in hassle costs compare to inframarginal complaints. Marginal complaints are more likely to be written by white consumers and less likely to be written by Hispanic consumers, are less likely to report a monetary loss, and are much less sophisticated in their writing style.

This paper contributes to a literature on hassles and targeting that has focused on disadvantaged groups applying to government programs (Currie, 2006; Diamond and Sheshinski, 1995; Kleven and Kopczuk, 2011). Economists have examined the selection process for the Earned Income Tax Credit (Kopczuk and Pop-Eleches, 2007; Bhargava and Manoli, 2015; Chetty, Friedman and Saez, 2013), disability insurance (Foote, Grosz and Rennane, 2019; Parsons, 1991), unemployment insurance (Ebenstein and Stange, 2010), and public health insurance (Aizer, 2007). In this paper, we examine the case where complainants are providing useful information to the government, rather than seeking benefits from the government.

We also contribute to the literature that documents patterns in fraud. So far, this

literature has focused on identifying the demographics of consumers affected by frauds and scams, the types of schemes they report, as well as the demographics of consumers who complain (Raval, 2020*a*, 2021, 2020*b*; Anderson, 2013, 2019; Raval and Grosz, 2022). In this paper we find that the redesign of the FTC's complaint website likely led to increases in the quantity and quality of complaints from older consumers. However, we do not find disproportionate increases in complaints from non-white racial groups, which is consistent with Raval (2020*b*)'s argument that racial disparities in complaining are due to feelings of social alienation rather than information costs.

Finally, we contribute to a large literature in marketing and computer science on how the design of web interfaces affects how users interact with a site. Much of this work focuses on "dark patterns", in which a website seeks to manipulate consumers to the detriment, such as making it difficult to cancel a recurring subscription. Here, in contrast, the FTC worked to make its complaint site easier to use for consumers. Our work is complementary to researchers seeking to improve disclosures of advertisements and important information to consumers.

The rest of this paper proceeds as follows. Section 2 discusses how consumers complain to federal and private entities, and also describes the redesign of the FTC's website. Section 3 discusses the Consumer Sentinel data we use. Section 4 discusses the methodology. Section 5 presents the results on short-run changes following the redesign. Section 6 concludes.

2 Background

Consumers hoping to report fraud or scams have several ways that they can complain to policymakers. The FTC has a phone number, at 1-877-FTC-HELP, open during business hours. In addition, the FTC has a website to complain, which was originally called "Complaint Assistant" and previously available at www.ftccomplaintassistant.gov. The FTC added a

mobile version of this website in 2014.[4]

Besides the FTC, consumers can complain to many government agencies or non-governmental organizations. In this paper, we use data from the two largest: the Better Business Bureau (BBB) and Consumer Financial Protection Bureau (CFPB). The CFPB accepts complaints about financial products, such as credit cards, debt collection, payday loans, prepaid cards, and money transfer services. The BBB is a non-profit organization that has accepted complaints about companies for decades. The Consumer Sentinel Network, a consortium run by the FTC, collects complaints from the FTC, BBB, CFPB, and many other sources.

On October 22nd, 2020, the FTC launched a new website to collect consumer complaints, renamed as ReportFraud.ftc.gov, and available in online and mobile versions. The new website replaced the old Complaint Assistant system.[5] The FTC cited increases in fraud reports relative to the previous year, as well as a focus on better reporting on the incidence of fraud and scams across diverse communities, as reasons for the change (Federal Trade Commission, 2021*a*,*b*). The streamlined website also came at a time, more than six months into the COVID pandemic, of increases in scams related to hand sanitizer, personal protective equipment (PPE), and COVID treatments.[6]

The ReportFraud.ftc.gov website was different in several ways from the previous FTC website. For one, the URL is shorter and easier, and explicitly brands consumers as "reporting" rather than "complaining". Consumers might see reporting as more neutral than complaining, and not requiring monetary losses from fraud.

The landing page and flow of the new website was also designed to be more user friendly. Figure 1 and Figure 2 show the landing pages and flow of the new website and the one it replaced. One the new website, clicking on the "Report Now" button leads consumers on a series of customized steps to report their fraud. The new version of the website also requires

[4] https://www.ftc.gov/news-events/news/press-releases/2014/05/file-consumer-complaint-ftc-your-mobile-device

[5] https://www.ftc.gov/news-events/news/press-releases/2020/10/ftc-announces-new-fraud-reporting-platform-consumers-reportfraudftcgov

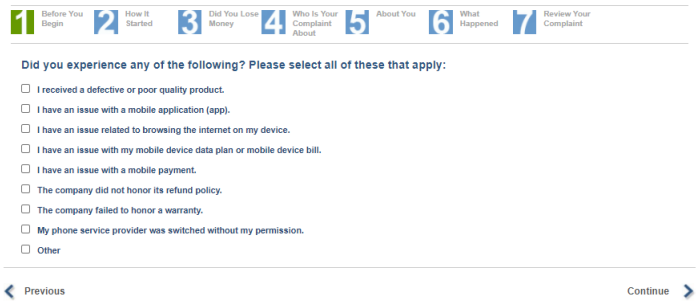
[6] See explanation in Federal Trade Commission (2021*a*). Also, for example, see recent FTC cases against Quickwork LLC, QYK Brands LLC, American Screening, and Xlear, Inc.

fewer steps to submit a complaint, in order to encourage completion. When consumers complete their report, the new website also gives them specific next steps on how to resolve their particular complaint.

Another important feature of the new website is that it prompts consumers for different questions depending on their answers to previous questions. For example, consumers reporting a scam related to an impersonator will be asked about which government agency or entity the scammer pretended to be, while consumers who reported an issue related to online shopping will not be asked those questions. Instead, these consumers might be asked about whether and how much they paid for a product, whether and when they received it, and whether they received a refund. Consumers who report having paid some amount as part of their complaint will be prompted with further questions about the timing, amount, and other details of the payment itself.

The new ReportFraud website was launched on October 22, 2020, after which users visiting the previous website were redirected to the new site. The FTC did not promote its new website ahead of time, so consumers did not anticipate that the user interface would be different from one day to the next. The FTC did, however, promote the new website immediately, including with a press release the same day. In addition, the FTC has undertaken ongoing outreach efforts to promote the new website, especially in communities with known under-reporting of fraud and high rates of fraud (Federal Trade Commission, 2021*b*). These efforts include online videos and blogs, social media posts, outreach to national and local partners, and paid ads. Later, in March 2021, the FTC began another effort to further increase reports from lower-income communities with the launch of its Community Advocate Center. This program provides specialized links to legal services providers and encourages reports from the providers and the people they serve (Kaufmann, 2021).

Figure 1: Landing Page and Flow of Complaint Assistant (Old Website)



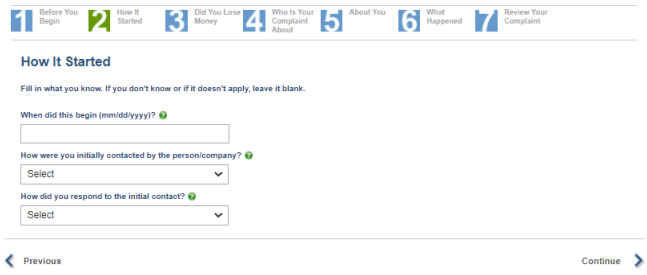
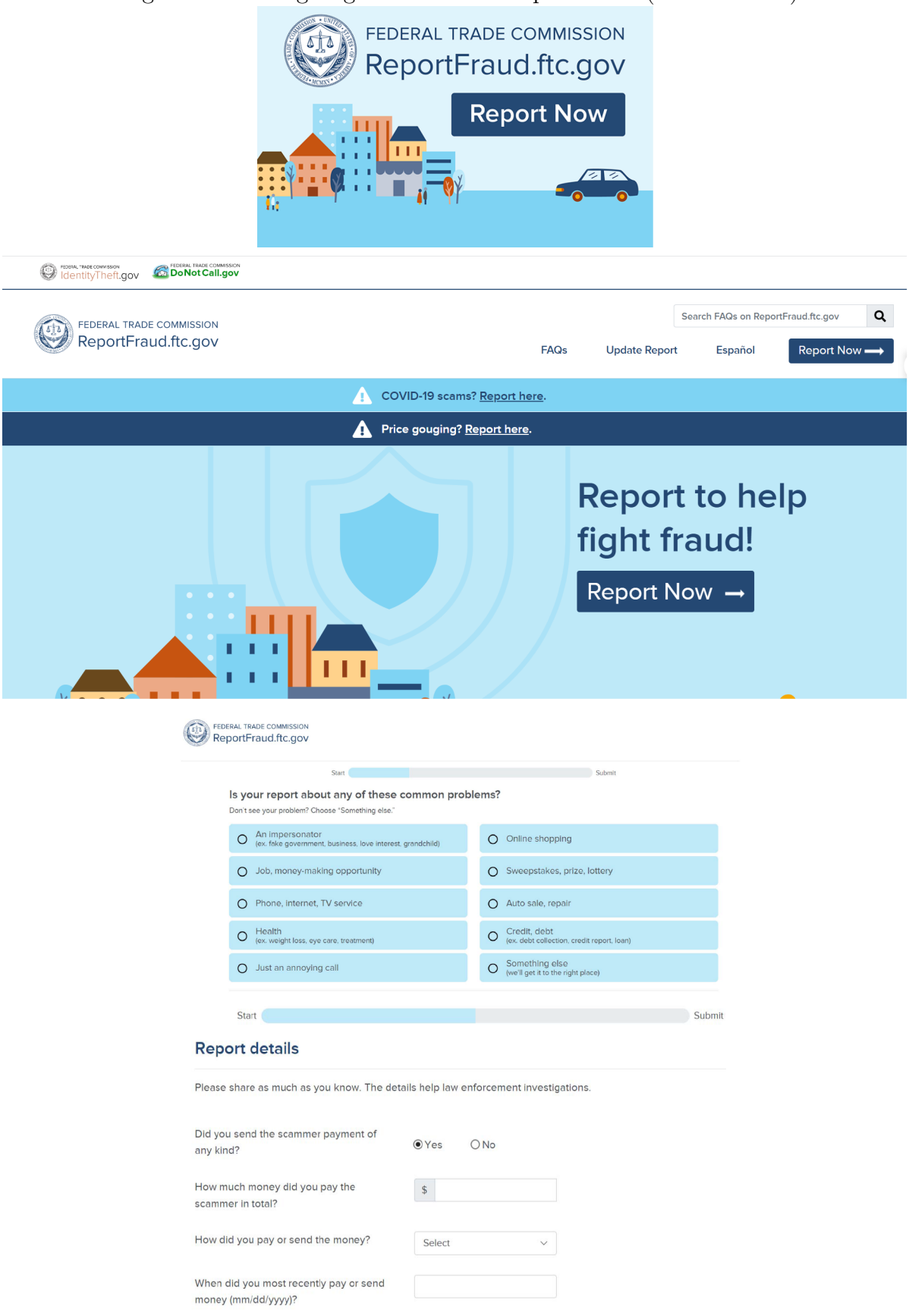


Figure 2: Landing Page and Flow of ReportFraud (New Website)



3 Data

We use data from the Consumer Sentinel Network, which collects information on consumer complaints. We focus on complaints from the Federal Trade Commission, the Consumer Financial Protection Bureau, and the Better Business Bureau. Although the Consumer Sentinel Network includes complaints from other sources, such as other government agencies, these three sources account for approximately three quarters of all the complaints.[7]

Each complaint in the Consumer Sentinal data includes information about the consumer and the content of the complaint. We observe the consumer name, zip code, city, state, country, and broad age bands, if the consumer included this information. We also observe the date the complaint was filed, as well as broad categories of complaints and the text of the complaint itself. For FTC complaints, we are able to separately identify complaints filed online, on a mobile device, or over the phone.

Figure 3 shows the weekly number of complaints to the FTC by channel between October 31, 2019 and June 6, 2021. In the first week of data shown in the figure, the FTC received approximately 12,000 complaints across its desktop and mobile platforms, and an additional 6,400 complaints over the phone. Over time, the desktop and mobile complaints rise in a parallel fashion compared to the complaints over the phone. In addition, we see a spike in complaints in the first week of April 2020, as the full effect of the coronavirus pandemic began to take hold, and a decline in complaints during the Christmas and New Year's holidays season.[8]

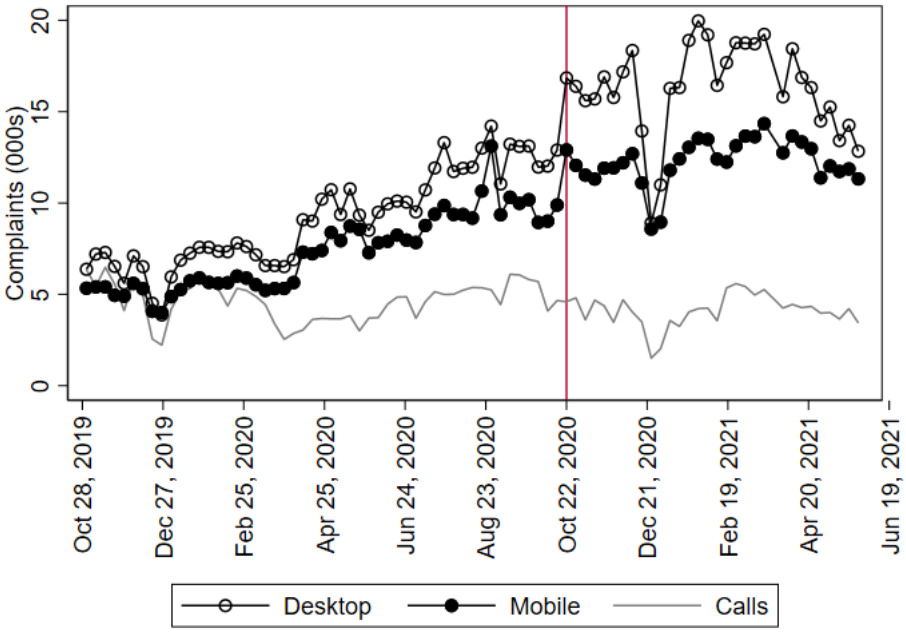
The week of the FTC's redesign is marked by a vertical line. Complaints to both desktop and mobile source jump significantly the week of the redesign. In contrast, there is no similar

[7]See https://www.ftc.gov/enforcement/consumer-sentinel-network/reports for the Consumer Sentinel Data Book, which contains further detail on the Consumer Sentinel and statistics on the complaints included in it.

[8]The FTC has since pursued several companies due to COVID-related scams and fraud, including from false promises of quick delivery of personal protective equipment, and companies making bogus health claims. See https://www.ftc.gov/coronavirus/enforcement for more information about these particular cases and other efforts.

jump in FTC phone complaints. Figure A1 depict the same graph for the BBB and CFPB, for which there is no jump the week of the FTC's redesign either.

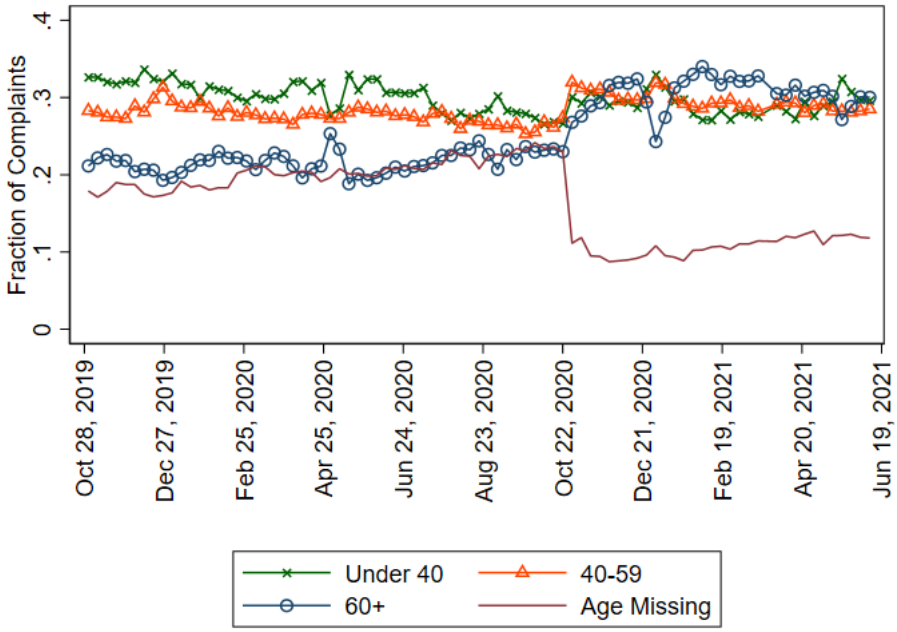
Figure 3: Complaints by Week to the FTC



Notes: The figure shows the number of complaints, in thousands, logged each week between October 26, 2019 and June 19, 2021, across the three FTC sources. The weeks are defined as starting on Thursdays, since the website redesign was a Thursday. The vertical line shows the date of the website redesign.

The complaint data also include self-reported information about consumers' age. Figure 4 shows the distribution of self-reported consumer age for consumers who filed complaints with FTC desktop and mobile systems. First, complaints that do not report age drop suddenly after the redesign. Second, the distribution of age conditional on reporting also seems to have changed. In particular, the share of consumers aged 60 or older, who might be the ones with the most difficulty in completing online complaint forms, go from being the group with the lowest share of complaints to being the highest. This increase in share suggests that older consumers may be more likely to complain after the redesign.

Figure 4: FTC Online Complaints by Week and Age



Notes: The figure shows the fraction of total complaints logged each week between October 26, 2019 and June 19, 2021, across the three FTC sources and age bands. The weeks are defined as starting on Thursdays, since the website redesign was a Thursday.

4 Empirical Strategy

To analyze the short-term effects of the website redesign, we estimate a regression discontinuity (RD) in time. RD designs with time as the running variable are a common empirical strategy in marketing, where different user interfaces can be implemented quickly and unexpectedly (Hausman and Rapson, 2017), as well as in economics.

Consumers did not anticipate that the ReportFraud website would change design overnight because the change in the website design was not advertised or announced ahead of time by the FTC. Thus, users wishing to log in a complaint on October 21 and October 22—the days before and after the redesign—would have unexpectedly experienced different user interfaces. We assume that rates of fraud and consumers' willingness to report fraud did not see similar dramatic breaks from one day to the next.

We estimate the following empirical specification:

$$y_t = \beta Post_t + f(Date_t) + \epsilon_t, \tag{1}$$

where, y_t is the number or share of complaints with a particular attribute each day t. We use data on daily complaints for the 60 days before and after the date of the website change, from August 23, 2020, to December 21, 2020, and bin complaints by day. We do not extend past December 21 because the begining of Christmas and New Year's holiday season introduces a dramatic trend break in complaints. The variable $Post_t$ indicates whether the date is after the website change, and β is the coefficient of interest. The term $f(Date_t)$ is a polynomial in the date: we use third-degree polynomials in our preferred specification. To account for differences in complaint rates over the course of a week, we control for day-of-the-week effects.

5 Results

5.1 Total Complaints

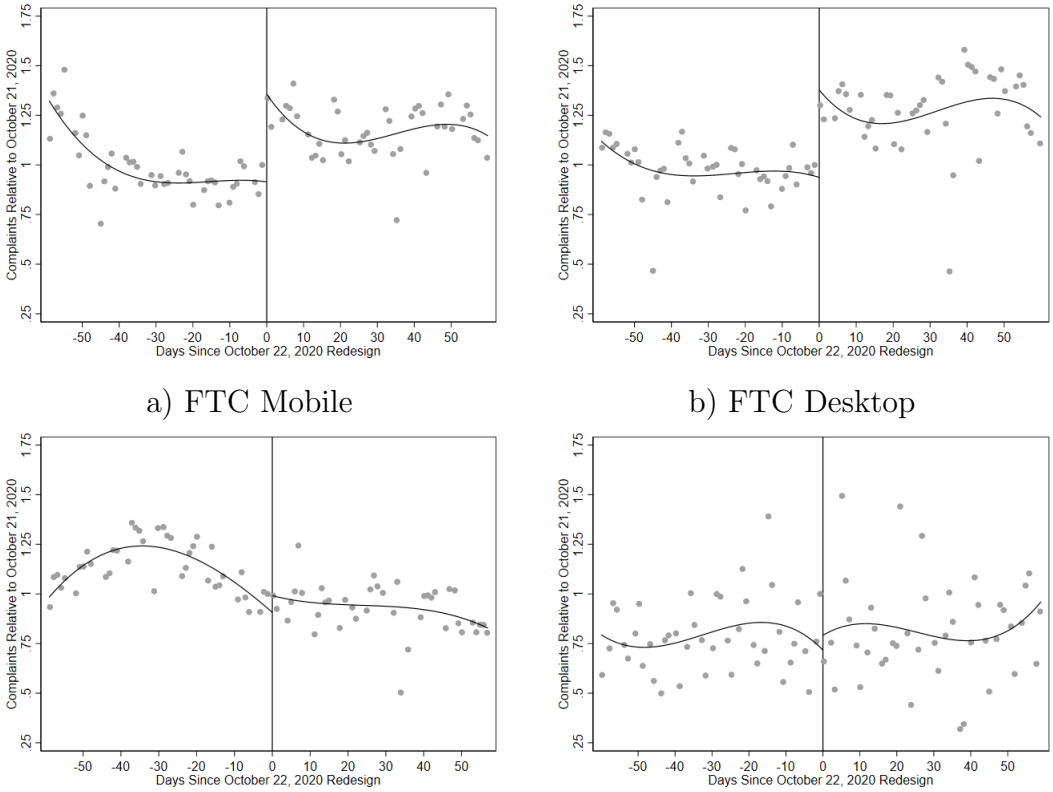
A primary goal of the FTC's website redesign was to increase the number of complaints submitted. We use data on complaints filed through the FTC's three resources—desktop, mobile, and phone—and complaints filed through the BBB and CFPB. The FTC phone complaints serve as a comparison for consumers with similar types of complaints: those that would be appropriate to file with the FTC. Meanwhile, the BBB and CFPB serve as comparisons with other agencies. The complaints filed with the BBB are broadly similar to the FTC in terms of the types of industries and scams. The CFPB is a sister federal agency, although its complaints are limited to financial topics and so tend to overlap less with FTC complaints.

Figure 5 displays the number of daily complaints by source 60 days before and after the

website change. In order to show the regression discontinuity, we also display estimates of a third degree polynomial with day of the week effects for the periods before and after the change. Each panel is adjusted to be expressed in shares relative to October 21, the date before the redesign, which is set to 1. For example, a marker at 1.25 means that there were 25% more complaints that day than on October 21.

The number of FTC mobile and desktop complaints clearly jump at the date of the website redesign. In contrast, the FTC's phone complaints are flat through the threshold, as are the BBB and CFPB complaints.[9]

Figure 5: RD Estimate of Website Redesign on Number of Complaints



a) FTC Mobile

b) FTC Desktop

c) FTC Calls

d) BBB & CFPB

Notes: The figure shows the daily number of complaints report to each of the three FTC sources and to the CFPB and BBB, from 60 days before and after the FTC's website redesign on October 22, 2020. For each panel, the number of complaints are expressed relative to the number of complaints on the day prior to the redesign, October 21, 2020, which are set to one. The vertical bar shows the date of the redesign. The fitted lines are an RD estimate the includes a third-degree polynomial and controls for the day of the week.

Table 1 shows the coefficient estimates that correspond to the figure, where the number of

[9] Figure A2 disaggregates the BBB and CFPB.

complaints is expressed in logs. FTC online complaints increased by 40% due to the change in the user interface, with a similar jump for desktop (42%) and mobile (37%) complaints. The effect on FTC calls is positive at 8%, but not statistically significant, while the coefficient is -0.3% and not statistically significant for the BBB and CFPB. Table A1 shows similar results using a first order polynomial, with a smaller significant estimate for online complaints (28%) and a negative insignificant estimate for FTC phone calls (-9%).

Table 1: RD Estimate of Website Redesign on Number of Complaints

	(1) FTC Online	(2) FTC Mobile	(3) FTC Desktop	(4) FTC Calls	(5) BBB & CFPB
RD Estimate	0.395***	0.374***	0.416***	0.0808	-0.00368
	(0.0721)	(0.0634)	(0.0657)	(0.0531)	(0.246)

Notes: The table shows estimates of equation 1, where the dependent variable is the log number of daily complaints. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

We evaluate the mechanisms behind the increase in complaints using data from the website developer on the number of users accessing the FTC's complaint websites, together with successful completions of the complaint form. In Table 2, we report RD estimates from the website redesign of the change in log total users and new users (columns 1 and 2), and the completion rate, calculated as the number of complaints each day in the Consumer Sentinel data divided by the number of total users in the website developer data. We find no change in the number of total users or new users after the redesign. However, the completion rate rose by 4 percentage points.

Because the user interface change was not anticipated, the number of users who visited the sites to begin filing a complaint did not change. In other words, the underlying rate of consumers starting a complaint was unchanged. However, the new site's improvements allowed more users to finish filing their complaint, resulting in the larger number of complaints seen above.

Table 2: RD Estimate of Website Redesign on FTC Users and Completions

	(1)	(2)	(3)
	Total Users (log)	New Users (log)	Completion Rate
RD Estimate	-0.000515	0.00591	0.0399*
	(0.0644)	(0.0759)	(0.0197)

Notes: The table shows estimates of equation 1. In columns 1 and 2 the dependent variable is the log number of total users and new users. In the final column the dependent variable is the fraction of started complaints that were completed.The specification includes a third degree polynomial and controls for day of the week. Data includes complaints at the daily level across FTC desktop and mobile platforms. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

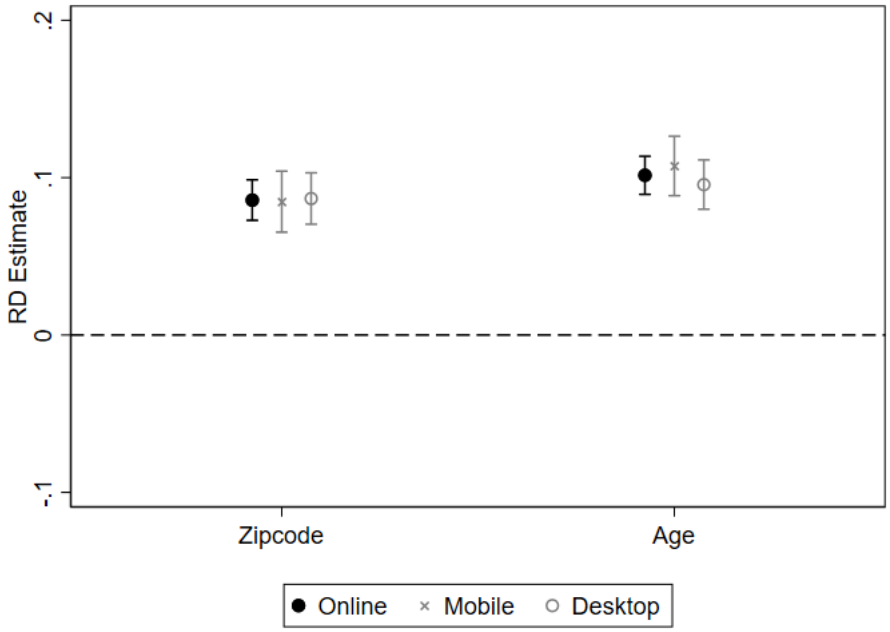
5.2 Quality of Complaints

We then investigate how the quality of complaints changed as a result of the website redesign, as a key goal of the redesign was to make it easier for consumers to provide information in complaints. Our proxy for complaint quality is whether consumers input optional personal information in complaints, including the location that the consumer lives in and their age. This information is helpful for policymakers in order to understand the alleged behavior itself, as well as trends in marketplace problems and the demographics of consumers affected by such issues.

We find substantial increases in the quality of complaints after the website redesign. Figure 6 shows RD point estimates and 95% confidence intervals on the likelihood that the consumer provided different pieces of information in each completed complaint.[10] After the website redesign, the share of consumers reporting their zip code rises by 9% and those reporting their age rises by 10%.

[10]The corresponding table is Table A2.

Figure 6: RD Estimate of Website Redesign on FTC Complaint Quality



Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1, where the dependent variable is the fraction of daily complaints that included a Zipcode or included a consumer's age. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.

5.3 Demographics of Complaining Consumers

In this section we examine how the demographics of complaining consumers changed as a result of the redesign.

We first study the age of consumers who complain. The FTC regularly publishes reports about efforts dedicated to protecting older adults (Federal Trade Commission, 2022*b*). Older consumers typically make more reports to the FTC than younger consumers. While younger consumers report losing money more often than older consumers, older consumers that report losing money have lost much more than young consumers. Typically older consumers report that scammers target them using the telephone, but that has been shifting too. Some scammers also explicitly target older people (Mclean, 2020), and Congress passed the "Stop Senior Scams Act" in 2022 in order to prevent scams targeting seniors.

The only demographic characteristic that the FTC explicitly asks for in its complaint

submission process is broad age bands. As shown previously, though, the redesign of the FTC's interface increased the proportion of consumers who recorded their age. This makes it difficult to determine if the redesign brought in more consumers of a particular age, or that consumers of a particular age were more likely to report their age because of the easier consumer interface.

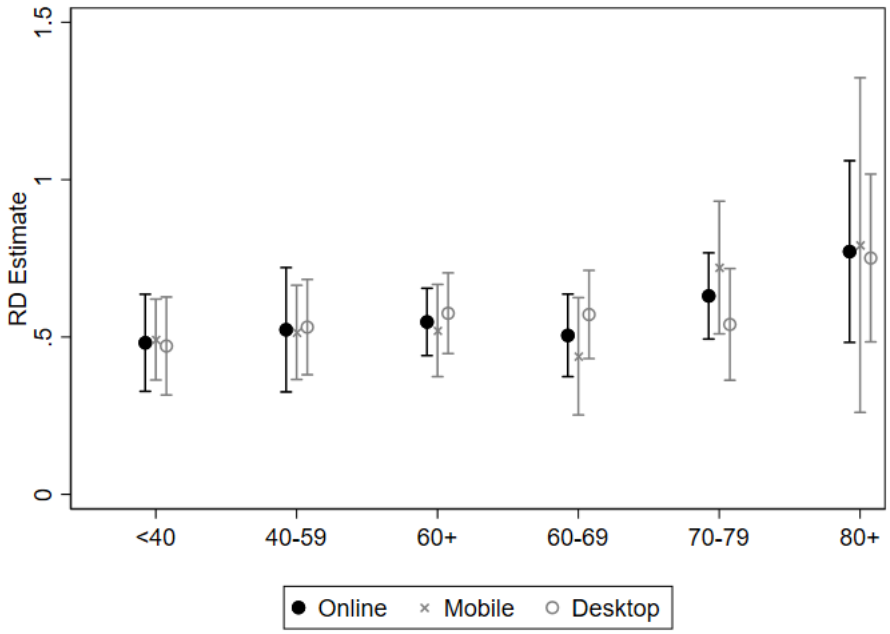
Figure 7 shows how the number of complaints in each particular age band changed.[11] All of the age bands grew faster than the 40% headline number because the share of consumers not reporting their age fell. Nevertheless, we find substantially higher increases for older adults; complaints from consumers below 40 increased by 48%, and 40-59 by 52%, compared to 55% for consumers aged 60+. Of the population aged 60 and above, the increases were concentrated amongst the oldest adults. Complaints from consumers aged 70-79 went up by 63%, and 80+ by 77%, compared to 51% for 60-69. Thus, we find evidence that either the quantity or quality of complaints from older adults increased the most after the redesign.

We next look at the racial and ethnic composition of complaining consumers. Consumers in heavily Black areas are more likely to be affected by scammers and fraudsters, while consumers in both heavily Black and Latino areas are also less likely to complain to law enforcement (Raval, 2020*b*,*a*, 2021). One of the goals of the redesign of the FTC's interface was to improve complaint rates among groups that are less likely to complain.

The Consumer Sentinel data do not, however, explicitly ask for self-identified race or ethnicity. In order to overcome this obstacle, we impute race and ethnicity using consumer first and last names in a method analogous to the Bayesian Improved Surname Geocoding (BISG) (Consumer Financial Protection Bureau, 2014; Zhang, 2018). The availability of name data did not change before and after the redesign, because a non-missing name entry is required to complete the complaint. We match surnames to data from the Census on the distribution of race and ethnicity for more than 150,000 surnames. We also match first names to data from the Home Mortgage Disclosure Act (HMDA) on the distribution for

[11] Table A3 shows the point estimates and standard errors that correspond to this figure.

Figure 7: RD Estimate of Website Redesign on FTC Consumer Reported Age Bands



Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1, where the dependent variable is the log number of daily complaints by consumers in each age band. Consumer can also choose to not report their age. The age 60 and above is the sum of the other older age bands. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.

more than 4,200 first names (Voicu, 2018).

For consumers with only first or last name matched to the Census or HMDA data, we calculated the probability that consumer was a given race as the probability their first or last name occurred in the population. For consumers with first and last name available, we used Bayes' Rule,[12] with the probability an individual is of a particular race or ethnicity r given their first and last names f and s as:

$$Pr(r|f,s) = \frac{p(r|f) * q(s|r)}{\sum_{r \in R}(p * q)}, \tag{2}$$

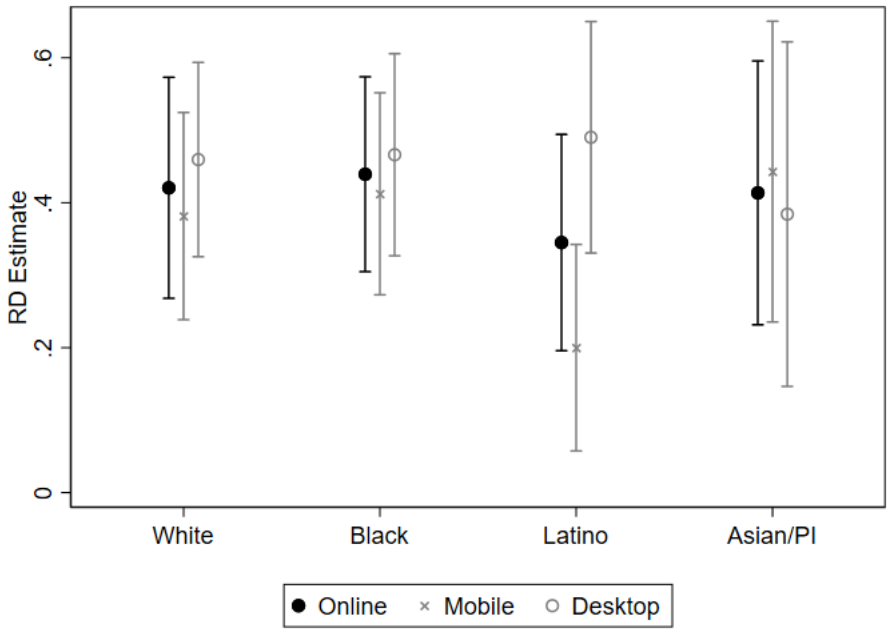
where $p(r|f)$ is the share of individuals in the HMDA data with that first name who are of that race, and $q(s|r)$ is the share of that race who has the surname. We convert the resulting

[12]Overall, 20% of complaints did not match to the first name data, and 14% did not match to the surname data. Only 6% did not match to either.

probabilities to proxy race and ethnicity by assigning the consumer a race according to their highest probability (Zhang, 2018).

Figure 8 shows how the number of complaints in each imputed race and ethnicity changed with the redesign. We find substantial increases in complaints among all groups. We do not, however, find disproportionate increases amongst Black and Latino consumers; that is, the website redesign did not affect pre-existing *disparities* in complaints. Overall, we find an increase of 42% in complaints from white consumers, compared to an increase in 44% for Black consumers, 35% for Latino consumers, and 41% for Asian consumers. For mobile complaints, we find a much smaller increase for Latino consumers than other groups; mobile complaints from Latino consumers increase by only 20% after the redesign, compared to 38% for white consumers, 41% for Black consumers, and 44% for Asian consumers.

Figure 8: RD Estimate of Website Redesign on FTC Consumer Imputed Race and Ethnicity



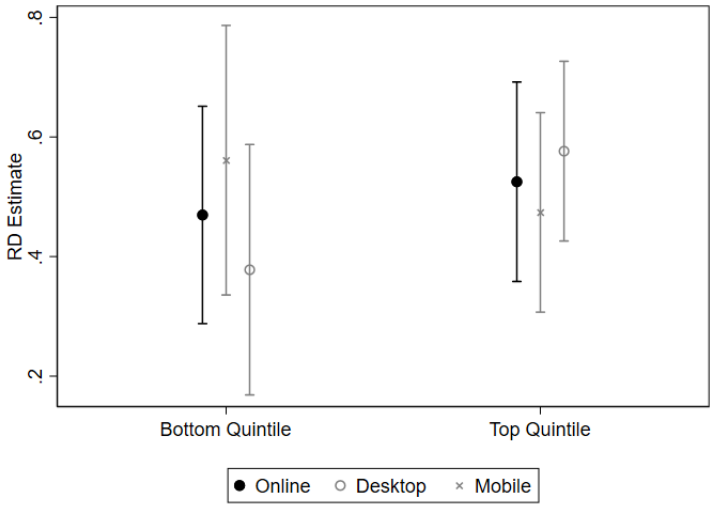
Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1, where the dependent variable is the log number of daily complaints by consumers in each imputed race or ethnicity category. Race and ethnicity are imputed as the highest probability race or ethnicity group using posterior probabilities based on the consumer's first and last name. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.

Finally, we examine whether the website redesign disproportionately affected consumers with better internet access. Here, we use the zipcodes where consumers report that they live, splitting the country's zipcodes into quintiles based on their resident's reported access to broadband internet and computers in the 2020 Census. We interpret these results with caution since the share of consumers reporting a zipcode itself increased sharply.

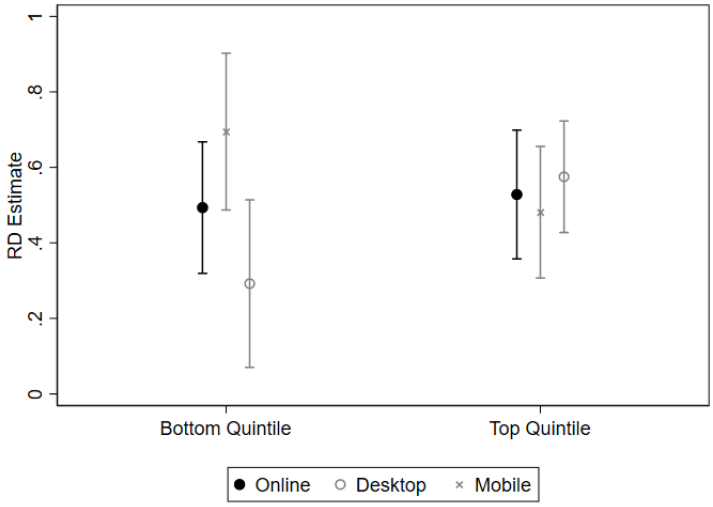
In Figure 9, we depict the difference for zipcodes in the bottom and top quintiles for broadband access in the top panel, and for computer access in the bottom panel. We find slightly higher increases in complaints from areas with greater Internet access. Online complaints rise by 53% for consumers in the top quintile of broadband access, compared to 47% for those in the bottom quintile. For computer access, online complaints rise by 53% for consumers in the top quintile of access, compared to 49% for those in the bottom quintile of access.

As we might expect, this effect is driven by desktop complaints. Desktop complaints increase by 58% for consumers in the top quintile of broadband or computer access, compared to 38% and 29% for those in the bottom quintiles of each measure. Mobile complaints increase more in areas with worse internet access, which may represent substitution between the mobile and desktop channel based on the degree of Internet access.

Figure 9: RD Estimate of Website Redesign on FTC Consumers from Zipcodes with High and Low Access to Broadband and Computing



a) Broadband Internet Access



b) Computer Access

Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1. The first panel dependent variable is the log number of complaints in the bottom and top quintiles of zipcodes according to their reported access to broadband internet in the 2020 Census. The second panel dependent variable is the log number of complaints in the bottom and top quintiles of zipcodes according to their reported access to computing resources in the 2020 Census. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.

5.4 Complaint Contents

We now turn to the content of the complaints themselves using information from the open-ended text that consumers can fill to explain the details of their complaint. Before and after the change, consumers were prompted to fill in this text box, and the vast majority of them did so.

In the first column of Table 10, we report the effect of the website redesign on the size of the comment field text. We find sharp declines in the amount that consumers wrote – text length falls by 38% for online complaints, 31% for mobile complaints, and 44% for desktop complaints. This decline in the length of the text could be because marginal consumers have less important concerns and so less to complain about. On the other hand, such consumers might have a simpler writing style and so write less. Finally, the redesign may have meant that consumers provided the site more information by the time they are asked for the open ended description and so have less information left to provide.

In the next columns of the table, we examine the sophistication of the writing and find substantial declines in the sophistication of the writing after the redesign. The Flesch-Kincaid grade level measures the level of reading comprehension required for a particular text based upon the ratio of words to sentences and syllables to words in the text.[13] On average, the grade level of the text in online complaints falls by about a grade level after the website redesign, the share of consumers with at least an 8th grade level falls by 11 percentage points and with a college level falls by 8 percentage points.

We find larger effects for mobile complaints than desktop complaints. Mobile complaints fell by 1.5 grade levels, with 16 percentage points fewer complaints at least at an 8th grade level and 14 percentage points fewer complaints at a college level. Desktop complaints fell by 0.4 grade levels, with 6 percentage points fewer complaints at least at an 8th grade level and

[13]The Flesch-Kincaid grade level measure is defined as

$$0.39(\frac{words}{sentences}) + 11.8(\frac{syllables}{words}) - 15.59 \tag{3}$$

.

3 percentage points fewer complaints at a college level. Overall, we find that the marginal consumer induced into complaining by the redesign wrote with a simpler writing style, with much larger changes for the mobile site.[14]

Figure 10: RD Estimate of Website Redesign on FTC Complaint Length and Grade Level

	(1)	(2)	(3)	(4)
		Flesch-Kincaid Grade Level		
	Length	Median	8th gr	college
A. FTC Online				
RD Estimate	-0.376*	-0.938***	-0.107***	-0.0813**
	(0.152)	(0.213)	(0.0172)	(0.0257)
B. FTC Mobile				
RD Estimate	-0.313***	-1.479***	-0.157***	-0.136***
	(0.0475)	(0.179)	(0.0145)	(0.0166)
C. FTC Desktop				
RD Estimate	-0.439***	-0.398**	-0.0581***	-0.0261*
	(0.0572)	(0.131)	(0.0135)	(0.0121)

Notes: The table shows estimates of equation 1. In column 1 the dependent variable is the log length of the median complaint's open-ended text field, at the daily level. In the second column the dependent variable is the median Flesch-Kincaid Grade Level, and the final two columns are the fraction of complaints above 8th grade or college according to the Flesch-Kincaid Grade Level. The specification includes a third degree polynomial and controls for day of the week. Data includes complaints at the daily level across FTC desktop and mobile platforms. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.
$*p < 0.05, **p < 0.01, ***p < 0.001$

We can further study the marginal consumer by examining changes in the types of frauds and scams that they reported. Unfortunately, the categorization of frauds and scams itself changed with the website redesign, as did the share of consumers reporting a complaint, so self-reported categories are not directly comparable in the two time periods. Instead, we

[14] Table A9 shows analogous results using a related measure. The Flesch Reading Ease score assigns a text's readability a number between 1 (hardest) and 100 (easiest). The Flesch Reading Ease measure is defined as

$$206.835 - 1.015(\frac{words}{sentences}) - 84.6(\frac{syllables}{words}) \quad (4)$$

. The scores can also be grouped into grade level difficulty, with lower than 70 being apt for 8th grade and above, and below 50 being college-level. Overall, median reading ease increased by 2.5 points, with the share of texts with at least an 8th grade or college reading ease declined by 5 to 6 percentage points. On the mobile site, median reading ease increased by 4 points, and the share of texts with at least an 8th grade or college reading ease declined by approximately 11 percentage points. There were no changes in the online site.

again analyze the open-ended text fields themselves.

We begin with the most distinctive words that appear in complaint texts in the two months following the redesign.[15] Using equation (1), we estimate which words saw a statistically significant rise or decrease in use following the website redesign. To account for multiple hypothesis testing, we apply a Bonferroni correction to adjust the critical value for statistical significance.

Table 3 shows which of the 512 words showed a statistically significant rise or fall on both the mobile and online FTC complaint sites. Although 18% of words increased in relevance for online and 28% increased for mobile, very few had a statistically significant increase, and none had statistically significant increases in both sources. We can learn more from the terms that saw declines, however. One clear theme that emerges overlaps with the previous finding that consumers were less likely to report monetary losses. Terms related to payments, such as "check," "deposit," "money," "order," and "purchase" all saw declines in both interfaces.

Table A10 shows the words that had statistically significant increases and decreases for just mobile or online interfaces. Within the mobile users interface, an additional theme that stands out is a decline in terms related to orders and refunds. Terms such as "refund," "paypal," "order," and "delay" all showed declines. For online interface users, an additional theme is that of computing itself. Terms like "comput," "onlin," "email," and "websit" decreased.

This analysis indicates that consumers were less likely to complain about issues related to payments, as well as orders, refunds, and computer related issues. We also find that consumers are less likely to report losing money at all in Table 4; many consumers either report a zero loss or leave the question blank. We find that the share of consumers reporting a loss falls by 2.6 percentage points. This difference is due to mobile complaints, for which the percentage of consumers reporting a loss falls by 5 percentage points. We find no decline

[15]Specifically, we omit all numbers, punctuation, white space, and "stop words". We then stem the documents to their root, and limit the resulting terms to ones that occur in between 1% and 40% of complaint texts. The two months following the redesign are October 23 through December 23, 2020.

Table 3: Terms with Statistically Significant Declines

check, compani, contact, deposit, email, inform, money, never, offer, order, person, purchas, request, someon, state, though, websit

Notes: The table shows the terms that saw a statistically significant decline in use after the FTC's website redesign. The set of all possible terms do not common stop words or words that were included in fewer than 1 percent or over 40 percent of FTC complaints. All words were destemmed to create the most popular terms. Each resulting term was then used as a dependent variable in estimates of equation 1, with a Bonferroni correction to account for multiple hypothesis testing. The specification includes a third degree polynomial and controls for day of the week. Data includes complaints at the daily level across FTC desktop and mobile platforms. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020.

for desktop complaints. Overall, this decline in the fraction of consumers reporting a loss means that the mean per-consumer loss declined, although these estimate are not statistically significant.

Table 4: RD Estimate of Website Redesign on FTC Complaints Reporting a Dollar Loss

	(1) Reported a Loss	(2) Mean Loss Amount (log)
A. FTC Online		
RD Estimate	-0.0258*	-0.199
	(0.0122)	(0.160)
B. FTC Mobile		
RD Estimate	-0.0501**	-0.207
	(0.0154)	(0.262)
C. FTC Desktop		
RD Estimate	-0.00155	-0.191
	(0.0163)	(0.202)

Notes. Use 3rd order polynomial and control for day of week.
Notes: The table shows estimates of equation 1, where the dependent variable is the log number of complaints that reported a dollar loss and the log of the mean value of the daily loss reported. The specification includes a third degree polynomial and controls for day of the week. Data includes complaints at the daily level across FTC desktop and mobile platforms. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

5.5 The Marginal Consumer

We now use our RD estimates to explicitly compare the characteristics of the marginal consumer induced into successfully complaining from the redesign to inframarginal consumers who were complaining before the redesign. The main assumption required is that all of the change from the redesign is due to changes in composition; that is, the redesign did not affect the types of complaints from inframarginal complainants. This assumption is trivially satisfied for a person's name, and will fail for age bands (for which we see an increase in reporting) and complaint categories (which change after the redesign).

Given that assumption, the average for any variable Y for marginal consumers is equal to:

$$E(Y_{marginal}) = \Delta \frac{1+\gamma}{\gamma} + E(Y_{inframarginal}) \tag{5}$$

, where Δ is the RD (level) estimate for variable Y, γ is the RD (percentage) estimate for number of complaints, and $E(Y_{inframarginal})$ is the pre-redesign mean.

Table A11 displays the mean for several characteristics for inframarginal and marginal complainants, respectively. The marginal complainant is substantially different from the inframarginal complainant; on average, the marginal complainant is 6 percentage points more likely to be white and 3.5 percentage points less likely to be Latino. On average, 23% of inframarginal complainants report a loss, compared to 14% of marginal complainants. Finally, the average grade level of inframarginal complaints is 9 years, compared to 6 years for marginal complaints.

Table 5: Differences between Inframarginal and Marginal Complainants for FTC Online Complaints

	(1) Mean for Inframarginal Complainants	(2) Mean for Marginal Complainants
White	0.643	0.703
Black	0.0919	0.105
Latino	0.0890	0.0644
Asian-PI	0.0426	0.0458
Reported Loss	0.230	0.138
Grade Level	9.161	5.848

Notes: The first column of the table shows the mean characteristics for FTC complaints in the 30 days prior to the website redesign on October 22, 2020. The second column shows the imputed means for marginal complainants. These means are calculated using the inframarginal mean, the coefficient estimate from equation 1, and the coefficient estimate on the number of complaints.

6 Conclusion

In this article, we have studied the effect of a major website redesign that made it much easier for consumers to complain about consumer protection problems to the government. Through the redesign, we can examine the marginal complainant and evaluate how "hassle costs" affect complaining. The release of the new website was unanticipated by the public and so allows us to use regression discontinuity techniques to evaluate the effect of the change.

Online complaints to the FTC rose 40% overnight due to the change; we find no significant increase in complaints for calls to the FTC or complaints to the BBB or CFPB. The quality of complaints increases as well, as consumers are significantly more likely to report optional information. We find suggestive evidence that older adults, and consumers living in areas with better Internet access, have the largest increase in complaints after the redesign. The redesign does not reduce racial disparities in complaining, however; we find smaller increases in Latino complaints compared to white and Black complaints.

We find evidence for countervailing effects of hassle costs on complaining. On the one hand, the redesign leads to less sophisticated complaints, as the length of the complaint and the grade level of the text fall sharply. Hassle costs may thus keep less sophisticated users from complaining. On the other hand, consumers are less likely to report having lost money,

and the complaint text is less likely to relate to purchases and payments, so the marginal consumer may have experienced less severe consumer protection problems.

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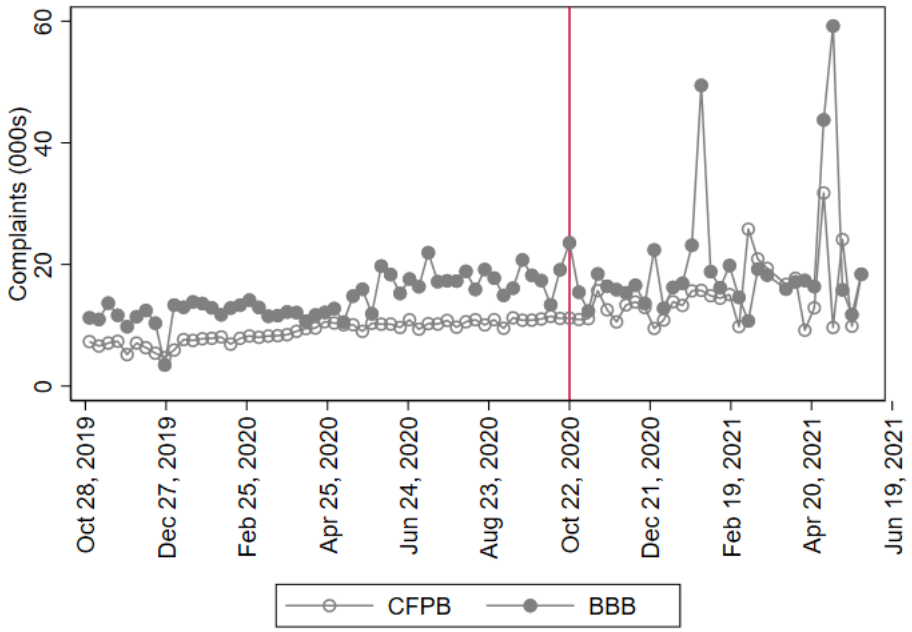
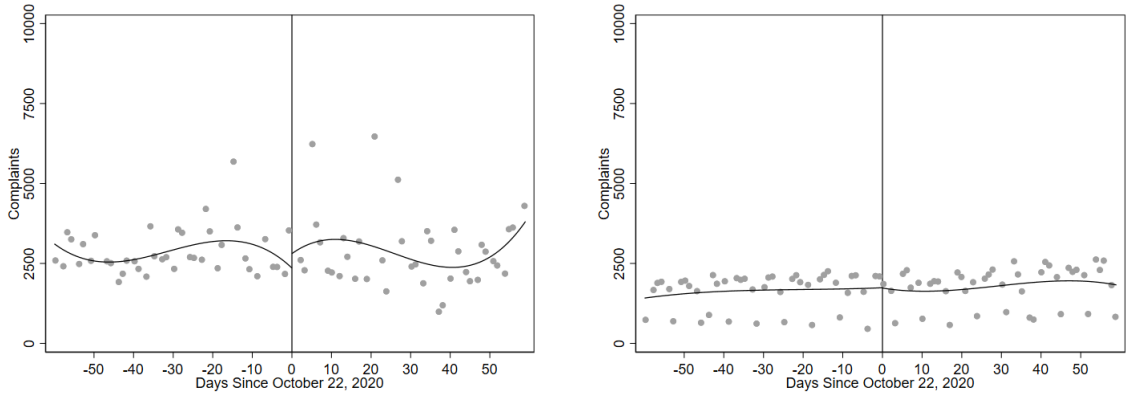
A1 Appendix Tables and Figures

Figure A1: Complaints by Week to the BBB and CFPB



Notes: The figure shows the number of complaints, in thousands, logged each week between October 26, 2019 and June 19, 2021, across the BBB and CFPB sources. The weeks are defined as starting on Thursdays, since the website redesign was a Thursday. The vertical line shows the date of the website redesign.

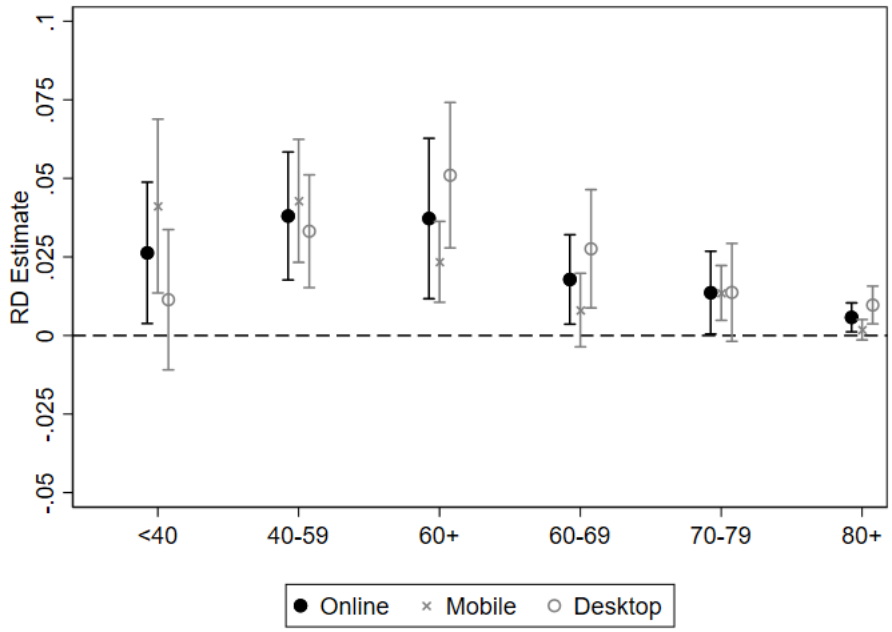
Figure A2: RD Estimate of Website Redesign on Number of Complaints, BBB and CFPB



a) BBB b) CFPB

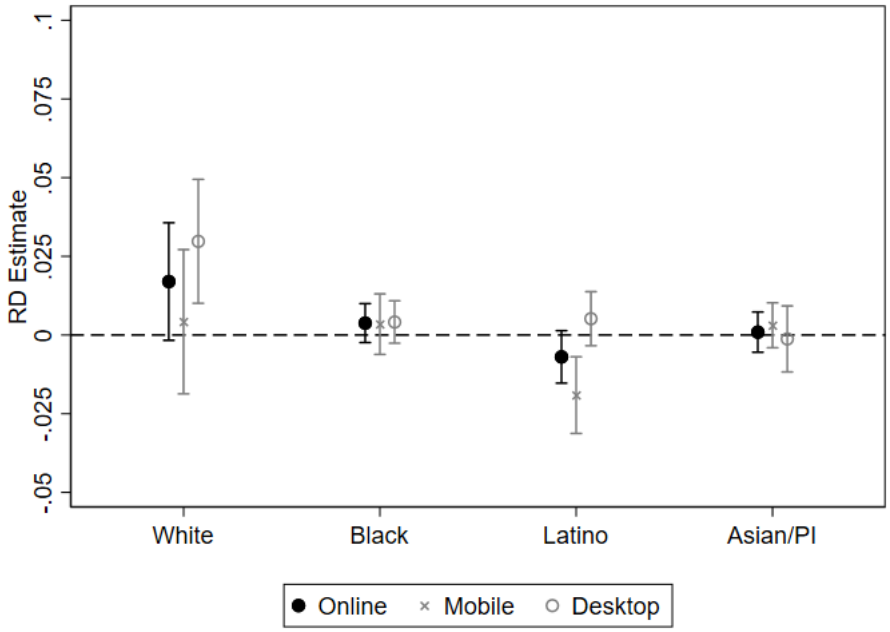
Notes: The figure shows the daily number of complaints report to the CFPB and BBB, from 60 days before and after the FTC's website redesign on October 22, 2020. For each panel, the number of complaints are expressed relative to the number of complaints on the day prior to the redesign, October 21, 2020, which are set to one. The vertical bar shows the date of the redesign. The fitted lines are an RD estimate the includes a third-degree polynomial and controls for the day of the week.

Figure A3: RD Estimate of Website Redesign on Fraction FTC Consumer Reported Age Bands



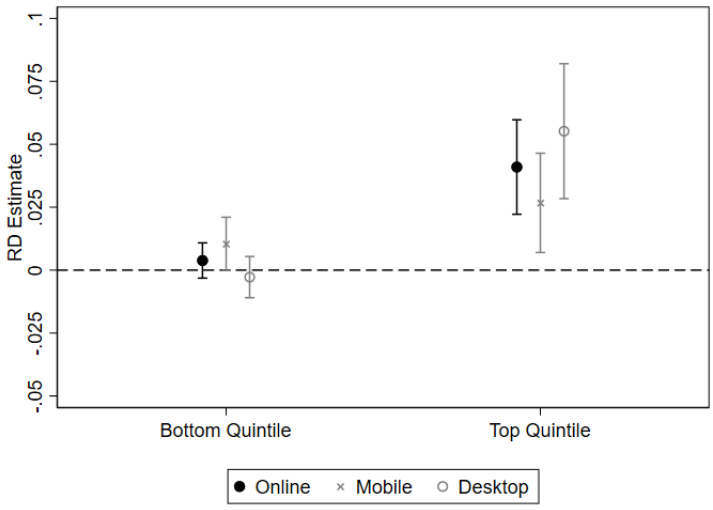
Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1, where the dependent variable is the fraction of daily complaints by consumers in each age band. Consumer can also choose to not report their age. The age 60 and above is the sum of the other older age bands. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.
$*p < 0.05, **p < 0.01, ***p < 0.001$

Figure A4: RD Estimate of Website Redesign on Fraction FTC Consumer Imputed Race and Ethnicity

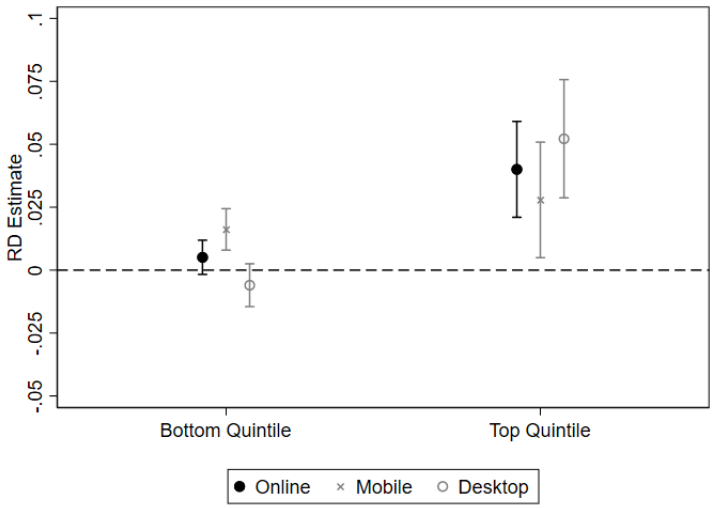


Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1, where the dependent variable is the fraction of daily complaints by consumers in each imputed race or ethnicity category. Race and ethnicity are imputed using a Maximum A Posteriori proxy based on the consumer's first and last name. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Figure A5: RD Estimate of Website Redesign on Fraction FTC Consumers from Zipcodes with High and Low Access to Broadband and Computing



a) Broadband Internet Access



b) Computer Access

Notes: The figure shows point estimates and 95% confidence intervals for estimates of equation 1. The first panel dependent variable is the fraction of complaints in the bottom and top quintiles of zipcodes according to their reported access to broadband internet in the 2020 Census. The second panel dependent variable is the fraction of complaints in the bottom and top quintiles of zipcodes according to their reported access to computing resources in the 2020 Census. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A1: RD Estimate of Website Redesign on Number of Complaints, First Degree Polynomial

	(1) FTC Online	(2) FTC Mobile	(3) FTC Desktop	(4) FTC Calls	(5) BBB & CFPB
RD Estimate	0.282***	0.307***	0.256***	-0.0856	0.0223
	(0.0379)	(0.0395)	(0.0357)	(0.0456)	(0.101)

Notes: The table shows estimates of equation 1, where the dependent variable is the log number of daily complaints. The specification includes a first degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A2: RD Estimates, Quality of Data

	(1) Has Zip	(2) Has Age
A. FTC Online		
RD Estimate	0.0857***	0.102***
	(0.00657)	(0.00617)
B. FTC Mobile		
RD Estimate	0.0847***	0.107***
	(0.00991)	(0.00964)
C. FTC Desktop		
RD Estimate	0.0867***	0.0956***
	(0.00833)	(0.00798)
D. FTC Calls		
RD Estimate	0.00804	0.00997
	(0.00531)	(0.00775)
E. BBB/CFPB		
RD Estimate	-0.000717	-0.00625
	(0.00349)	(0.0206)

Notes: The table estimates of equation 1, where the dependent variable is the fraction of daily complaints that included a Zipcode or included a consumer's age. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A3: RD Estimates, Log Complaints in Each Age Range

	(1) <40	(2) 40-59	(3) 60+	(4) 60-69	(5) 70-79	(6) 80+
A. FTC Online						
RD Estimate	0.482***	0.523***	0.548***	0.505***	0.630***	0.771***
	(0.0787)	(0.101)	(0.0546)	(0.0670)	(0.0698)	(0.147)
B. FTC Mobile						
RD Estimate	0.492***	0.515***	0.520***	0.439***	0.721***	0.792**
	(0.0655)	(0.0764)	(0.0748)	(0.0951)	(0.108)	(0.271)
C. FTC Desktop						
RD Estimate	0.471***	0.531***	0.575***	0.572***	0.540***	0.751***
	(0.0794)	(0.0772)	(0.0654)	(0.0715)	(0.0905)	(0.136)
D. FTC Calls						
RD Estimate	0.0475	0.128*	0.0931	0.119*	0.0822	0.0648
	(0.0804)	(0.0611)	(0.0550)	(0.0575)	(0.0752)	(0.0830)
E. BBB/CFPB						
RD Estimate	0.957	-0.307	0.165	0.219	0.143	0.974*
	(0.695)	(0.325)	(0.166)	(0.177)	(0.232)	(0.432)

Notes: The table shows estimates of equation 1, where the dependent variable is the log number of daily complaints by consumers in each age band. Consumer can also choose to not report their age. The age 60 and above is the sum of the other older age bands. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A4: RD Estimates, Fraction of Complaints in Each Age Range

	(1) <40	(2) 40-59	(3) 60+	(4) 60-69	(5) 70-79	(6) 80+
A. FTC Online						
RD Estimate	0.0263*	0.0380***	0.0372**	0.0178*	0.0136*	0.00576*
	(0.0115)	(0.0104)	(0.0130)	(0.00726)	(0.00672)	(0.00235)
B. FTC Mobile						
RD Estimate	0.0412**	0.0428***	0.0234***	0.00808	0.0135**	0.00183
	(0.0141)	(0.00998)	(0.00656)	(0.00597)	(0.00445)	(0.00166)
C. FTC Desktop						
RD Estimate	0.0114	0.0332***	0.0510***	0.0276**	0.0137	0.00969**
	(0.0114)	(0.00916)	(0.0118)	(0.00960)	(0.00795)	(0.00307)
D. FTC Calls						
RD Estimate	-0.00533	0.0109	0.00316	0.00738	-0.00122	-0.00300
	(0.00859)	(0.00985)	(0.0114)	(0.00653)	(0.0109)	(0.00514)
E. BBB/CFPB						
RD Estimate	-0.00392	-0.00575	0.00341	0.00284	-0.000630	0.00120
	(0.0164)	(0.00706)	(0.00380)	(0.00283)	(0.00138)	(0.000821)

Notes: The table shows estimates of equation 1, where the dependent variable is the fraction of daily complaints by consumers in each age band. Consumer can also choose to not report their age. The age 60 and above is the sum of the other older age bands. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A5: RD Estimates, Fraction of Complaints in Each Imputed Race

	(1) White	(2) Black	(3) Latino	(4) Asian
A. FTC Online				
RD Estimate	0.0170	0.00379	-0.00696	0.000917
	(0.00953)	(0.00316)	(0.00426)	(0.00326)
B. FTC Mobile				
RD Estimate	0.00422	0.00345	-0.0191**	0.00308
	(0.0117)	(0.00491)	(0.00621)	(0.00364)
C. FTC Desktop				
RD Estimate	0.0298**	0.00412	0.00519	-0.00124
	(0.0100)	(0.00344)	(0.00438)	(0.00536)
D. FTC Calls				
RD Estimate	0.122	0.0152	0.000537	-0.00206
	(0.0929)	(0.0140)	(0.0176)	(0.00428)
E. BBB/CFPB				
RD Estimate	-0.00260	-0.00134	0.00139	0.00494
	(0.0112)	(0.00776)	(0.00894)	(0.00520)

Notes: The table shows of equation 1, where the dependent variable is the log number of daily complaints by consumers in each imputed race or ethnicity category. Race and ethnicity are imputed using a Maximum A Posteriori proxy based on the consumer's first and last name. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A6: RD Estimates, Log Complaints in Each Imputed Race

	(1) White	(2) Black	(3) Latino	(4) Asian
A. FTC Online				
RD Estimate	0.421***	0.439***	0.345***	0.414***
	(0.0778)	(0.0686)	(0.0761)	(0.0928)
B. FTC Mobile				
RD Estimate	0.382***	0.412***	0.200**	0.443***
	(0.0729)	(0.0711)	(0.0727)	(0.106)
C. FTC Desktop				
RD Estimate	0.460***	0.466***	0.490***	0.384**
	(0.0684)	(0.0711)	(0.0815)	(0.121)
D. FTC Calls				
RD Estimate	0.131*	0.132	0.0458	-0.00200
	(0.0626)	(0.0900)	(0.165)	(0.173)
E. BBB/CFPB				
RD Estimate	-0.00724	-0.0336	0.00293	0.0742
	(0.241)	(0.245)	(0.274)	(0.287)

Notes: The table shows of equation 1, where the dependent variable is the fraction of daily complaints by consumers in each imputed race or ethnicity category. Race and ethnicity are imputed using a Maximum A Posteriori proxy based on the consumer's first and last name. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A7: RD Estimates, Log Complaints, by Internet and Computing Zipcode Quintile

	(1)	(2)	(3)	(4)
	Broadband Access Quintile		Computer Access Quintile	
	q1	q5	q1	q5
A. FTC Online				
RD Estimate	0.470***	0.525***	0.494***	0.528***
	(0.0927)	(0.0851)	(0.0889)	(0.0870)
B. FTC Mobile				
RD Estimate	0.561***	0.474***	0.695***	0.481***
	(0.115)	(0.0851)	(0.106)	(0.0889)
C. FTC Desktop				
RD Estimate	0.378***	0.576***	0.292*	0.575***
	(0.107)	(0.0767)	(0.113)	(0.0753)
D. FTC Calls				
RD Estimate	0.210	-0.102	0.180*	0.0148
	(0.116)	(0.0812)	(0.0878)	(0.0758)
E. BBB/CFPB				
RD Estimate	0.113	0.137	0.0479	0.128
	(0.184)	(0.183)	(0.196)	(0.191)

Notes: The table shows estimates of equation 1. The first two columns' dependent variable is the log number of complaints in the bottom and top quintiles of zipcodes according to their reported access to broadband internet in the 2020 Census. The third and fourth column dependent variable is the log number of complaints in the bottom and top quintiles of zipcodes according to their reported access to computing resources in the 2020 Census. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A8: RD Estimates, Fraction of Complaints Internet and Computing Zipcode Quintile

	(1)	(2)	(3)	(4)
	Broadband Access Quintile		Computer Access Quintile	
	q1	q5	q1	q5
A. FTC Online				
RD Estimate	0.00382	0.0410***	0.00508	0.0400***
	(0.00358)	(0.00958)	(0.00346)	(0.00972)
B. FTC Mobile				
RD Estimate	0.0104	0.0267**	0.0162***	0.0279*
	(0.00540)	(0.0101)	(0.00420)	(0.0117)
C. FTC Desktop				
RD Estimate	-0.00278	0.0552***	-0.00600	0.0522***
	(0.00418)	(0.0137)	(0.00434)	(0.0120)
D. FTC Calls				
RD Estimate	0.0317	-0.0257	0.0191	0.0109
	(0.0163)	(0.0205)	(0.0115)	(0.0235)
E. BBB/CFPB				
RD Estimate	-0.00251	-0.00560	-0.00653	-0.00900
	(0.00675)	(0.0137)	(0.00499)	(0.0144)

Notes: The table shows estimates of equation 1. The first two columns' dependent variable is the fraction of complaints in the bottom and top quintiles of zipcodes according to their reported access to broadband internet in the 2020 Census. The third and fourth column dependent variable is the number of log complaints in the bottom and top quintiles of zipcodes according to their reported access to computing resources in the 2020 Census. The specification includes a third degree polynomial and controls for day of the week. FTC Online refers to the sum of FTC mobile and desktop. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level. $*p < 0.05, **p < 0.01, ***p < 0.001$

Table A9: RD Estimates, Text Analysis Flesch Reading Ease

	(1) Median	(2) 8th gr	(3) college
A. FTC Online			
RD Estimate	2.674**	-0.0636**	-0.0545*
	(0.927)	(0.0222)	(0.0233)
A. FTC Mobile			
RD Estimate	4.312***	-0.112***	-0.107***
	(0.616)	(0.0144)	(0.0154)
B. FTC Desktop			
RD Estimate	1.036	-0.0149	-0.00216
	(0.615)	(0.0159)	(0.0111)

Notes: The table shows estimates of equation 1. In the first column the dependent variable is the median Flesch-Kincaid Reading Ease Score, and the final two columns are the fraction of complaints above 8th grade or college according to the Flesch Reading Ease score. The specification includes a third degree polynomial and controls for day of the week. Data includes complaints at the daily level across FTC desktop and mobile platforms. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020. Robust standard errors clustered at the daily level.
$*p < 0.05, **p < 0.01, ***p < 0.001$

Table A10: Terms with Statistically Significant Changes

	(1) Positive	(2) Negative
FTC Mobile Only	unfortun	communic, continu, correct, covid, delay, facebook, paypal, peopl, pictur, point, refund, thought, transact, updat
FTC Desktop Only	hello, signatur, prevent, devic, unemploy	account, actual, address, answer, believ, cancel, chang, complaint, comput, convers, credit, direct, investig, number, obtain, onlin, phone, posit, proceed, provid, receiv, report, research, return, servic, taken, think, verifi, wasnt

Notes: The table shows the terms that saw a statistically significant decline or increase in use after the FTC's website redesign. The set of all possible terms do not common stop words or words that were included in fewer than 1 percent or over 40 percent of FTC complaints. All words were destemmed to create the most popular terms. Each resulting term was then used as a dependent variable in estimates of equation 1, with a Bonferroni correction to account for multiple hypothesis testing. The specification includes a third degree polynomial and controls for day of the week. Data includes complaints at the daily level across FTC desktop and mobile platforms. The data include complaints from 60 days before and after the FTC's website redesign on October 22, 2020.

Table A11: Marginal Consumers, FTC Mobile and Desktop

	(1)	(2)	(3)	(4)
	Mobile		Desktop	
	Pre-Period Mean	Entrant Mean	Pre-Period Mean	Entrant Mean
White	0.629	0.645	0.656	0.758
Black	0.0961	0.109	0.0876	0.102
Latino	0.109	0.0385	0.0694	0.0871
Asian/PI	0.0403	0.0516	0.0448	0.0406
Reported Loss	0.251	0.0673	0.208	0.203
Grade Level	9.644	4.214	8.678	7.324

Notes: The first column of the table shows the mean characteristics for FTC complaints in the 30 days prior to the website redesign on October 22, 2020. The second column shows the imputed means for marginal complainants. These means are calculated using the inframarginal mean, the coefficient estimate from equation 1, and the coefficient estimate on the number of complaints.