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"I always feel like somebody's watching me": What do the U.S. electorate know about political micro-targeting and how much do they care?

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The practice of political micro-targeting (PMT) – tailoring messages for voters based on their personal data – has increased over the past two decades, particularly in the U.S. Studies of PMT have to date concentrated largely on its effects on voters, or its implications for democracy more broadly. Less attention has been given to answering basic descriptive questions about how people perceive, feel and care about this new mode of political communication. This paper fills that gap by reporting findings from an online survey (weighted to be nationally representative on age, gender, ethnicity, region and past vote) that measured public attitudes toward PMT during the 2020 U.S. Presidential campaign. Specifically, we measure voter orientations toward PMT in four key dimensions – awareness, aversion, knowledge, and acceptability at the aggregate level –

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and explore how these vary according to a range of individual characteristics. Key findings are that public understanding and acceptance of PMT may be higher than current studies indicate, particularly among certain sectors of the population. Such insights are important for academic research to cognize and also policy-makers, as they move toward greater regulation of voter targeting.

Keywords: Political Micro-targeting, Digital campaigning, Data-driven, Online political advertising

The 2016 U.S. Presidential election prompted major questions about whether campaigns were misusing citizens' personal data to target them with misleading and contentious information on social media platforms. At the core of these concerns is the practice of political micro-targeting (PMT), an activity that involves the tailoring and delivering of campaign messages to voters primarily through online channels. Reflecting these anxieties, academic studies have tended to focus on measuring the impact of PMT on voters' behaviour and attitudes or its broader consequences for democracy, leaving more basic questions about the extent of public awareness and understanding about the use of these techniques in elections unaddressed. This paper attempts to fill that gap using data from a specially designed module of survey questions fielded during a recent national election. Specifically, we measure levels of awareness, aversion, knowledge, and concern about PMT among the U.S. electorate during the 2020 Presidential campaign. By providing insight into what voters' think and feel about the use of these techniques during a high-profile election where the use of PMT was also likely to be at its most intensive, this work offers an important benchmark for this expanding field of study. It is also timely as governments around the world, including several states in the U.S. consider new restrictions on the use of political targeting in elections (Hiltunen., 2021; Harker, 2020; Palmieri, 2020; Blanke, 2020; McEvoy, 2019; Dobber et al., 2019; ICO, 2018). Current research would tend to support such moves, with the existing evidence suggesting that

public concerns are very high and uniformly distributed, while knowledge of the use of such practices are worryingly low. Our study confirms that while most voters do not welcome personalised campaign contact, levels of awareness and understanding among publics are not as limited as they are currently portrayed. Furthermore, we find acceptance of PMT does vary according to individual traits and is moderated by the type of personal data being used. Any attempts to restrict or even ban PMT, therefore, need to consider that citizens' attitudes toward it are likely more nuanced than has previously been thought, and that while most voters oppose its use in general, there may be some conditions under which they can envisage potential benefits.

Expansion in the Practice and Study of Political Micro-targeting (PMT)

While the targeting of voters is now 'standard' practice in election campaigns (Bodó et al, 2017), political micro-targeting (PMT) is a more recent phenomenon that has become increasingly common over the past two decades, particularly in the U.S. The 2012 U.S. Presidential race and the 'data-driven' efforts of the Obama re-election team in particular were seen as pivotal in moving the practice to the core of campaign strategy. (Issenberg, 2012). A defining feature of PMT according to most studies is the precision it brings to voter communication at the individual level (Kreiss, 2017; Jamieson, 2013). According to Turow et al. (2012) the practice of 'tailored' political advertising or micro-targeting is the "finding and combining information about individuals' political preferences and consumer habits." (p. 5). Expanding on this Barbu (2014) argued that micro-targeting is a form of "advanced psycho-geographic segmenting…based on an algorithm determining a series of demographic and attitudinal traits to distinguish individuals for each targeted segment." (p. 45). Along with its personalised dimension, micro-targeting is also seen as highly reliant on digital communication tools and particularly social media platforms given the vast quantities of detailed information they provide on an increasingly large number of voters (Barbu, 2014; Turow et al., 2012; Blaemire, 2003).

Despite the growing prominence of PMT over the past decade, attempts to measure public perceptions of it, distinct from attitudes to online targeting more generally, are surprisingly limited, particularly beyond the U.S. (Beer et al., 2019). Much of the research on PMT has focused instead on understanding the short and longer-term effects of this new mode of voter communication on voters and democracy more generally. With some exceptions, accounts have generally painted an increasingly negative picture of the impact of PMT (Aargard &Marthedal, 2023). While some studies have focused more on conceptualizing the threats it presents to the democratic processes and outcomes (Lavigne 2020, Zarouali et al., 2020; Zuiderveen Borgesius et al., 2018; Persily, 2017; Gorton, 2016; Barocos, 2012), others have taken an empirical approach and demonstrated how use of these methods are helping to reduce voter trust, turnout and attention to collective interests and issues (Endres and Kelly, 2018; Flores & Coppock, 2018; Kruikemeier et al., 2016; Nickerson & Rogers, 2014; Hersch &Schaffer, 2013), and potentially increasing levels of polarization (Kim et al., 2018; Hillygus & Shields, 2008). Based on the gaps identified in the literature with regard to these more basic and descriptive questions about citizen attitudes toward PMT, this paper has two core aims. First, to present a richer and more detailed picture of public attitudes toward PMT in a 'high use' context; and second, to investigate the variance in those attitudes at the individual level. We start by reviewing the limited set of studies that have directly measured public perceptions of PMT in the U.S., and other countries over the past decade. The lens is then widened to present related evidence from marketing and consumer behaviour studies, and particularly empirical research measuring public perceptions of a new mode commercial targeting - online behavioural advertising (OBA).

Public Attitudes to Political Micro-Targeting

Political communication scholars provided some of the earliest scientific insights into citizens' attitudes toward PMT during the 2012 U.S. Presidential election. A random digital dial (RDD) survey conducted by Turow et al. (2012) measured the opinions of over 1,500 Americans toward 'tailored political advertising' during the campaign. According to

the authors the event served as a "watershed moment" in US elections as candidates were able to use "hundreds of pieces of information about individuals' online and offline lives, to ensure the "right" people are being targeted with the "right" advertising". As the authors went on to point out, however, "no one has asked the citizens themselves whether they think it's a good idea." Their study addressed this gap by measuring attitudes, and particularly concerns about tailored political advertising. The results revealed that a very large majority of Americans rejected it. Over four fifths (86%) of respondents said they did not want the websites they visited to show them political adverts tailored to their interests. This was significantly higher than the rejection rate for commercial advertising (61%). Furthermore, after using a filter question to control for dislike of online advertising in general, the authors reported only a small drop in opposition toward tailored political ads, suggesting feelings about the latter could not be accounted for by hostility toward digital marketing more generally. Notably, a similar filter was not applied to see whether a general dislike of political advertising was driving the high rejection rates.

Simple bivariate analyses revealed very modest differences within the population, with younger and African American voters being slightly more accepting of targeted political adverts as were those with the highest and lowest levels of education. Partisanship had no effect. Concerns did vary, however, based on the data sources used for the targeting process. Political adverts that used personal information taken from Facebook were regarded as particularly unacceptable (85%) compared to those based on information about what someone reads or buys online (61% and 57%, found this unacceptable).

Subsequent studies have updated and extended Turow et al.'s (2012) findings about public concern toward PMT in the U.S. Pew Center reports published after the 2016 Presidential election found a similarly large majority of Americans objected to the use of their personal data for PMT, and that the opposition was still significantly higher than toward other forms of personalised marketing (Auxier et al., 2019; Hitlin & Rainie, 2019; Smith, 2018). A later study conducted prior to the 2020 Presidential election found that four fifths of Americans objected to the targeting of political adverts based on their online

activity.[2] Simple bivariate analysis again showed that concerns remained fairly evenly distributed across the population, with only minor differences observed based on race and age, and no discernible effect for partisanship.[3]

The work of Kozyreva et al. (2021) added a rare but very useful comparative perspective to these findings in measuring levels of public concern about PMT in the UK, Germany and the U.S. over the 2019 – 2020 time period. While absolute levels of concern were lower for the U.S. than previous reports had indicated, European respondents were noticeably more likely to oppose PMT than their American counterparts. Just over three fifths (61%) of German and UK respondents respectively opposed targeted political advertising, compared to just over half of Americans (51%). In line with prior work bivariate analysis found no "noteworthy" association of concern with political outlook or demographics (8). Perceptions of the type of personal data used in the process, however, did appear to affect levels of concern. Specifically, in all three countries the use of more sensitive and private information such as a person's income, major life events, sexual orientation and religion for targeting was typically seen as much more unacceptable than more observable traits such as age and gender. Use of individuals' online activities to personalise marketing messages was also seen by most people as out of bounds, although the content of public posts, and record of likes and videos watched were generally seen as less problematic than use of email messages, location history and browsing habits. While the pattern of acceptance proved relatively similar across countries, U.S. respondents were typically less concerned for each category of data than were Europeans.

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[2] Auxier, Brooke. "54% of Americans say social media companies shouldn't allow any political ads" Pew Blog Post, 09.20.20. Available at https://www.pewresearch.org/fact-tank/2020/09/24/54-of-americans-say-social-media-companies-shouldnt-allow-any-political-ads/. Accessed 09.22.22

[3] In the Pew 2018 report White respondents were considerably more likely to find these practices unacceptable than those from ethnic minorities particularly black respondents (82% vs 66%), and those over 65 moreso than those aged 18-29 (87% versus 71%). Just over three quarters of both Democrats and Republicans (including leaners) considering it unacceptable for companies to use data about users' online activity to show them ads for political campaigns and similar sized majorities favoured a complete ban.

Moving away from levels of concern, scholars have recently turned their attention to measuring levels knowledge about PMT, again with a primary focus on the U.S. Nelson et al. (2021) fielded a four-item battery of questions designed to measure respondents understanding of digital political advertising (DPA).[4] The findings were seen as disappointing in that less than half of respondents gave correct answers to three of the four items designed to measure knowledge of digital political advertising. Unlike concern, however, levels of knowledge did vary significantly within the population according to demographics. Multivariate analysis of a longer battery of items measuring general knowledge of political advertising that included the DPA items, found that levels varied significantly according to individuals' prior political knowledge, age, gender and education, while partisanship again made no difference.[5]

Online Behavioural Advertising

While not measuring attitudes toward PMT per se, findings about public perceptions of a new form of digital marketing – online behavioural advertising or OBA – are clearly relevant to that task. The practice of OBA, which involves the "displaying [of] digital advertisements to consumers based on their previous individual-level online behaviour" (Varnali, 2021, p.93), lies at the heart of campaigns' micro-targeting efforts, as they increasingly make use of online tracking data to personalise their advertising. Although the focus of most research to date (as with the PMT literature) has been on identifying its impact on consumer choices and broader ethical and regulatory implications (Varnali, 2021; Boerman et al., 2017), there have been some attempts to measure public perceptions and knowledge of OBA, again concentrated in the U.S.

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[4] The four items were: D1. In digital, political advertisers, such as political parties, are allowed to use information from individuals' online behaviors to guess his/her political leanings and interests (true) D2. Digital political advertising is personalized to each individual and changing often, so hard to monitor, track, or check for misleading information. (true) D3. Currently political advertising is not allowed on Twitter. (true) D4. Currently political advertising is not allowed on Facebook. (false)

[5] The findings were based on multivariate regression analysis of individuals' OPK scores (i.e. the full 28 item political advertising battery).

The first efforts to track perceptions came around the same time as the study of Turow et al. (2012) into tailored political advertising. A commercial organization, TRUSTe, conducted a series of online opinion surveys with Harris Interactive between 2008 and 2011. [6] The resulting report showed that by 2011 a large proportion of the U.S. population (70%) were aware of OBA as a marketing practice, i.e., they understood that advertisers and websites tracked their browsing activities to show them relevant adverts. The report also revealed a 'majority rejection' rate, in that over half of respondents (54%) said they disliked OBA, and a similar proportion were not willing to share their online browsing behaviour with advertisers (55%). On a more positive note for advertisers, the over-time aspect of the study suggested that opposition to OBA was waning in that there was a significant increase in the proportion of respondents who felt the online adverts they were seeing matched their interests. There was also a rise in respondents' willingness to share non-identifying personal data for purposes of targeted advertising.[7] While further efforts to map concerns about OBA have been quite limited, Segijn and Van Ooijen (2022) in the U.S. used a survey vignette of an online purchasing experience and open-ended questions to tease out what lay behind respondents negative reactions. The findings showed that only a small minority of the sample (9%) voiced a 'knee jerk' dislike of OBA, i.e., they considered it creepy or manipulative. Worries instead centred primarily on its privacy implications and to a lesser extent the disruption it presented to their online experience. The close connection between privacy fears and opposition to PMT is one that was robustly supported by Dobber et al.'s (2018) earlier analysis of Dutch panel data. In line with the Truste findings, however, more than quarter of respondents were able to see benefits in this type of advertising, if it increased the relevance of the ad content for them.

[6] TRUSTe are a company offering privacy seals for websites surveys, in 2011 they published a presentation that featured findings from three surveys conducted with Harris Interactive between 2008-2011 on public attitudes toward OBA, 'Privacy and Online Behavioural Advertising', https://www.eff.org/files/truste-2011-consumer-behavioral-advertising-survey-results.pdf , accessed 23.6.2021.

[7] The % of those who considered that between a quarter and a half of all the ads they saw online were relevant to them increased from 9% in 2008 to 23% in 2011. The % willing to share non-PII increased from a quarter to a third of the sample.

Studies measuring levels of knowledge about OBA have also yielded interesting if somewhat surprising results. Findings from the U.S. and the Netherlands have shown that citizens' understanding of OBA is actually very high and appears to be on the increase (Segijn & Van Ooijen, 2022; Smit et al., 2014).[8] In the most recent study of the U.S., most respondents correctly answered seven of the eight items measuring knowledge of OBA (Segijn and Van Ooijen, 2022). This contrasts sharply with the findings of Nelson et al. (2021) regarding digital political advertising (DPA) literacy reported earlier. While methodological choices might explain part of the difference,[9] some items on the DPA index arguably had a higher difficulty threshold than those used to measure OBA. Specifically, the OBA index includes only items that measure individuals' knowledge of the 'process' of OBA, i.e., how it works from the user end. Only two of the four DPA items do so, however, while the other two require knowledge of the external regulatory environment. These latter items also produced more 'incorrect' answers. The disparity suggests that knowledge of PMT may divide into at least two components. One that is more subjective in nature and centres on the users' experience and understanding of how it works in practice (process) and a second that is more factual and focuses on the rules surrounding its use (regulatory).

[8] Questions included were (T/F): Your browser history, location history, and website navigation behavior can determine which ads you are going to see during your next website visit. Companies divide users into different personality profiles based on people's Internet behavior and they show these groups ads based on said information. Cookies are used to present you with ads based on your Internet behaviour Information that you enter on search engines and when writing e-mails can both be used to provide you with relevant ads. Information that you post on your social media account (e.g., Facebook, Twitter, Instagram) can be used by companies to provide you with ads related to this information. When browsing the Internet, people generally see the same ads as someone else browsing the same website. It is impossible for companies to gather information about the device type, applications, and type of browser that you are currently using. When you own multiple devices (e.g., smartphone, tablet, laptop) it is impossible for companies to relate these different devices to one single user.

[9] One possible explanation is that the smaller number of items used in the DPA index magnifies the impact of an incorrect response on an individual's overall score.

Describing attitudes toward PMT

Current studies provide useful insights into public views of PMT, however, a number of major gaps clearly remain. Below we summarize what is known from current research on the topic and highlight the main areas for further investigation.

Summary of key findings

Studies of attitudes toward PMT have focused almost entirely on reporting how concerned people are about it in general about it, based on how acceptable (or not) they think it is for campaigns to use their personal data to show them political adverts online. Geographically, the U.S. has received most attention, although acceptance of PMT has been measured in a small number of European countries. This work has shown that a significant majority of democratic electorates consider PMT to be unacceptable and that opposition is much stronger than toward micro-targeted commercial advertising. Concern appears to be uniformly high among the population based on demographic and political characteristics, and longitudinal data in the case of the U.S., suggests that this concern has remained high over the past three Presidential election cycles. However, there is evidence from consumer studies that acceptance rates may be moderated based on the type of personal data used in the targeting process, and if individuals see the personalisation as useful or of benefit for them. Notably, targeting based on more observable traits and activities, such as liking or commenting on web content, or even purchasing goods is seen as much more acceptable than relying on private forms of data such as individuals' sexual identity or information from one's social media account.

Beyond public concerns about PMT, levels of knowledge have also been explored. The results have yielded a rather bleak picture of citizens' understanding of digital political advertising (DPA), at least in the case of the U.S., with worryingly low levels of knowledge (although this varies based on individuals' cognitive resources and age). These findings contrast sharply with marketing studies that have shown consumers' knowledge of online

behavioural advertising (OBA) to be much more robust. Closer examination of the scales used in these studies, however, suggest methodological differences may be responsible. Specifically, the OBA scale relied on a homogenous set of items designed to tap into individuals' experience of the process of personalised targeting. The smaller DPA scale combined experiential measures with more objective items about regulation of digital political advertising, thereby imposing a higher difficulty threshold.

Gaps in knowledge and areas for further research

Although evidence about public perceptions of PMT is growing, particularly in the context of the U.S., there is clearly scope for more work to be done. Below we identify three priority areas for descriptive research on this topic to address:

(1) More measures are needed to map a wider range of attitudes toward PMT at the aggregate level. Current measures of concern and knowledge are highly generalized or one dimensional and need expanding to allow for more specificity and nuance. In addition, new measures are required to capture more basic attitudinal 'priors' to concern and knowledge about PMT. How aware are voters of PMT occurring in an election, i.e., that campaigns are engaging in more personalised contact with them, and how much do they mind? Thus far, questions have been framed around the acceptability of PMT, limiting the options for more neutral or even positive sentiments to be expressed toward PMT. Furthermore, there has been no attempt to date to assess the extent to which negative perceptions of PMT reflect a deeper underlying distaste for political advertising as a whole?

(2) Analyses of attitudes toward PMT, specifically levels of concern, have thus far shown little variance within the population according to key socio-demographic and political characteristics. However, the findings are based on examining bivariate relationships, raising the question of whether such uniformity holds up after scrutiny using more robust multivariate techniques and a wider set of control variables?

(3) Finally, related to the need for more in-depth analysis of the factors moderating attitudes toward PMT, studies so far have focused on the relationship between concern and

'standard' variables such as age, race and education and partisan outlook. However, findings from the marketing literature have shown that consumers' acceptance of personalised adverts is based on the value they assign to their privacy compared to the benefits they perceive in receiving content that is more relevant to their decision-making. Given the high degree of attention given to measuring concern about PMT, the question of whether this 'privacy calculus' mechanism carries over and moderates rejection of personalised political advertising is an important and interesting question to address.

Research Questions

Based on these deficits in current work we draw out a series of specific research questions and use survey data from the 2020 U.S. Presidential election to provide answers:

1. How aware are the public of PMT, i.e., how conscious are voters that they are being personally targeted by campaigns political messages?
2. If contacted in this way, how much do they mind?
3. How knowledgeable are the public about PMT? First in a more internal 'process' sense, i.e., how it works and second, on a more external 'regulatory' basis, i.e., how is it controlled?
4. How concerned are people about PMT, and how much does this vary based on the type of personal data used in targeting process?
5. To what extent is concern about PMT accounted for by a dislike of political advertising in general?
6. How do attitudes toward PMT vary within the population according to socio-demographic and political characteristics when examined at the individual level using multivariate techniques?
7. Is concern toward PMT moderated by a preference for receiving personalised content?

Cumulatively, these questions allow us to , first, present a richer and more detailed picture of public attitudes toward PMT in a 'high use' context; and second, to investigate the variance in those attitudes at the individual level.

Data and methods

To address these questions, we analyse original survey data collected online during the 2020 U.S. Presidential election that measured Americans attitudes and understanding of campaign targeting, and particularly personalised micro-targeting. The fieldwork was conducted by YouGov from September 16 to October 20, 2020. An overall sample N of 5,379 was generated from YouGov's main panel to be nationally representative of the target population i.e., all US adults aged 18 and above, based on education level, age, gender, ethnicity, region and 2016 past vote. A subset of 3,956 respondents from the total sample completed the PMT module of questions.[10] Weights were included by YouGov in the final dataset, to be applied to the achieved sub-sample to optimise the representativeness and survey responses to all US adults.

The analysis proceeds in three stages. First, we define and report our measures of public orientations toward PMT, broken down into four main dimensions - awareness, aversion, knowledge and concern – (Research questions one to four). We then apply a filter to the final dimension of concern to see how far the attitudes expressed reflect a more general distaste for political advertising rather than PMT *per se* (Research question 5). In the third stage of the analysis, we develop and test multivariate models to more robustly examine how selected orientations measured in stage one vary at the individual level, according to socio-demographic, political characteristics and a privacy calculus (Research questions 6 and 7).

[10] The remainder of the sample formed part of a separate social media analysis (SoMA) panel that tracked respondents' Twitter and web browsing habits during the campaign. The PMT module was not fielded for this sub-sample in the pre-election period, given possible priming effects on their online behaviours.

Stage 1: Measuring Attitudes

Awareness of PMT was measured in two-steps. We first asked respondents a baseline question about whether they had been contacted by a party or candidate during the campaign, and if so, by which mode, based on a range of seven options. (Question wordings and response categories for all attitudinal measures reported in the paper are provided in Appendix 1). Multiple answers were permitted and the frequencies by mode of contact are reported for the whole sample and among those reporting contact in columns one and two of table 1. Overall, contact rates were high, with 81% of the sample reporting they had been contacted in some way by a campaign. Leaflets and email were the most commonly used methods, while face-to-face contact was much less frequent.

A follow-up question then asked respondents whether they considered the contact they had received to be personalised; in terms of its message being tailored to their personal interests or characteristics, on a scale ranging from zero (no personalisation) to 10 (very personalised). If they had experienced multiple contacts by the same mode, they were asked to base their answer on their last recalled contact via that particular mode. To present the results in a more condensed format, the scale was recoded into four levels of perceived personalisation, (0 = none, 1-3=low, 4-6=medium, 7-10=high). The results are reported by mode in columns two to five of table 1. Appendix 2a reports the full results for each mode using bar charts. The table shows that while a significant proportion of the contact received was considered not to be personalised at all (zero was the modal response), the majority of contact reported was perceived as personalised to some degree i.e., its message was tailored to the respondent's interests or characteristics. The level of perceived personalisation appears to vary according to mode with contact from campaigns via email or mobile phone more likely to be seen as highly personalised (31%) compared to leaflets or being contacted while browsing online (20% and 18%). Aggregating the results across all modes, we find that of the 81% of US voters reporting campaign contact, most of them (68%) considered the contact to be personalised in some way, and over half (55.4%) thought this was to a

medium or high degree. The corresponding figures for the sample as a whole were 54.5% and 44.4%.

Table 1: Awareness of PMT.

Contact mode	Step 1		Step 2: Level of personalisation					
	% of total contacted N=3,168	% of total sample N=3,956	High	Med	Low	None	DK	N
Browsing	32.5%	26.0%	18.3%	22.5%	18.8%	30.4%	10.0%	1,029
Email	53.4%	42.8%	31.0%	24.8%	15.3%	22.2%	6.6%	1,694
Soc. med.	29.4%	23.5%	24.6%	26.4%	16.5%	24.6%	7.9%	932
Mobile	44.5%	35.6%	31.1%	22.2%	15.1%	23.3%	8.4%	1,410
In person	10.2%	8.1%	29.0%	24.5%	15.8%	24.3%	6.4%	322
Landline	30.3%	24.3%	24.9%	21.9%	14.7%	27.3%	11.2%	961
Leaflet	57.8%	46.3%	20.2%	16.8%	16.0%	39.3%	7.6%	1,830

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample, N = 3,956. % for step two, calculated row-wise.

Aversion to PMT. Aversion to PMT was also measured in a two-step process. All respondents that reported contact were then asked whether they had minded being contacted in this way, for each of the seven modes. Again, if they had been contacted multiple times for a given mode, they were prompted to think about the last time they were contacted. Responses were recorded on a zero to 10 scale, with 10 meaning they minded very much and zero they did not mind at all. A score of five meant they did not feel strongly either way. Bar charts reporting the full set of responses are reported in Appendix 2b. With the exception of email and leaflets, the charts show the modal response was the most negative score of 10 i.e., they minded very much. For ease reporting in tabular form we recoded the scale to a create a trichotomous variable of mind (6-10), not mind (0 – 4) and no feeling either way (5) which smooths responses out and reveals that on balance more people were inclined toward not minding being contacted in general by campaigns, than minded. This differed only for contact via a home landline or mobile phone, where a

majority of respondents clearly did mind being contacted in this way. The full set of results among those reporting contact are reported in table 2.

Table 2. Proportion of the sample that minded receiving campaign contact by mode.

Contact mode	Step 1	Step 2: Minded Contact				
	% of total contacted N=3,168	Did not mind	No feeling either way	Minded	DK	N
Browsing	32.5%	38.2%	18.1%	39.9%	3.8%	1,029
Email	53.4%	46.8%	15.8%	33.9%	3.5%	1,693
Soc. med.	29.4%	42.0%	15.6%	38.8%	3.6%	932
Mobile	44.5%	26.6%	11.5%	59.2%	2.6%	1,411
In person	10.2%	43.6%	11.5%	39.9%	5.0%	322
Landline	30.3%	21.5%	11.9%	62.3%	4.3%	961
Leaflet	57.8%	55.0%	15.1%	27.2%	2.7%	1,830

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample, N = 3,956. % for step 2, calculated row-wise.

To measure the level of dislike or aversion to PMT among the U.S. public, we used the figures reported in table 1, measuring the perceived level of personalization attributed to a given mode of contact, and cross-tabulated each one against the proportion of respondents that reported having minded being contacted in this way. In doing so we were able to separate PMT (i.e., highly personalised contact) from 'regular' or untargeted campaign content (i.e. low or no personalisation) to see what proportion of voters disliked the former compared to the latter. In doing so, however, we acknowledge that other motivations, aside from personalisation may be driving respondents' dislike of these different types of contact. Some people may be hostile to any form of unsolicited contact via their mobile phone but more relaxed about an online ad popup or a leaflet to their door. Those who live in swing states and have been subject to a much higher level of contact may be more inclined to mind receiving contact regardless of whether it is personalised or not. In not factoring in this nuance we accept that our estimates of opposition toward highly personalised content are likely to over-estimate its prevalence among our sample. We are thus cautious in using our figures as precise estimates of the level of aversion toward PMT within the U.S. population. Instead, we focus more on their indicative value, and

particularly whether on balance we see an increasing aversion for PMT as the perceived level of personalisation increases, and whether this applies across all modes consistently? The results are reported in table 3 by mode of contact.

The findings show that in general contact that is viewed as more personalized tends to provoke a more negative response, although the relationship is not clear cut and does not apply to all modes. [11] Taking the findings reported in the first four rows of the table for example, we see that most of those who received contact they considered to be highly personalized when they were browsing online minded (59.2), compared to less than a quarter (23.9%) that did not mind and around one sixth (16.8%) had no strong feeling either way. Contact that was not personalised still generated hostility (43.4% minded), however, significantly more people stated that they did not mind (41.6%). A similar response pattern is observed for other forms of contact, except for email and mobile phone, where the level of personalization either appears to make no difference to whether people mind receiving it, or actually appears to produce less irritation than untargeted contact. These disparities are interesting. We can speculate that for email it may be due to its wider use as a professional communication tool, which means people are less bothered if a candidate or party use it in an election. Conversely although campaign contact by mobile phone sparks the most annoyance among voters according to table 1, the fact that people were less annoyed if it was more personalised suggests either that may be an expectation of receiving for more individualized messages via one's phone. It might also be the case that those who are contacted in this way are more likely to have opted-in to receive updates compared with other modes. Overall, therefore, while voters are more likely than not to dislike or mind PMT it is not automatically seen as a bad thing and for some modes, notably mobile phone and email, higher personalization was seen as non-problematic or even slightly preferred. Of course, as noted a fuller analysis that unpacks the various factors in addition to personalisation that explain whether people minded being contacted is needed.

[11] Attenuation in the estimated relationship between perceived personalization and aversion to PMT may partially be explained by how the latter indicator was formed. As noted above, the measure likely captures a wider mix of reasons, beyond the level of personalization for disliking highly personalized contact.

Table 3. Perceived personalisation of contact by how much it was minded by mode.

Contact mode	Personalisation	Minded (6-10)	No feeling either way (5)	Did not mind (0-4)	N
Online browsing	None	43.3%	15.1%	41.6%	305
	Low	29.2%	15.6%	55.2%	192)
	Medium	33.8%	27.3%	39.0%	231
	High	59.2%	16.8%	23.9%	184
		41.1%	18.6%	40.2%	912
Email	None	38.8%	15.1%	46.1%	371
	Low	23.0%	15.5%	61.5%	252
	Medium	30.9%	23.9%	45.2%	414
	High	38.6%	12.4%	49.0%	518
		34.1%	16.6%	49.3%	1,555
Social media	None	40.2%	10.3%	49.6%	224
	Low	32.9%	13.8%	53.3%	152
	Medium	32.4%	24.5%	43.2%	241
	High	50.9%	13.3%	35.8%	226
		39.5%	15.8%	44.7%	843
Mobile Phone	None	69.9%	7.1%	23.0%	322
	Low	60.2%	12.3%	27.5%	211
	Medium	52.4%	18.6%	28.9%	311
	High	58.8%	10.3%	30.9%	437
		60.3%	11.9%	27.9%	1,281
In person	None	44.7%	7.9%	47.4%	76
	Low	32.0%	12.0%	56.0%	50
	Medium	32.9%	22.8%	44.3%	79
	High	52.2%	6.5%	41.3%	92
		41.8%	12.1%	46.1%	297
Home phone/ Land line	None	68.5%	7.4%	24.1%	257
	Low	57.2%	13.0%	29.7%	138
	Medium	57.7%	19.7%	22.6%	208
	High	70.6%	11.1%	18.3%	235
		64.6%	12.4%	23.0%	838
Leaflet	None	24.6%	13.4%	62.0%	711
	Low	22.4%	14.5%	63.1%	290
	Medium	28.9%	23.3%	47.9%	305
	High	35.9%	13.7%	50.4%	365
		27.5%	15.4%	57.1%	1,671

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample, N = 3,956. % are calculated row-wise. DK excluded.

Knowledge of PMT was measured in two dimensions following the distinction identified in prior literature. The first set of measures focused on levels of public knowledge about the processes underlying PMT, and the second captures knowledge of the wider context and regulation surrounding it.

Process knowledge is measured by a battery of items that asked respondents what sources of personal information are currently used by campaigns to target political adverts. In total 15 different types of personal data were presented to respondents, and they were scored on how many they identified as used in the PMT process (see Appendix 1, items 1.4a and b). Items were split across two sets of questions, the first focused on a range of personal characteristics, such as age, gender, ethnicity, relationship status, sexual orientation, religious views, political views, personality, major life events (9 items). The second set included a list of OBA data, such as individuals' internet browsing and search habits, likes and follows of different accounts and purchasing records and location history.[12] Respondents were then scored on a 'process knowledge' scale of zero to 15. Item response theory modelling using the Mokken test for homogeneity confirmed the items formed a uni-dimensional scale.[13]

Table 4 reports the percentage of the sample that gave the correct answer, i.e., they checked it as being used, versus incorrect i.e., they did not check it or selected none of the above or don't know in response to set of items listed. The results show that levels of knowledge varied based on data type, with respondents typically being unaware that campaigns can use personal information such as their personality profile or relationship status to target adverts at them. Overall, however, most respondents were able to correctly identify at least half of forms of the personal information used in PMT.

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[12] For an overview of the types of data typically contained in voter files in by U.S. Campaigns see the updated models for 2021 published by L2 and Haystaq https://haystaqdna.com/wp-content/uploads/2021/09/L2-National-Models-User-Guide-2021.pdf

[13] Loevinger H coefficients were all considerably higher than 0.3, indicating that this is a strong scale and that all items belong together (see Appendix 3 for further details).

Table 4. Process Knowledge of PMT by data type used.

Type of personal data	Used (correct)	Not Used /DK (incorrect)
Personal characteristics		
Age	55.0%	45.0%
Gender	51.1%	48.9%
Ethnicity	55.9%	44.1%
Relationship status	26.2%	73.8%
Sexual orientation	39.7%	60.3%
Religious views	47.7%	52.3%
Political views	60.6%	39.4%
Personality	23.1%	76.9%
Major life events	20.3%	79.7%
Online behaviours		
Browsing & search habits	54.8%	45.2%
Purchasing habits	38.2%	61.8%
Location history	36.5%	63.5%
Content access	51.3%	48.7%
Post, likes, shares	54.0%	46.0%
Liked/followed profiles	51.2%	48.8%

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample. % are calculated row-wise, no missing data, all % calculated from full N of 3,956.

Table 5 presents the recoding of the zero to 15 additive scale to group respondents into four categories of process knowledge about PMT – zero (0 correct), low (1-4), medium (5-9) and high (10-15). The results show the modal category process knowledge of PMT was ‘high’ and that a significant majority of the sample (62.8%) could be considered to have medium to high knowledge.

Table 5. Level of Process Knowledge of PMT.

Level of Process Knowledge about PMT	N	%
None	613	15.5%
Low	856	21.6%
Medium	1,224	30.9%
High	1,262	31.9%
Total	3,956	100%

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample. N = 3,956

Regulatory knowledge: The second measure of knowledge about PMT focuses on the wider regulatory context governing it. This was measured with a single question that tapped respondents' knowledge of the rules governing political advertising across a range of media channels, including online (see Appendix 1, qu. 1.5). Respondents were asked to select the correct statement from three options describing how political advertising offline and online is controlled in the U.S. The responses are reported in the first column of table 6, with the correct answer shaded in grey. The findings contrast with those reported in tables 4 and 5 in that knowledge about the regulation of PMT appears to be quite low, with less than a third of respondents selecting the correct response. As the final column of table 6 shows, however, those with higher process knowledge, however, were significantly more likely (10%) to select the right answer, and also less likely (again by around 10%) to say they didn't know the answer.

Table 6. Regulatory knowledge of PMT.

Political Advertising Regulations Across Media	% Total Respondents	% of respondents with high levels of PMT process knowledge
All political advertising (whether on television, radio, in newspapers or the internet) is subject to the same rules that are set by the Federal Communication Commission (FCC)	17.7% (700)	17.0% (215)
Only political advertising on television and radio is regulated by the Federal Communication Commission (FCC). Advertising on the internet and social media is regulated by individual companies and platforms	30.2% (1196)	40.5% (511)
There are no government controls on any type of political advertising in U.S. elections	16.0% (633)	18.2% (229)
Don't Know	36.0% (1,426)	24.3% (307)
Total N	100% (3,956)	100% (1,262)

Note: Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample. N = 3,956. Respondents with high process knowledge scored of 10-15 on the process knowledge index reported in table 5. N in parentheses

Concern about PMT is typically measured with a single question that asks whether people think it is acceptable for campaigns to use their personal data to send them targeted adverts. Based on the findings from studies of consumer micro-targeting, however, it is clear that concerns vary according to the type of personal data used by firms in targeting people. To capture this nuance, we broke down levels of respondent concern across the different types of data that had been used to measure individuals' process knowledge of PMT. Specifically, we asked respondents how acceptable they considered campaigns use of each type of data to be for targeting purposes. Responses were coded on a four point scale that ranged from very and fairly acceptable, to not very and not at all acceptable, and a don't know option was included (see Appendix 1, 6a and 6b for full question wording)

Table 7 reports the findings for each type of data, according to whether respondents considered it 'acceptable' (very, fairly) or 'not acceptable' (not very, not at all) or didn't know (see Appendix 4a and 4b report the acceptability distributions for each item). The results show that concern about PMT is moderated by the type of data being used. While some forms of data do lead to a majority 'reject' response, this is not true for all. In general, online behavioural data are seen as less acceptable than socio-demographic characteristics, particularly tracking types of information based on purchasing habits and location history. However, the use of age and political opinions for PMT are seen by a majority of people to be acceptable, with online posts and gender also seen as 'fair game' by a significant proportion of the U.S. public.

Table 7. Concern about PMT by type of data used.

Type of personal data	Acceptable	Unacceptable	Don't Know
Personal characteristics			
Age	56.4%	27.4%	16.2%
Gender	47.8%	36.0%	16.2%
Ethnicity	41.1%	42.5%	16.4%
Relationship status	42.6%	39.2%	18.2%
Sexual orientation	32.8%	49.2%	18.0%
Religious views	40.0%	43.5%	16.5%
Political views	66.1%	18.8%	15.1%
Personality	39.4%	39.6%	21.0%
Major life events	36.9%	44.5%	18.6%
Online behaviours			
Browsing and search habits	31.0%	56.7%	12.3%
Purchasing habits	23.8%	63.0%	13.1%
Location history	21.4%	66.3%	12.3%
Content access	40.5%	46.2%	13.3%
Post, likes, shares	47.1%	39.6%	13.3%
Liked/followed profiles	43.1%	43.9%	13.0%

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample, N = 3,956. % are calculated row-wise. No missing data, all % calculated from N of 3,956.

Stage 2: Controlling for the General Dislike of Political Advertising

Having shown that attitudes toward PMT are more multi-faceted than revealed by prior studies, we turn to examine the key and thus far neglected question of whether opinion toward PMT, and particularly levels of public concern, are over-estimated in that they reflect a dislike for political advertising in general, rather than a rejection of its more micro-targeted form. To do so we re-calculated the figures for concern reported in table 7 with a filter applied to control for the general dislike of political advertising. The filter was derived from a question that measured how far individuals preferred to hear more about collective vs particularistic benefits in candidates' adverts (measured on a 10 point scale), or whether they preferred not to receive any political adverts or messaging at all. We recoded this variable as a binary indicator, where a score of one was assigned to those saying preferred not to receive any political adverts and 0 indicated acceptance of receiving such content, i.e., the respondent had stated a preference for more personalised or collective benefits in the political adverts they received (see Appendix 1, qu.1.7 for full question wording). This process revealed a small sub-sample of 561 respondents or 14.2% who are firmly or intrinsically opposed to receiving any political advertising or messages. Overall, then it seems that a large majority of Americans appear to accept or place some value on receiving political information from candidates during elections.[14]

To compare differences in levels of concern between the two groups we recalculated the acceptability frequencies reported in table 7 for each type of data used in PMT for each of our two groups of respondents, i.e., according to whether they generally accept or reject political adverts. The results are reported in table 8.

[14] We acknowledge the measure of general dislike of political advertising is a conservative one in that it first prompts respondents to think about possible benefits of political advertising before giving the option of rejecting receiving any political ads. Arguably if the order was reversed and respondents were first asked if they preferred to receive or not receive any political advertising the numbers for general dislike would have been significantly higher. However, it would not have been possible to distinguish within this group whether their dislike of PMT is based simply on the intrinsic rejection of all political ads as opposed to PMT, which is our core variable of interest.

Table 8. Concern about PMT by type of data according to acceptance or rejection of political adverts (PA).

Type of personal data	Acceptable		Unacceptable		Don't Know	
	Accept PA	Reject PA	Accept PA	Reject PA	Accept PA	Reject RA
Socio-demographic						
Age	60.6%	31%	27.7%	25.4%	11.7%	43.6%
Gender	51.7%	24.3%	36.9%	30.9%	11.4%	44.8%
Ethnicity	43.8%	21.6%	44.3%	34.8%	11.9%	43.7%
Relationship status	45.8%	23.2%	40.5%	31.4%	13.7%	45.5%
Sexual orientation	35.7%	15.2%	50.5%	41.4%	13.8%	43.4%
Religious views	42.9%	22%	45.1%	33.9%	12.0%	44.1%
Political views	71.3%	34.9%	18.5%	20.9%	10.3%	44.2%
Personality	42.24%	21.4%	40.8%	32.1%	16.8%	46.4%
Major life events	39.7%	20.2%	46.1%	35%	14.3%	44.8%
Online behaviours						
Brows. and search habits	33.4%	16.6%	58.8%	43.9%	7.8%	39.6%
Purchasing habits	25.4%	14.4%	65.7%	46.9%	8.9%	38.7%
Location history	23.2%	10.5%	69%	49.9%	7.7%	39.6%
Content access	43.8%	20.7%	47.2%	39.8%	9.0%	39.6%
Post, likes, shares	51%	23.7%	40.4%	34.6%	8.6%	41.7%
Liked/followed profiles	46.8%	21.3%	44.8%	38.2%	8.5%	40.5%

Note. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample, Total N = 3,956. % calculated with groups of accepts or rejects political adverts. N accepts political ads = 3,395, N rejects political ads = 561.

The revised frequencies present some expected and unanticipated insights. If we compare the acceptance rates reported in column one of table 7, against those recorded in column one of table 8, which now excludes people that say they reject political adverts in general, we see a drop of only around three to five percent levels of acceptance. This very modest drop appears to support the claims by Turow et al. (2012) that a generalized dislike of advertising has only a weak relationship with popular concerns about tailored political advertising. Although it is notable that once those who are intrinsically opposed to political advertising are removed from the sample, acceptance of the use of gender and people's online posts to target voters passes the threshold of 'majority' acceptance, with most voters now being comfortable that these data are used in political targeting.

Table 8 partially confirms this. If we compare acceptance of PMT according to whether people accept or reject political adverts (first two columns) we see tolerance rates are typically more than twice as high among the former group, for all types of data. Taking age data as a case in point, almost two thirds that accept political adverts find using it to target political adverts acceptable, while only around one third of those rejecting adverts feel the same. This contrast is not maintained, however, when comparing the proportions of each group that consider use of personal data to be unacceptable, indeed the percentage of those expressing this view actually tends to be slightly lower among those who reject political advertising. This apparent anomaly is explained to a degree when we look at the results in the final column which reports the 'don't know' frequencies for each group. This response is much more common among those who reject adverts and is the modal response of the group as a whole. In regard to research question five, therefore, these results suggest that a general dislike of political advertising does affect how people view PMT, in that it makes them more ambivalent or perhaps even indifferent to the types of personal data that campaigns use. This makes sense in that it suggests those who hold negative opinions about political advertising 'globally' do not necessarily have a strong view on whether it is personalized or not.

This section of the paper has provided answers to five of the seven research questions initially posed. Specifically, it has shown that overall awareness of PMT among U.S. voters is quite high, with under half of the population having received contact from a campaign during the last 2020 Presidential election that they considered to display a medium to high level of personalisation. This varied according to mode, however, with newer forms of more direct contact through email and mobile phone reported as more personalised, while leaflets and contact made via online browsing were much more likely to be seen as having no personalisation. While in general people were more likely not to mind or care about being contacted during the campaign, more personalised contact was typically minded more than non-personalised contact and vice versa non-personalised contact bothered people less. However, it was also clear that people were not uniformly averse to receiving personalised contact. For some modes, notably mobile phone and email,

a higher degree of personalization was in fact slightly preferred over non-personalised contact.

Knowledge of the process of PMT, at least in terms of the type of data campaigns are using to target voters appears to be reasonably healthy, in line with findings from the OBA literature. This was particularly evident in relation to knowledge about campaigns' use of voters' demographic characteristics. However, wider contextual knowledge about the restrictions on PMT, is relatively low. Not surprisingly, however, those with more process knowledge display higher levels of regulatory knowledge. Finally, in regard to levels of concern about PMT, our results confirm the idea of a 'majority' rejection of the practice based on respondents' views about the acceptability of using a range of data for targeting voters. However, we also have shown the public to be more discriminating in their levels of concern when they consider the types of data used for PMT. Specifically, publicly observable traits and especially political views are more accepted as 'fair game' for campaigns to use compared to sensitive private information. Rejection rates fall further when those who dislike political advertising in general are excluded from the analysis. While the drop at the aggregate level is not particularly pronounced, this is due to numbers of 'blanket rejecters' being so small. Thus, while our research supports the idea that a general dislike of political advertising cannot account for the high levels of concern expressed toward PMT, we do not conclude from these results, as Turow et al. (2012) have done, that a weak relationship exists between concern about PMT and a rejection of online or political advertising. Instead, we consider this to be something that requires further investigation at the individual level.

Stage 3: Multivariate analysis of attitudes to PMT

In this section we undertake analysis of attitudes to PMT at the individual level in order to address our remaining two research questions – namely, how they vary among the population according to a range of socio-demographic and political characteristics when examined using multivariate techniques; and whether the perceived benefits of

personalised ad content moderate voters' concerns about PMT, as is the case with consumer advertising. The analysis focuses on two of the four attitudinal dimensions in particular – knowledge and concern. We select these two variables given they have been the main foci of prior work on the topic and can demonstrate more clearly the significance of any methodological advance our approach yields.[15] Also, in practical terms the measurement of awareness and aversion to PMT by mode make them less amenable to regression analysis. Each respondent has potentially up to six non-mutually exclusive values for awareness and aversion, i.e., whether they considered the contact received online, or by phone etc. to be personalised and whether they minded being contacted in this way. Computing cumulative or singular measures of level of awareness (knowledge or concern) or aversion to PMT for each respondent that can be used as a dependent variable is thus not possible. In addition, in the case of aversion, as noted earlier, our measure is likely to combine a range of factors prompting the dislike of campaign contact, beyond purely its level of personalisation.

To explore variance in knowledge and concern about PMT we conducted four multivariate regression analyses. The first two examined variance in respondents' levels of process and regulatory knowledge, using measures of the latter as generated for tables 4, 5 and 6. Specifically, process knowledge was measured as a zero to fifteen additive scale based on the types of personal data that voters correctly identified as used in voter targeting, and regulatory knowledge as a binary variable based on their providing a correct or incorrect/don't know answer. The third and fourth analyses examined variation in respondents' concern about PMT, as measured by respondents' average PMT acceptability score in regard to the use of socio-demographic data in campaign targeting, and the use of online behavioural data. Specifically, we calculated the average acceptability score for the nine types of socio-demographic data used in targeting and the six online behavioural activities, respectively. Each item had been scored as one to four or don't know by

[15] We note that a multivariate analysis of knowledge of political advertising was conducted by Nelson et al. (2021), however, this was based on a 29 point scale of general knowledge, rather than focusing on the four point sub-index measuring digital political advertising (DPA) specifically.

respondents, with a higher score indicating greater acceptance. A lower score indicated the respondent found the use of the range of types of data less acceptable and thus registered higher concern about PMT. If a respondent responded don't know to an item we imputed its value from the mean of the items scored, rather than remove them as missing.[16] All inferential statistical analyses were conducted using STATA version 14.

The correlates included in the models were age, gender, education, income, race, employment status, and partisan identification. The binary measure of general dislike or acceptance of political advertising formed an additional control variable. This allowed us to probe Turow et al.'s (2012) claim based on aggregate findings, that a distaste for online advertising made little difference to concerns about PMT. To address our seventh and final research question, we included a variable that measured individuals' preference for privacy versus personalisation in their online experience. Specifically, respondents were asked to indicate their position on a zero to ten scale anchored by the statements that "Privacy is important to me and I don't want my data collected or used by businesses and other organizations I interact with, under an circumstances" (equal zero) and "Personalization is useful to me so I don't mind if businesses and other organizations I interact with collect and use my data" (equal 10). Details of the wording and coding of the independent variables are reported Appendix 5.

Given the prior literature has reported the bivariate relationships between individual demographic and political characteristics and attitudes to PMT or OBA, we began by cross-tabulating our two forms of knowledge and two types of concern against the demographic

[16] 789 respondents gave a DK response to the acceptability of using one or more of any of the 9 types of socio-demographic data and 1247 did so for the 6 types of online behavioural data. Using mean imputation we were able to assign values for DKs to the socio-demographic items for 411 respondents, and to the online behavior items for 824 respondents. This produced a final N of 3587 for the mean score on acceptability of socio-demographic data and 3533 for mean score on online behavioural data with missing data now reduced to an N of 369 and 423 respectively. As a robustness check of our new findings, we recalculated the bivariate relationships and regressions excluding DK respondents as missing listwise. The results did not change substantively in regard to direction or significance. These are provided in Appendix 7.

and political variables examined in the prior literature. Appendix 6a-d reports these bivariate relationships in detail. The results are largely in line with expectations in that differences in levels of knowledge and concern about PMT are generally quite modest among the electorate. Levels of process and regulatory knowledge tend to be higher among older, white, more highly educated voters, although age does appear to follow a more normal distribution, particularly for regulatory knowledge, with the middle-aged groups being most informed, compared to the youngest and oldest voters. Concern about PMT is also higher among older voters, and more so for uses of online behavioural data than socio-demographic types of personal data. Females are somewhat more concerned than males as are white voters about PMT, while education displays almost no relationship to concern for use of either type of data. In line with prior findings, partisanship appears to make very little difference to what people know or feel about PMT, with independents demonstrating slightly higher knowledge, while Democrats espouse slightly less concern.

To test these relationships more systematically we regressed our four attitudinal measures against the key correlates listed above. We used OLS for the analysis of process knowledge and concern, and binary logistic regression for regulatory knowledge. Missing variables were treated using list wise deletion. The results are reported in tables 9-12. Looking first at the correlates of our different types of knowledge, table 9 shows that in line with the findings from the cross-tables, age and education are all positively and significantly related to higher levels of process knowledge of PMT, as is race for white respondents. Being in paid employment is also associated with having a greater understanding of the different types of personal data used in voter targeting. Finally, a small but significant partisan difference emerges with Republicans reporting slightly lower levels of process knowledge than independents or Democrats.

For regulatory knowledge the story is somewhat similar. Notably age effects are very small but negative which is likely to reflect the non-linear relationship observed in the bivariate analysis, with those in the 25-44 year age bracket displaying the highest levels of regulatory knowledge. Otherwise, being male, and also again white is associated with

higher levels of knowledge. Perhaps most interesting, however, is that party affiliation, or more precisely a lack thereof is significant with independent voters showing greater awareness of the rules governing PMT compared to both Democrats and Republicans.

Table 9. Multivariate analysis of correlates of Process Knowledge (0-15 scale).

	B	(se)	Beta
Age	.022***	.004	.086
Gender	.249	.156	.027
Education (ref: No high school)			
Finished high school	.542	.338	.011
College or more	2.630***	.341	.280
Income	.002	.002	.011
Ethnicity (ref: White)			
Black	-1.990***	.238	-.137
Hispanic	-1.528***	.222	-.112
Other	-.650	.317	-.039
Employment status (ref: Full-time)			
Employed part-time	-.474	.265	-.031
Not in paid employment	-.822***	.179	-.088
Party ID (ref: Independent)			
Democrat	.309	.190	.033
Republican	-.390*	.197	-.039
Dislike pol adverts (gen)	-2.900***	.274	-.188
Constant	5.369***	.450	
R-square	.168		
N	3,299		

Note. *** Significant at $p < .001$, **Significant at $p < 0.01$, *$p < 0.05$, two-tailed. OLS results showing partial and standardized parameter estimates and standard errors for correlates of PMT process knowledge. Source YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample.

Table 10. Multivariate analysis of correlates of Regulatory Knowledge of PMT.

Independent var.	b	(se)
Age	-.007**	.002
Gender	.325***	.081
Education (ref: No high school)		
Finished high school	-.169	.203
College or more	.377	.200
Income	-.002	.001
Ethnicity (ref: White)		
Black	-.425**	.136
Hispanic	-.279*	.120
Other	-.167	.159
Employment status (ref: Full-time)		
Employed part-time	.282	.144
Not in paid employment	.072	.091
Party ID (ref: Independent)		
Democrat	-.214*	.097
Republican	-.276**	.101
Dislike pol adverts (gen)	-1.347***	.185
Constant	-.428	
Pseudo r-square	.047	
N	3,299	

Note. *** Significant at p < .001**Significant at $p < 0.01$, *$p < 0.05$, two-tailed. Binary logistic regression results showing parameter estimates and standard errors for correlates of PMT regulatory knowledge. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample.

The results for concern about PMT are reported in tables 11 and 12. The first set of results are based on respondents' overall acceptance of campaigns' use of a range of personal socio-demographic data for voter targeting. A higher acceptance score is equated to lower average concern about PMT tailored according to this type of information. The findings show that younger voters are significantly less concerns than older voters, as are black voters compared to other ethnic groups. Women are generally more worried than men about these practices. The results for partisanship are interesting in that those who identify with a party are typically more likely to accept campaigns using voter data to tailor

adverts than to independents, particularly Republicans. In contrast to the conclusion drawn from the aggregate results, a dislike for political advertising is strongly and significantly linked individuals' concern about the use of PMT. Finally, respondents that perceive benefits in personalised content online are significantly more likely to accept the use of their personal data in campaign advertising. Comparing the beta statistics this emerges as the most significant factor in lowering concerns about PMT.

Table 11. Multivariate analysis of correlates of concern about PMT using socio-demographic data.

Independent var.	Mean acceptability score		Beta
	b	(se)	
Age	-.003***	.001	-.066
Gender	.183***	.030	.109
Education (ref: No high school)			
Finished high school	-.030	.087	-.017
College or more	.059	.087	..34
Income	-.001	.001	-.029
Ethnicity (ref: White)			
Black	.216***	.047	.080
Hispanic	-.056	.045	-.023
Other	-.028	.056	-.009
Employment status (ref: Full-time)			
Employed part-time	.004	.051	.002
Not in paid employment	-.060	.034	-.036
Party ID (ref: Independent)			
Democrat	.084*	.037	.049
Republican	.108**	.039	.059
Dislike pol adverts (gen)	-.244***	.066	-.078
Preference for personalisation	.058***	.005	.218
Constant	2.264***		
R-square	.096		
N	3,053		

Note. *** Significant at $p < .001$, ** $p < 0.01$, *$p < 0.05$, two-tailed. OLS results showing partial and standardized parameter estimates and standard errors for correlates of mean level of concern about PMT using socio-demographic types of data. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample.

The factors associated with concern about use of online behaviour in PMT reported in table 12 follow a broadly similar pattern to that observed toward the use of personal social and demographic traits. Income now becomes significant with those earning more being significantly less accepting or more concerned about the use of their online activities for political targeting. Similarly, Democrats appear to be less accepting of campaigns using online tracking data in PMT compared to Republicans. A general dislike of political adverts is even more significantly linked with lower rates of acceptance while those valuing personalisation over privacy are even more accepting of targeting that uses online tracking data, according to the beta coefficients in the two models.

The results of the multivariate analysis provide answers to our final two research questions. In doing so, we both confirm and challenge findings from prior empirical analyses of attitudes to PMT among the U.S. electorate. Regarding our two forms of PMT knowledge we find that in line with previous work, it varies significantly according to age, education and gender while political views make very little difference. We also find disparity in knowledge on ethnicity grounds, a characteristic that previous studies either did not control for, or concluded was insignificant based on a much smaller sample size and less nuanced measures.[17] In terms of concern about PMT, although most people are worried about these new electoral practices, use of multivariate techniques reveals that the modest differences exposed in previous bivariate analyses are significant. Specifically, age, gender, race and ethnicity again affect how accepting people are of PMT, with the additional influence of income and partisanship now being detected. In addition, while only a small minority of the public reject political advertising in general, this dislike exerts a strong influence on attitudes to PMT, even after a wide range of these other variables are controlled for. These findings directly challenge the conclusions of Turow et al. (2012) that peoples' general dislike of political advertising has only a weak relationship with concerns

[17] Nelson et al.'s (2021) study presents the frequencies for ethnicity within their sample broken down in six groups. The N's for each of the non-white categories are below 15 (Table 1). The regression results shown in table 4 report findings for a singular 'ethnicity' variable that is assumed to compare white against non-white respondents. Given the N of the latter was less than 40, the statistical power to identify a significant relationship is thus reduced in comparison to the model we test here.

about political advertising. Finally, in an extension of prior work we show that those who view personalised online content as useful are also more willing to accept use of their personal data to show them campaign adverts. This answers our final research question in the affirmative, therefore, and indicates that the personalisation-privacy calculus uncovered in the consumer context does indeed carry over to the political sphere.

Table 12: Multivariate analysis of correlates of concern about use of online behavioural data in PMT.

Independent var.	Mean acceptability score b	(se)	Beta
Age	-.006***	.001	-.133
Gender	.162***	.028	.099
Education (ref: No high school)			
Finished high school	.028	.080	.016
College or more	.019	.079	.012
Income	-.002**	.000	-.059
Ethnicity (ref: White)			
Black	.171***	.047	.065
Hispanic	.083	.043	.034
Other	-.007	.055	-.002
Employment status (ref: Full-time)			
Employed part-time	.103*	.048	.038
Not in paid employment	.017	.031	.011
Party ID (ref: Independent)			
Democrat	.042	.036	.025
Republican	.109**	.035	.061
Dislike pol adverts (gen)	-.322***	.055	-.105
Preference for personalisation	.084***	.005	.322
Constant	1.907***		
R-square	.178		
N	3,098		

Note. *** Significant at p < .001, ** p < 0.01, *p < 0.05, two-tailed. OLS results showing partial and standardized parameter estimates and standard errors for correlates of mean level of concern about PMT using online behavioural data. *Source*: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample.

Conclusion

The main goal of this paper was to address some of the more obvious gaps in the empirical literature describing attitudes to PMT at both the aggregate and individual level. To do so we have disaggregated, operationalised and measured a range of voter orientations to PMT in the U.S. Specifically we identified four main dimensions – awareness, aversion, knowledge and concern – for more detailed profiling and analysis. While the latter two have been studied to some degree, the first two have received little to no attention. Our findings show that attitudes toward PMT are more complex and multi-faceted than current studies portray. While it is well established that a large majority of the public in the U.S. and elsewhere consider PMT, or campaigns' use of their personal data to target political messages to them to be unacceptable, our results add important nuance to this finding. First, we reveal that just under half of the adult American population actually experienced contact from a candidate or party in 2020 that they considered as moderately to highly personalised, in that it was tailored to their interests during the 2020 Presidential election campaign. Although this is a sizeable minority who have been exposed to PMT this does indicate that a significant number of those voicing concern about PMT are doing so based on more generalized anxiety about the process rather than direct experience. Furthermore, while most people have a reasonable understanding of the type of data campaigns are using to target them, knowledge of the regulations governing online political advertising is quite low.

Among those that have experienced PMT, while typically they were more likely to mind being contacted in this way than via entirely impersonal contact, this did vary by mode, with email and mobile phone contact being viewed most negatively when it was not personalised. Also, although the level of generalized concern about PMT is high, our disaggregated approach showed that this varied considerably depending on the type of data used in the targeting process. Closer inspection of individual level concern and knowledge about PMT demonstrated a role for other more 'internal' moderating factors. This included more conventional descriptors such as age, race and income and political outlook.

Psychological factors, however, played the most important role with aversion to political adverts being one of the strongest influences in lowering acceptance of these new practices, while a preference for personalised content is key to lowering anxiety about them.

These findings are important as a benchmarking exercise against which to monitor future evolutions in public attitudes. However, they are also important to contextualise on-going causal analyses. Even if voters espouse general concerns about PMT, if those who are exposed to it are aware of it, understand the processes involved, and do not automatically consider all forms of it be problematic, i.e., they can discriminate when it might be useful to them, and what personal data is acceptable to use, then the repeatedly negative conclusions drawn by empirical and more theoretical analyses of PMT may be unwarranted, or at least premature. Or, to phrase it another way, although voters may now increasingly feel like somebody is always watching them, this may be less of a cause for concern, and more an opportunity to engage and mobilize them than the recent headlines suggest. These findings have important implications for attempts to respond to and regulate PMT as they suggest that rather than having uniformly negative effects, the public perceive certain forms of this activity to be acceptable.

References

Aargaard, P., & Marthedal, S. (2023). Political microtargeting: Towards a pragmatic approach. *Internet Policy Review, 12*(1), 1-22. https://doi.org/10.14763/2023.1.1690

Auxier, B., Rainie, L. Anderson, M. Perrin, A., Kumar, M., & Turner, E. (2019). *Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information*. Pew Center Report. https://www.pewresearch.org/internet/2019/11/15/americans-and-privacy-concerned-confused-and-feeling-lack-of-control-over-their-personal-information

Barbu, O. (2014). Advertising, microtargeting and social media. *Procedia-Social and Behavioral Sciences*, *163*, 44-49. https://doi.org/10.1016/j.sbspro.2014.12.284

Barocas, S. (2012). The price of precision: Voter microtargeting and its potential harms to the democratic process. *Proceedings of the first edition workshop on Politics, elections and data*, 31-36. https://doi.org/10.1145/2389661.2389671

Beer, D., Redden, J., Williamson, B., & Yuill, S. (2019). *Landscape Summary: Online Targeting*. Centre for Data Ethics and Innovation. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819057/Landscape_Summary_-_Online_Targeting.pdf

Blaemire, R. (2003). Targeting: Getting the most out of what you have. In R. A. Faucheux (Ed.), *Winning elections. Political campaign management, strategy & tactics* (pp. 224–228). M. Evans and Company.

Blanke, J.M. (2020). Protection for 'Inferences Drawn': A Comparison Between the General Data Protection Regulation and the California Consumer Privacy - Act. *Global Privacy Law Review*, *1*(2), 81-92. https://doi.org/10.54648/gplr2020080

Bodó, B., Helberger, N., & De Vreese, C.H. (2017). Political micro-targeting: a Manchurian candidate or just a dark horse? *Internet Policy Review*, *6*(4), 1-13. https://doi.org/10.14763/2017.4.776

Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F.J. (2017). Online Behavioural Advertising: A Literature Review and Research Agenda. *Journal of Advertising, 46*(3), 363-376. https://doi.org/10.1080/00913367.2017.1339368

Bradshaw, S., Neudert, L-M., & Howard, P.N. (2018). *Government responses to malicious use of social media* (NATO Strategic Communications Centre of Excellence Working Paper). https://www.ceeol.com/search/viewpdf?id=791712

Crilley, R., Gillespie, M. (2019). What to do about social media? Politics, populism and journalism. *Journalism*, *20*(1), 173-176. https://doi.org/10.1177/1464884918807344

Cadwalladr, C., & Graham-Harrison, E. (2018, March 17). Revealed: 50 Million Facebook Profiles Harvested for Cambridge Analytica in Major Data Breach. *The Guardian*. https://www.theguardian.com/news/2018/mar/17/cambridge-analytica-facebook-influence-us-election [https://perma.cc/462S-T2EM].

Dobber, T., Ó Fathaigh, R., & Zuiderveen Borgesius, F. (2019). The regulation of online political micro-targeting in Europe. *Internet Policy Review*, *8*(4), 1-20. https://doi.org/10.14763/2019.4.1440

Dobber, T., Trilling, D., Helberger, N., & de Vreese, C. (2018). Spiraling downward: The reciprocal relation between attitude toward political behavioral targeting and privacy concerns. *New Media & Society, 21*(6), 1–20. https://doi.org/10.1177/1461444818813372

Endres, K., & Kelly, K.J. (2018). Does microtargeting matter? Campaign contact strategies and young voters. *Journal of Elections, Public Opinion and Parties*, *28*(1), 1-18. https://doi.org/10.1080/17457289.2017.1378222

Flores, A., & Coppock, A. (2018). Do bilinguals respond more favorably to candidate advertisements in English or in Spanish? *Political Communication*, *35*(4), 612-633. https://doi.org/10.1080/10584609.2018.1426663

Gorton, W. A. (2016). Manipulating citizens: how political campaigns' use of behavioral social science harms democracy. *New Political Science, 38*(1), 61-80. https://doi.org/10.1080/07393148.2015.1125119

Haenschen, K., & Jennings, J. (2019). Mobilizing millennial voters with targeted internet advertisements: A field experiment. *Political Communication*, *36*(3), 357-375. https://doi.org/10.1080/10584609.2018.1548530

Harker, M. (2020). Political advertising revisited: digital campaigning and protecting democratic discourse. *Legal Studies, 40*(1), 151-171. https://doi.org/10.1017/lst.2019.24

Hersch, E., & Schaffner, B. (2013). Targeted Campaign Appeals and the Value of Ambiguity. *The Journal of Politics*, 75(2), 520-534. https://doi.org/10.1017/S0022381613000182

Hillygus, D. Sunshine, & Shields, T.G. (2008). *The Persuadable Voter*. Princeton University Press.

Hitlin, P., & Rainie, L. (2019). *Facebook Algorithms and Personal Data*. Pew Center. https://www.pewresearch.org/internet/2019/01/16/facebook-algorithms-and-personal-data/

Hiltunen, Miikka (2021). *Online Political Advertising and Disinformation during Elections: Regulatory Framework in the EU and Member States* (Helsinki Legal Studies Research Paper No. 68). http://dx.doi.org/10.2139/ssrn.3897836

Information Commissioner's Office. (2018). *Democracy disrupted? Personal information and political influence*. ICO. https://ico.org.uk/media/action-weve-taken/2259369/democracy-disrupted-110718.pdf

Issenberg, S. (2012). *The victory lab: The secret science of winning campaigns.* Crown.

Jamieson, K. H. (2013) Messages, Micro-Targeting, and New Media Technologies. *The Forum, 11*(3), 429-435. https://doi.org/10.1515/for-2013-0052

Kim, Y.M., Hsu, J., Neiman, D., Kou, C., Bankston, L., Kim, S.Y., Heinrich, R., Baragwanath, R., & Raskutti, G. (2018). The stealth media? Groups and targets behind divisive issue campaigns on Facebook. *Political Communication, 35*(4), 515-541. https://doi.org/10.1080/10584609.2018.1476425

Kreiss, D. (2017). Micro-targeting, the quantified persuasion. *Internet Policy Review*, *6*(4), 1-14. https://doi.org/10.14763/2017.4.774

Kozyreva, A., Lorenz-Spreen, P., Hertwig, R., Lewandowsky, S., & Herzog, S.M. (2021). Public attitudes towards algorithmic personalization and use of personal data online: evidence from Germany, Great Britain, and the United States. *Humanities and Social Sciences Communications*, *8*(1), 1-11. https://doi.org/10.1057/s41599-021-00787-w

Kruikemeier, S., Sezgin, M., & Boerman, S.C. (2016). Political microtargeting: relationship between personalized advertising on Facebook and voters' responses. *Cyberpsychology, Behavior, and Social Networking*, *19*(6), 367-372. https://doi.org/10.1089/cyber.2015.0652

Lavigne, M. (2020). Strengthening ties: The influence of microtargeting on partisan attitudes and the vote. *Party Politics, 27*(5), 965-976. https://doi.org/10.1177/1354068820918387

McEvoy, M. P. (2019). Big data and democracy: a regulator's perspective Information and Privacy Commissioner for British Columbia. *Internet Policy Review*, 8(4). https://policyreview.info/articles/news/big-data-and-democracy-regulators-perspective/1444

Nelson, M.R., Ham, C.D., Haley, E. (2021). What Do We Know about Political Advertising? Not Much! Political Persuasion Knowledge and Advertising Skepticism in the United States. *Journal of Current Issues & Research in Advertising*, *42*(4), 329-353. https://doi.org/10.1080/10641734.2021.1925179

Nickerson, D.W., & Rogers, T. (2014). Political campaigns and big data. *Journal of Economic Perspectives, 28*(2), 51-74. https://doi.org/10.1257/jep.28.2.51

Palmieri III, N.F. (2020). Who should regulate data: An analysis of the California consumer privacy act and its effects on nationwide data protection laws. *Hastings Science and Technology Law Journal, 11*, 37-60.

Persily, N. (2017). The 2016 US Election: Can democracy survive the internet? *Journal of Democracy, 28*(2), 63-76.

Segijn, C.M., & Van Ooijen, I. (2022). Differences in consumer knowledge and perceptions of personalized advertising: Comparing online behavioural advertising and synced advertising. *Journal of Marketing Communications*, *28*(2), 207-226. https://doi.org/10.1080/13527266.2020.1857297

Smit, E., Noort, G., & Voorveld, H. A. M. (2014). Understanding online behavioural advertising: User knowledge, privacy concerns and online coping behaviour in Europe, *Computers in Human Behaviour, 32,* 15-22. https://doi.org/10.1016/j.chb.2013.11.008

Smith, A. (2018). *Public Attitudes Toward Computer Algorithms*. Pew Center Report. https://www.pewresearch.org/internet/2018/11/16/public-attitudes-toward-computer-algorithms

Turow, J., Delli Carpini, M. X., Draper, N. A., & Howard-Williams, R. (2012). Americans Roundly Reject Tailored Political Advertising. Annenberg School for Communication, University of Pennsylvania. https://repository.upenn.edu/asc_papers/398

Varnali, K. (2021). Online behavioral advertising: An integrative review. *Journal of Marketing Communications*, *27*(1), 93-114. https://doi.org/10.1080/13527266.2019.1630664

Valenzuela, A.A., & Michelson, M.R. (2016). Turnout, status, and identity: Mobilizing Latinos to vote with group appeals. *American Political Science Review*, *110*(4), 615-630. https://doi.org/10.1017/S000305541600040X

Zarouali B, Dobber, T., De Pauw, G., & De Vreese, C. (2020). Using a Personality-Profiling Algorithm to Investigate Political Microtargeting: Assessing the Persuasion Effects of Personality-Tailored Ads on Social Media. *Communication Research, 49*(8), 1066-1091. https://doi.org/10.1177/0093650220961965

Zuiderveen Borgesius, F., Moeller, J., Kruikemeier, S., Ó Fathaigh, R., Irion, K., Dobber, T., Bodó, B., & De Vreese, C.H. (2018). Online political microtargeting: promises and threats for democracy. *Utrecht Law Review, 14*(1), 82-96. http://doi.org/10.18352/ulr.420

Appendix 1: Survey questions measuring attitudes to PMT

Awareness of PMT (2 stages)

Stage 1 – Qu.1.1 Filter Question – Contacted during the Campaign?

Question	During this election have you been contacted by, or received any campaign material directly from, any of the political parties, candidates or any third party groups in any of the following ways? Please check all that apply.	
Responses	1	Online, when I have been searching/browsing the internet
	2	By email
	3	Through my social media accounts (e.g. Facebook, Twitter, Instagram)
	4	In person (i.e. face-to-face at my house or out in public)
	5	By phone (i.e. a call to my home phone or land line)
	6	By mobile phone (i.e. a call or text message)
	7	By mail or a leaflet delivered to my house
	8	Don't know
	9	Not been contacted in any of these ways

Stage 2 – Qu. 1.2 Follow-up: Asked for each mode of contact reported in qu. 1.1

Question	Using a scale of 0 to 10 where 0 means it was not personalized at all, and 10 that it was clearly very personalized, to what extent did you think the contact or campaign material that you received **was personally targeted at you** i.e. the message looked like it was designed around your personal interests or characteristics? (Note: If you were contacted more than once in this way, please think back to your most recent experience)		
	Score: Not personalised at all = 0; Very personalised = 10; Don't know option included.		
Responses	a	The contact I received when I was searching/browsing the internet was…	*(0-10)*
	b	The contact I received by email was…	*(0-10)*
	c	The contact I received through my social media accounts (e.g. on Facebook, Twitter, Instagram) was…	*(0-10)*
	d	The contact I received in person, i.e. face-to-face at my house or out in public was…	*(0-10)*
	e	The contact I received by phone, i.e. a call to my home phone or land line was…	*(0-10)*
	f	The contact I received by mobile phone (a call or text message) was…	*(0-10)*

	g	The contact I received by mail or a leaflet delivered to my house was…	*(0-10)*

Note. For the purposes of analysis the scale was recoded into four levels of perceived personalisation, (0 = no personalisation, 1-3 low personalisation, 4-6 = medium personalisation, 7-10 highly personalised).

Aversion to PMT (2 stages)

Stage 1 – Qu.1.1 as above, Filter Question - Contacted during the Campaign?

Stage 2 – Qu.1.3 Follow-up: Asked for each mode of contact reported in qu. 1.1

Question	And finally, still thinking about the ways in which you've been contacted during the campaign, could you tell us **how you felt about this** using a scale of 0 to 10, where 0 is 'I did not mind at all' and 10 is 'I minded very much'. A score of 5 means 'I didn't feel strongly either way'. (Note: Again if you were contacted more than once in this way, please think back to your most recent experience)		
	Score: I did not mind at all = 0; I minded very much = 10; Don't know option included.		
Responses	a	When I was contacted online or as I was searching/browsing the internet…	*(0-10)*
	b	When I was contacted by parties/candidates on email…	*(0-10)*
	c	When I was contacted by parties/candidates through my social media accounts i.e. Facebook, Twitter, Instagram…	*(0-10)*
	d	When I was contacted by parties /candidates in person, i.e. face-to-face at my house or out in public…	*(0-10)*
	e	When I was contacted by parties/candidates by phone, i.e. a call to my home phone or land line…	*(0-10)*
	f	When I was contacted by parties/candidates by mobile phone (a call or text message)…	*(0-10)*
	g	When I was contacted by party/candidates by mail or a leaflet delivered to my house…	*(0-10)*

Note. For purposes of analysis the scale was recoded into a trichotomous variable of - did mind (6-10), did not mind (0 – 4) and no feeling either way (5).

Knowledge of PMT

Qu. 1.4a Process knowledge of political micro-targeting (PMT)

Question	Political campaigners sometimes try to target their adverts and messages to different groups of voters during an election. Could you tell us which of the following types of personal information or characteristics you think political campaigns _currently use_ to target their ads and messages at voters? Please check all that apply.	
Responses	1	Age
	2	Gender
	3	Ethnicity
	4	Relationship status (e.g., married, single, divorced)
	5	Sexual orientation
	6	Religious views
	7	Political views
	8	Personality profiles (e.g., if you are cautious or outgoing)
	9	Major life events (e.g., getting married, having a baby, a bereavement, retirement)
		None of the above
		Don't know

Qu. 1.4b Process knowledge of political micro-targeting (PMT)

Question	Campaigns can also use information based on what people do **online** to target their ads and messages to voters. Which of the following types of online activity do you think political campaigns use when they are contacting voters? Please check all that apply.	
Responses	1	People's browsing and search habits
	2	People's purchasing history
	3	People's location history or GPS records
	4	The type of content that people watch or listen to (e.g., videos or podcasts)
	5	Posts, likes, (re)tweets or comments that people make or share on social media or public discussion forums
	6	Accounts or profiles that people like or follow
		None of the above
		Don't know

Note. Responses to qu 1.4a 1-9 and qu 1.4b 1-6 were counted to form a 0-15 score of PMT process knowledge for each respondent. Respondents answering none of the above of DK were coded as zero.

Qu 1.5 Regulatory knowledge of political micro-targeting (PMT)

Question	Countries vary in how much they regulate political advertising by campaigns and other organizations during elections. Thinking about the **current controls on political advertising** in U.S. elections, which of the following statements do you think is most accurate:	
Responses	1	All political advertising (whether on television, radio, in newspapers or the internet) is subject to the same rules that are set by the Federal Communication Commission (FCC)
(the correct answer)	2	Only political advertising on television and radio is regulated by the Federal Communication Commission (FCC). Advertising on the internet and social media is regulated by individual companies and platforms
	3	There are no government controls on any type of political advertising in U.S. elections
	4	Don't know

Concern about PMT

Qu. 1.6a Concern about political micro-targeting (PMT) using socio-demographic data

Question	Directly followed Qu. 1.4 in the survey "…and looking at the same list how acceptable do you think it is for political campaigners to use these different types of personal information to target their ads and messages at voters?		
	Response scale: Not at all acceptable = 1; Not very acceptable= 2; Fairly Acceptable = 3; Very acceptable = 4; Don't know		
Responses	1	Age	*(1-4)*
	2	Gender	*(1-4)*
	3	Ethnicity	*(1-4)*
	4	Relationship status (e.g., married, single, divorced)	*(1-4)*
	5	Sexual orientation	*(1-4)*
	6	Religious views	*(1-4)*
	7	Political views	*(1-4)*
	8	Personality profiles (e.g., if you are cautious or outgoing)	*(1-4)*
	9	Major life events (e.g., getting married, having a baby, a bereavement, retirement)	*(1-4)*

Qu. 1.6a Concern about political micro-targeting (PMT) using online behavioral data

Question	And looking at the same list, **how acceptable** do you think it is for political campaigners to use these kinds of activity to target their ads and messages to voters?

	Response scale: Not at all acceptable = 1; ; Not very acceptable= 2; Fairly Acceptable = 3; Very acceptable = 4; Don't know		
Responses	1	People's browsing and search habits	*(1-4)*
	2	People's purchasing history	*(1-4)*
	3	People's location history or GPS records	*(1-4)*
	4	The type of content that people watch or listen to e.g., videos or podcasts	*(1-4)*
	5	Posts, likes, (re)tweets or comments that people make or share on social media or public discussion forums	*(1-4)*
	6	Accounts or profiles that people like or follow	*(1-4)*
	7	Content of people's emails and private messages	*(1-4)*
	8	People's contact lists and address books	*(1-4)*

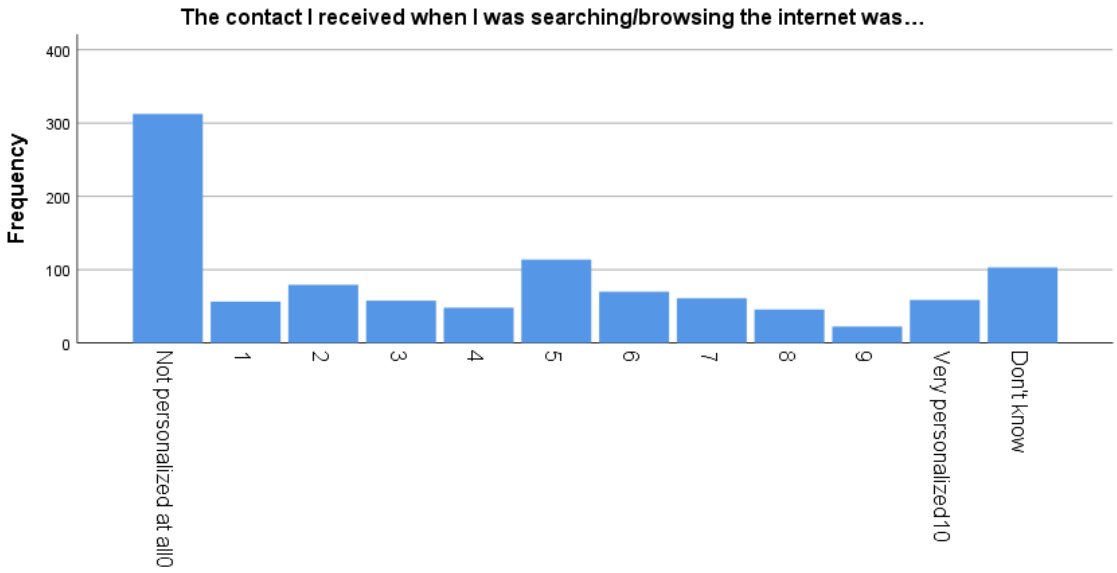
Qu. 1.7 General dislike of political advertising (GenDislike)

Question	During election campaigns some people prefer to hear more about **what the candidates plan to do about the issues and causes that matter most for them personally** and their family while others prefer to hear more about **what they will do to address wider problems** in their district, state or nation as a whole. Using the scale below could you **tell us your preference between these two views**?		
	Score: 0 - 10	0	Prefer information on how candidates will address problems in district, state or nation
		5	An even mix of both
		10	Prefer information on what candidates will do for me and my family
		N/A, (filter)	Prefer not to receive any type of political adverts or messages

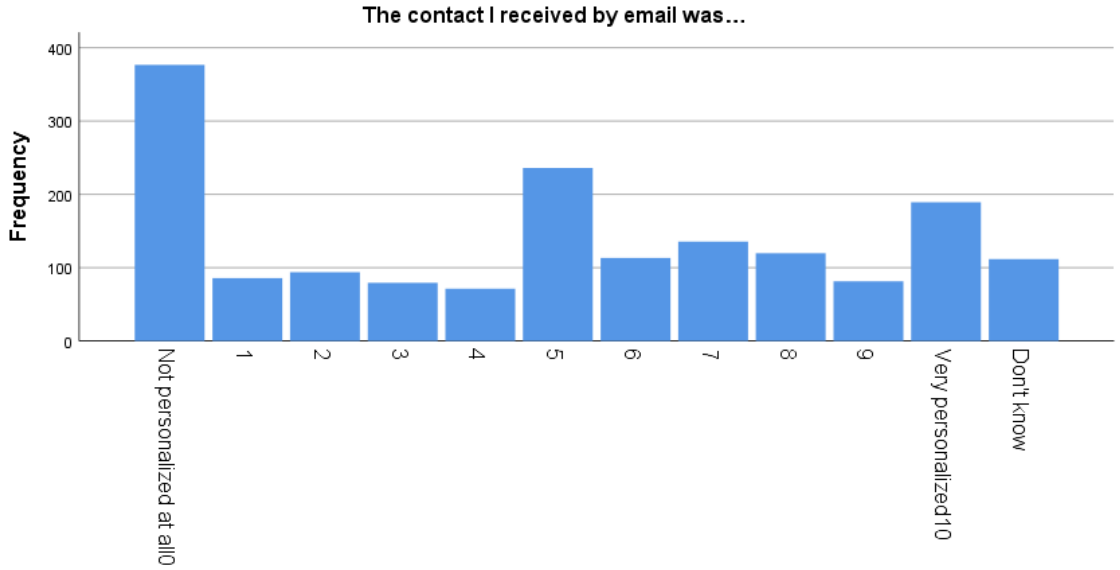
Note. For purposes of analysis the scale was recoded as a binary indicator where a score of 1 was assigned to those saying preferred not to receive any political ads and 0 indicated acceptance of receiving such content, i.e. the respondent had stated a preference for more personalised or collective benefits in the political ads they received

Appendix 2a: Level of Personalised Campaign Contact by Mode

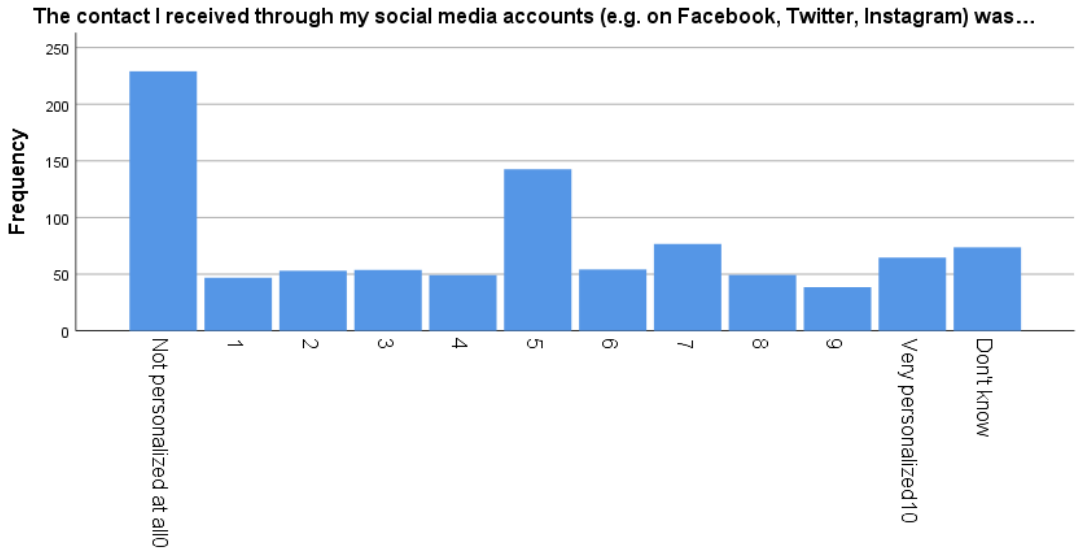
2.1.1 Bar chart 1: Contact while online browsing (N = 1,029)



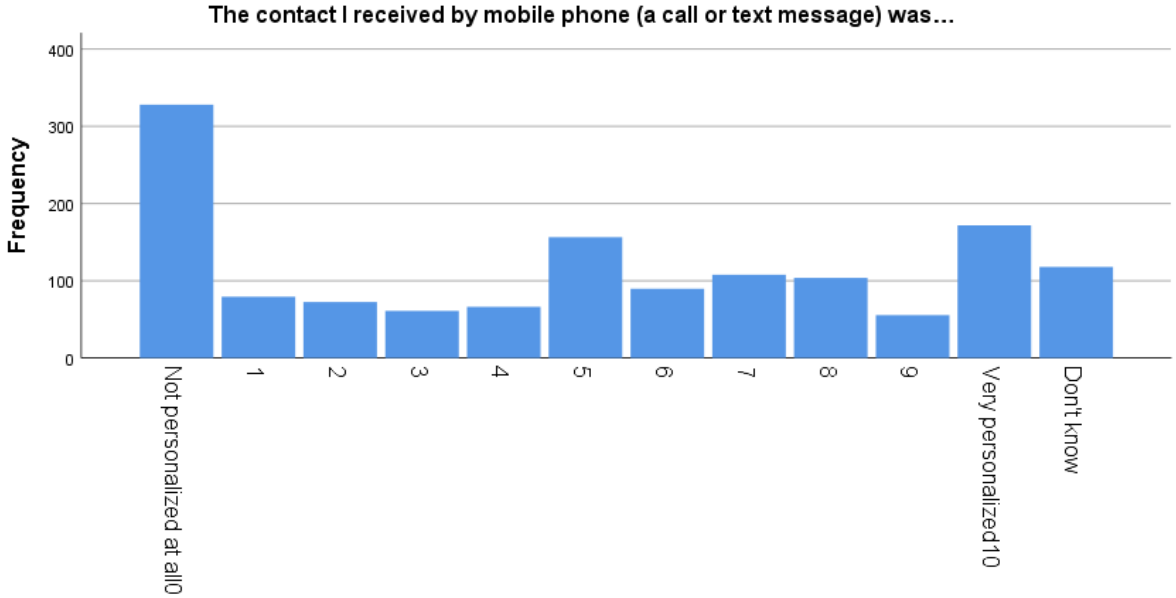
2.1.2 Bar chart 2: Contact via email (N = 1,694)



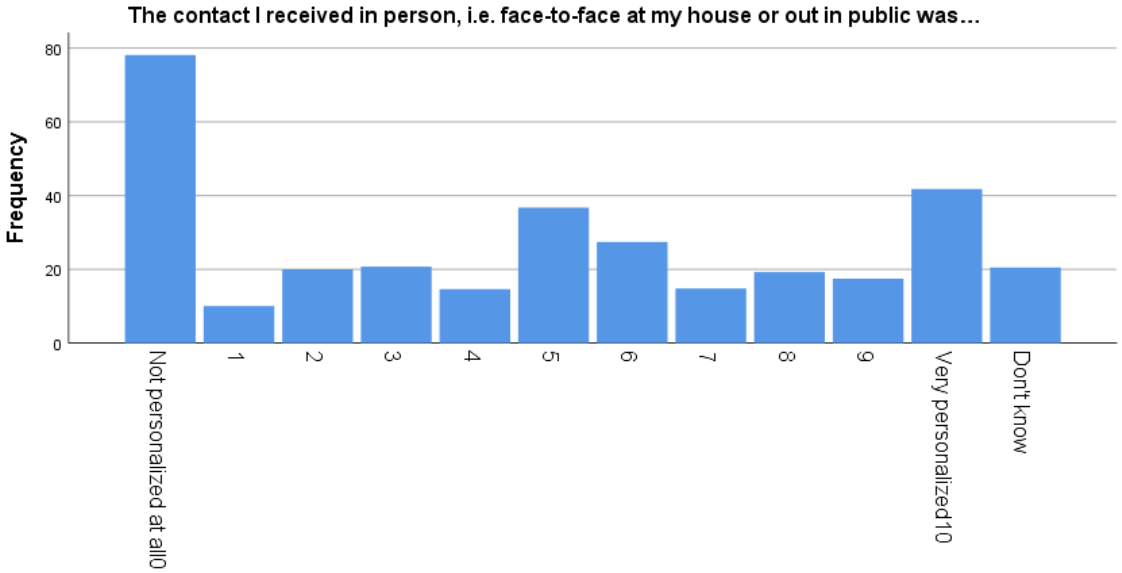
2.1.3 Bar chart 3: Contact via social media (N = 932)



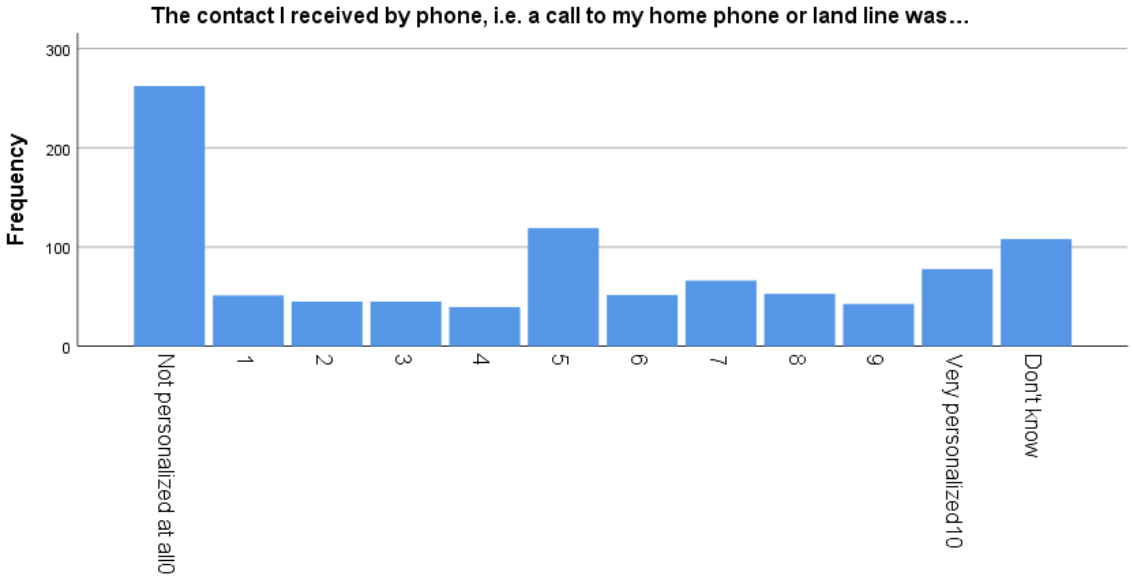
2.1.4 Bar chart 4: Contact by mobile phone (N = 1,410)



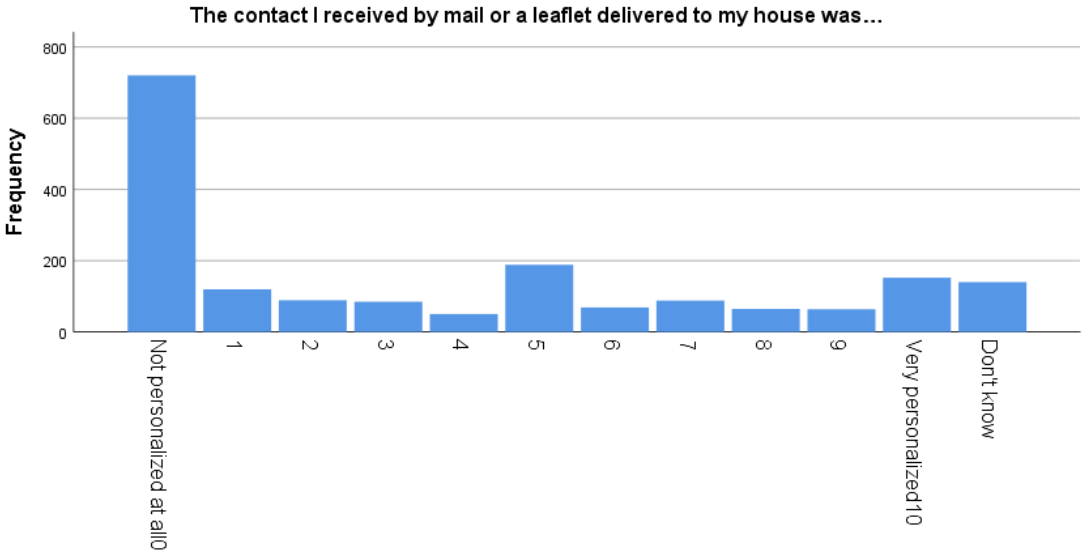
2.1.5 Bar chart 5: Contact in person (N = 322)



2.1.6 Bar chart 6: Contact by home phone (N = 961)

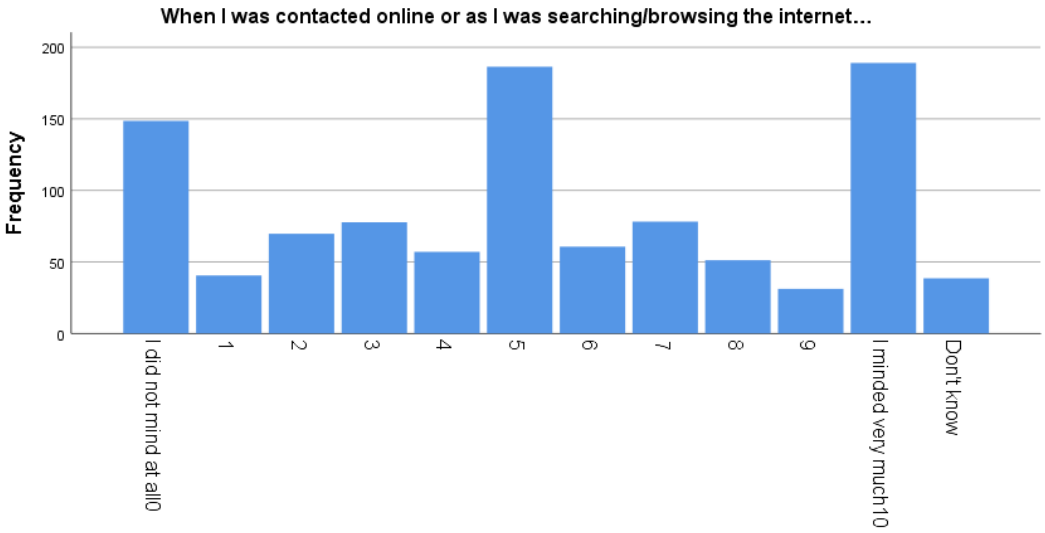


2.1.7 Bar chart 7: Contact via leaflet (N = 1,830)

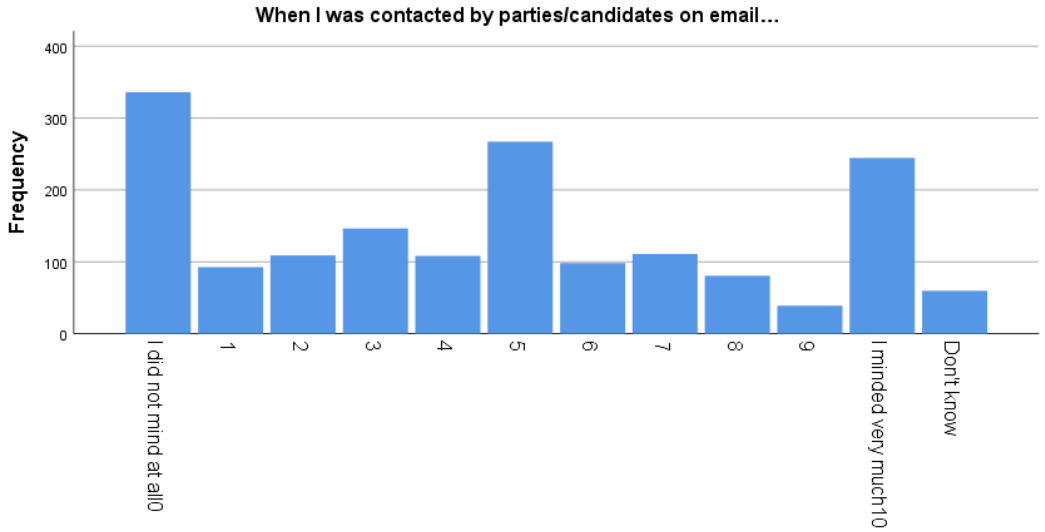


Appendix 2b: Level of Aversion to Campaign Contact by Mode

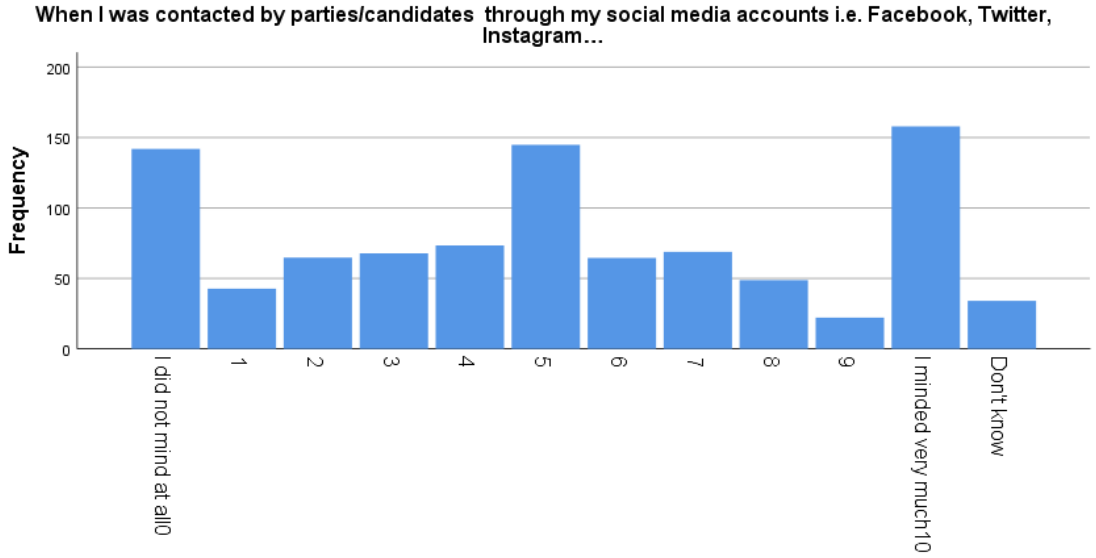
2.2.1 Bar chart 1: Aversion to contact while online browsing (N = 1,029)



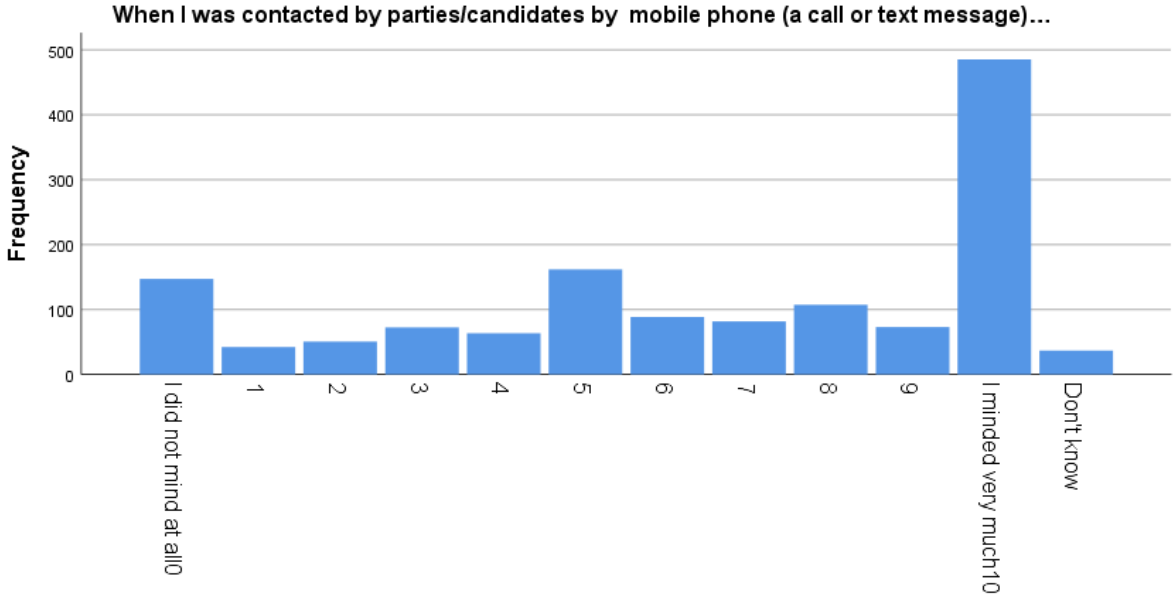
2.2.2 Bar chart 2: Aversion to contact via email (N = 1,693)



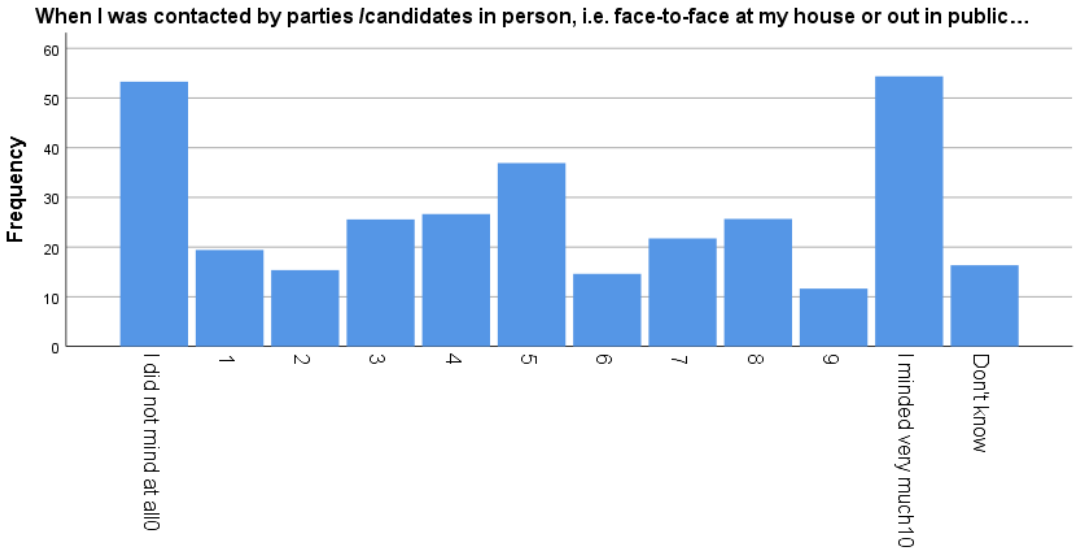
2.2.3 Bar chart 3: Aversion to contact via social media (N = 932)



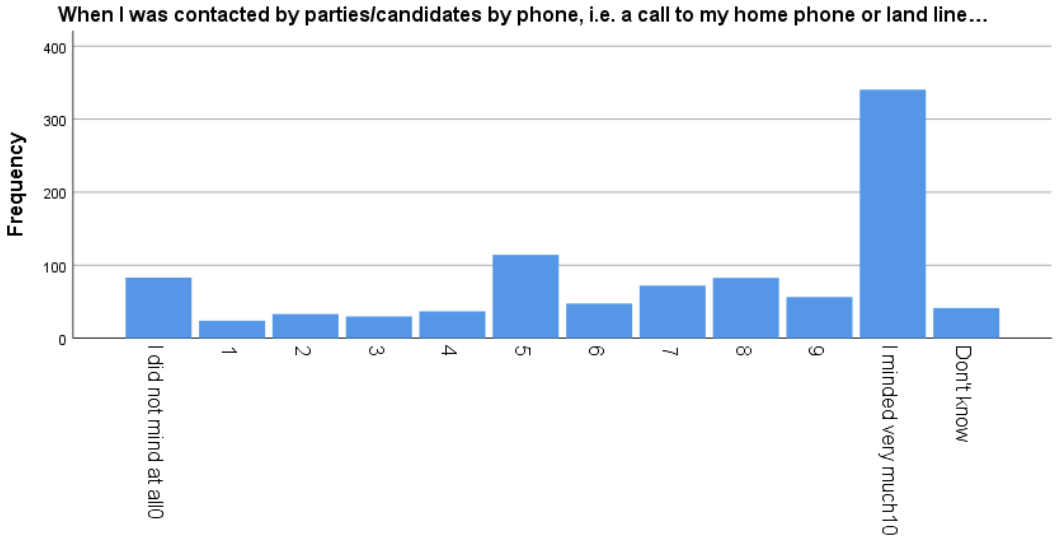
2.2.4 Bar chart 4: Aversion to contact by mobile phone (N = 1,410)



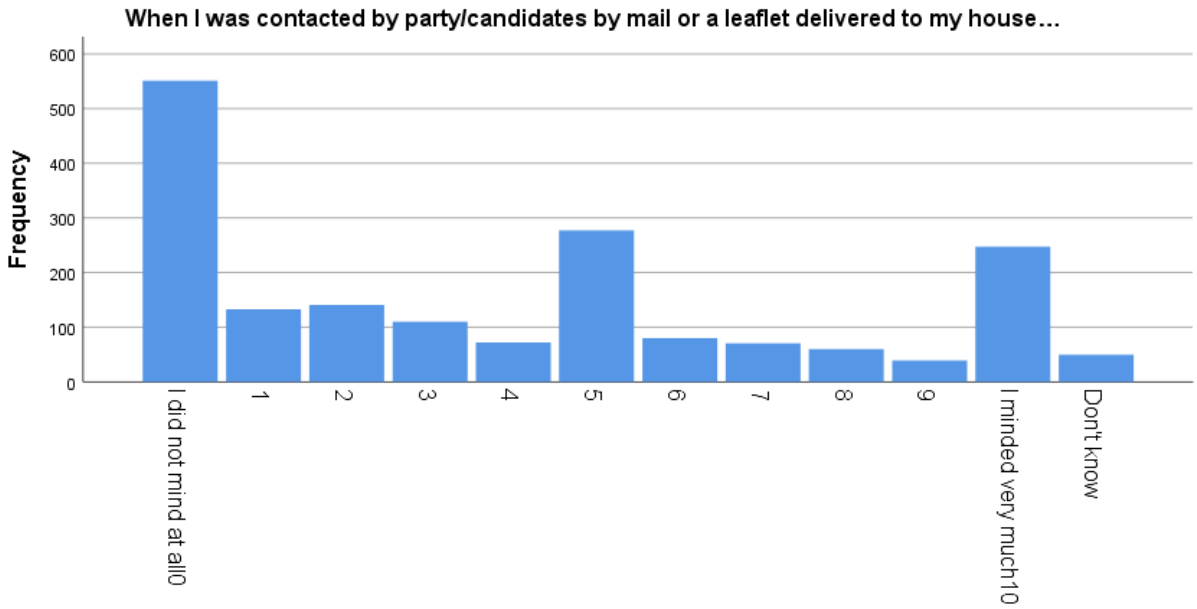
2.2.5 Bar chart 5: Aversion to contact in person (N = 322)



2.2.6 Bar chart 6: Aversion to contact by home phone (N = 961)



2.2.7 Bar chart 7: Aversion to contact via leaflet (N = 1,830)



Appendix 3: IRT analysis of the process knowledge scale

The Procedural Knowledge scale (1 scale with 15 items)

Significance level: 0.000476
The two first items selected in the scale 1 are DDC_usddc_1_3_pre_rec and DDC_usddc_1_5_pre_rec (Hjk=0.7803)
Significance level: 0.000424
The item DDC_usddc_1_2_pre_rec is selected in the scale 1Hj=0.6990H=0.7228
Significance level: 0.000385
The item DDC_usddc_1_1_pre_rec is selected in the scale 1Hj=0.6389H=0.6788
Significance level: 0.000355
The item DDC_usddc_1_4_pre_rec is selected in the scale 1Hj=0.6230H=0.6624
Significance level: 0.000331
The item DDC_usddc_1_7_pre_rec is selected in the scale 1Hj=0.6169H=0.6471
Significance level: 0.000313
The item DDC_usddc_1_6_pre_rec is selected in the scale 1Hj=0.5992H=0.6323
Significance level: 0.000298
The item DDC_usddc_1_9_pre_rec is selected in the scale 1Hj=0.5527H=0.6196
Significance level: 0.000286
The item DDC_usddc_1_8_pre_rec is selected in the scale 1Hj=0.5257H=0.6029
Significance level: 0.000276
The item DDC_usddc_3_5_pre_rec is selected in the scale 1Hj=0.4607H=0.5704
Significance level: 0.000269
The item DDC_usddc_3_6_pre_rec is selected in the scale 1Hj=0.4855H=0.5526
Significance level: 0.000263
The item DDC_usddc_3_1_pre_rec is selected in the scale 1Hj=0.4971H=0.5422
Significance level: 0.000259
The item DDC_usddc_3_3_pre_rec is selected in the scale 1Hj=0.4989H=0.5356
Significance level: 0.000256
The item DDC_usddc_3_4_pre_rec is selected in the scale 1Hj=0.5083H=0.5312
Significance level: 0.000255
The item DDC_usddc_3_2_pre_rec is selected in the scale 1Hj=0.4896H=0.5255
Significance level: 0.000255
There is no more items remaining.

Scale item	Knowl. about use of…	N	Mean score	Obs. Guttman errors	Expect. Guttman errors	Loev. H coeff	z-stat.	H0: Hj<=0 p-value	# of NS Hj k
3_2	People's purchasing history	3,956	0.38	5008	9812.38	**0.49**	87.45	0.00	0
3_4	The type of content that people watch or listen to	3,956	0.51	5267	10856.31	**0.52**	99.17	0.00	0
3_3	People's location history or GPS records	3,956	0.37	4665	9530.94	**0.51**	89.33	0.00	0
3_1	People's browsing and search habits	3,956	0.55	4857	10561.95	**0.54**	101.71	0.00	0
3_6	Accounts or profiles that people like or follow	3,956	0.51	5094	10855.25	**0.53**	102.22	0.00	0
3_5	Posts, likes, (re)tweets or comments that people make or share on social media or public discussion forums	3,956	0.54	5019	10673.14	**0.53**	100.62	0.00	0

1_8	Person. Profiles	3,956	0.23	3464	6760.06	**0.49**	68.68	0.0	0
1_9	Major life events	3,956	0.20	2936	5955.69	**0.51**	66.04	0.00	0
1_6	Religious views	3,956	0.48	5235	10671.90	**0.51**	96.53	0.00	0
1_7	Political views	3,956	0.61	3920	9370.96	**0.58**	98.89	0.00	0
1_4	Relation. status	3,956	0.26	3652	7464.28	**0.51**	76.34	0.00	0
1_1	Age	3,956	0.55	4940	10572.64	**0.53**	100.41	0.00	0
1_2	Gender	3,956	0.51	5137	10855.67	**0.53**	101.47	0.00	0
1_3	Ethnicity	3,956	0.56	4560	10366.10	**0.56**	103.76	0.00	0
1_5	Sexual orient.	3,956	0.40	4698	9958.47	**0.53**	95.26	0.00	0

Note. The Loevinger H coefficients are all considerably higher than 0.3, indicating that this is a strong scale and that all items belong together.

Appendix 4a: Frequencies measuring acceptance of the use of personal and data

	Age		Gender		Ethnicity		Relationship Status		Sexual Orientation	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Not at all acceptable	643	16.2	834	21.1	993	25.1	893	22.6	1,208	30.5
Not very acceptable	441	11.2	592	15.0	688	17.4	658	16.6	739	18.7
Fairly acceptable	1,422	36.0	1,194	30.2	1,057	26.7	1,163	29.4	839	21.2
Very acceptable	809	20.5	697	17.6	569	14.4	521	13.2	459	11.6
Don't know	640	16.2	639	16.2	649	16.4	721	18.2	711	18.0
Total	3,956	100	3,956	100	3,956	100	3,956	100	3,956	100

	Religious views		Political views		Personality profiles		Major life events	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Not at all acceptable	1,050	26.5	453	11.5	894	22.6	1,017	25.7
Not very acceptable	671	17.0	291	7.3	673	17.0	743	18.8
Fairly acceptable	1,031	26.1	1,262	31.9	1,087	27.5	1,009	25.5
Very acceptable	550	13.9	1,354	34.2	472	11.9	450	11.4
Don't know	654	16.5	596	15.1	830	21.0	736	18.6
Total	3,956	100	3,956	100	3,956	100	3,956	100

Appendix 4b: Frequencies measuring acceptance of online behavioural data

How acceptable is it for political campaigners to use... for this purpose?	Browsing and search habits		Purchasing habits		Location history	
	N	**%**	**N**	**%**	**N**	**%**
Not at all acceptable	1,476	37.3	1,680	42.5	1,981	50.1
Not very acceptable	766	19.4	814	20.6	642	16.2
Fairly acceptable	921	23.3	686	17.3	596	15.1
Very acceptable	307	7.8	257	6.5	252	6.4
Don't know	486	12.3	519	13.1	485	12.3
Total	3,956	100	3,956	100	3,956	100

How acceptable is it for political campaigners to use... for this purpose?	Content access		Posts, likes, shares		Liked/followed profiles	
	N	**%**	**N**	**%**	**N**	**%**
Not at all acceptable	1,103	27.9	937	23.7	1,064	26.9
Not very acceptable	723	18.3	629	15.9	671	17.0
Fairly acceptable	1,216	30.7	1,294	32.7	1,237	31.3
Very acceptable	387	9.8	571	14.4	469	11.9
Don't know	526	13.3	524	13.3	514	13.0
Total	3,956	100	3,956	100	3,956	100

Appendix 5: Independent Variable list, coding and values for multivariate analyses

- Age, measured in years, based on respondents self-reported year and month of birth at the time of the survey.
- Question "Are you Male, Female" if skipped treated as Missing. Gender, measured as a binary variable (1= female, 0 = male).
- Education, measured as the highest educational degree attained by the respondent: no high school (= 1), high school graduate (= 2) college level (with our without a degree = 3).
- Income., measured as the gross household income of the respondent in 15 categories, minimum being less than $10,000, then in $10k intervals through until 100k; $100,000 - $119,999; $120,000 - $149,999; then $50k intervals to $249,999; then 150k intervals to $499,999; Maximum = $500,000 or more
- Race, measured in four categories: White (= 1), Black (= 2), Hispanic (= 3) and "Other" (incl Asian-American, Native American, 2 or more races, Middle Eastern and Other = 4);
- Employment status, measured in three categories full time employment (= 1), in part-time employment (=2), or not in paid work (incl retired, permanently disabled, taking care of home/family, student, unemployed = 3),
- Party id, measured in 3 categories Independent = 0, Strong, not very strong, lean Republican = 1; Strong not very strong, lean Democrat = 2.
- General dislike of political advertising – Measured as a binary variable based on recoded responses to question "During election campaigns some people prefer to hear more about what the candidates plan to do about the issues and causes that matter most for them personally and their family while others prefer to hear more about what they will do to address wider problems in their district, state or nation as a whole. Using the 10 point scale below could you tell us your preference between these two views?
    - Prefer information on how candidates will address problems in district, state or nation to Prefer information on what candidates will do for me and my family. Recoded as 0 accepts political advertising
    - Or…. Prefer not to receive any type of political adverts or messages. Recoded as 1, dislikes political advertising in general.
- Privacy calculus – measured on a zero to 10 scale. "Some people prefer their personal details are never collected or shared when they are online while other people do not mind if these details are used to help personalize the content they see. Using the following scale could you please indicate your preference between these two views: Zero = "Privacy is important to me and I don't want my data collected or used by businesses and other organizations I interact with, under an

circumstances" 10 = "Personalization is useful to me so I don't mind if businesses and other organizations I interact with collect and use my data". 'Not sure' response was provided.

Appendix 6a: Bivariate Relationships between Process Knowledge and Demographic Characteristics

Demographic characteristic		Knowledge				
		None (zero)	Low (1 to 4)	Med. (5 to 9)	High (10 to 15)	N
Age	18 to 24	20.8% (105)	30.6% (154)	27.4% (138)	21.2% (107)	(504)
	25 to 44	18.3% (256)	26.2% (367)	24.8% (347)	30.8% (431)	(1,401)
	45 to 64	13.1% (180)	16.1% (221)	33.6% (462)	37.1% (510)	(1,373)
	65 and 65+	10.6% (72)	16.8% (114)	40.9% (1,224)	31.7% (215)	(678)
		15.5% (613)	21.6% (856)	30.9% (1,224)	31.9% (1,263)	(3,956)
Gender	Male	14.0% (268)	22.5% (431)	29.8% (571)	33.8% (649)	(1,919)
	Female	16.9% (345)	20.9% (426)	32.0% (653)	30.1% (614)	(2,038)
		15.5% (613)	21.7% (857)	30.9% (1,224)	31.9% (1,263)	(3,957)
Educ.	No HS	34.7% (87)	31.1% (78)	23.9% (60)	10.4% (26)	(251)
	HS	22.6% (330)	27.9% (408)	29.1% (426)	20.4% (299)	(,1463)
	College +	8.7% (196)	16.5% (371)	32.9% (739)	41.8% (937)	(2,243)
		15.5% (613)	21.7% (857)	31.0% (1,225)	31.9% (1,262)	(3,957)
Ethn.	White	11.9% (301)	17.0% (431)	33.1% (840)	38.1% (967)	(2,539)
	Black	21.0% (97)	29.7% (137)	30.3% (140)	19.0% (88)	(462)
	Hispanic	25.5% (145)	30.6% (174)	27.1% (154)	16.9% (96)	(569)
	Other	18.2% (70)	29.4% (113)	23.6% (91)	28.8% (111)	(385)
		15.5% (613)	21.6% (855)	31.0% (1,225)	31.9% (1,262)	(3,955)
PID	Dem.	9.8% (124)	22.8% (289)	32.6% (413)	34.8% (441)	(1,267)
	Rep.	10.3% (106)	21.2% (219)	37.8% (390)	30.6% (316)	(1,031)
	Indep.	13.1% (144)	24.0% (263)	28.5% (313)	34.4% (377)	(1,097)
		11.0% (374)	22.7% (771)	32.9% (1116)	33.4% (1,134)	(3,395)

Note. PID refers to partisan ID, HS refers to 'high school' and College+ refers to' college or more'. All numbers in the most right column 'N' represent 100% for each row.

Appendix 6b: Bivariate Relationships between Regulatory Knowledge and Demographic Characteristics

Demographic characteristic		Knowledge of regulation		
		Correct	Incorrect/DK	N
Age	18 to 24	28.2% (142)	71.8% (362)	100% (504)
	25 to 44	32.0% (448)	68.0% (952)	100% (1,400)
	45 to 64	30.4% (418)	69.6% (955)	100% (1,373)
	65 and 65+	27.7% (188)	72.3% (491)	100% (679)
		30.2% (1,196)	69.8% (2,760)	100% (3,956)
Gender	Male	34.3% (659)	65.7% (1,260)	100% (1,919)
	Female	26.4% (537)	73.6% (1,500)	100% (2,037)
		30.2% (1,196)	69.8% (2,760)	100% (3,956)
Educ.	No HS	20.2% (51)	79.8% (201)	100% (252)
	HS	22.7% (332)	77.3% (1,131)	100% (1,463)
	College +	36.3% (814)	63.7% (1,428)	100% (2,242)
		30.3% (1,197)	69.7% (2,760)	100% (3,957)
Ethn.	White	33.2% (843)	66.8% (1,697)	100% (2,540)
	Black	22.3% (103)	77.7% (359)	100% (462)
	Hispanic	23.2% (132)	76.8% (436)	100% (568)
	Other	30.6% (118)	69.4% (268)	100% (386)
		30.2% (1,196)	69.8% (2,760)	100% (3,956)
PID	Dem.	30.9% (391)	69.1% (875)	100% (1,266)
	Rep.	30.1% (310)	69.9% (720)	100% (1,030)
	Indep.	35.9% (394)	64.1% (703)	100% (1,097)
		32.3% (1,095)	67.7% (2,298)	100% (3,393)

Note. PID refers to partisan ID, HS refers to 'high school' and College+ refers to' college or more'.

Appendix 6c: Bivariate relationships between concern about PMT using socio-demographic targeting and demographic characteristics

Demographic characteristic		Concern			
		Low (mean acceptance sore ≥ 3.5)	Medium (mean acceptance score 2-3.49)	High (mean acceptance score < 2.0)	N
Age	18 to 24	8.3% (36)	78.5% (339)	13.2% (57)	100% (432)
	25 to 44	12.6% (154)	65.2% (798)	22.2% (271)	100% (1,223)
	45 to 64	12.6% (157)	61.0% (758)	26.4% (328)	100% (1,243)
	65 and 65+	11.3% (72)	54.9% (350)	33.9% (216)	100% (638)
		11.8% (419)	63.5% (2,245)	24.7% (872)	100% (3,536)
Gender	Male	13.6% (237)	65.2% (1,136)	21.2% (370)	100% (1,743)
	Female	10.2% (182)	61.9% (1,108)	28.0% (501)	100% (1,791)
		11.9% (419)	63.5% (2,244)	24.6% (871)	100% (3,534)
Educ.	No HS	17.7% (35)	57.1% (113)	25.3% (50)	100% (198)
	HS	10.7% (135)	62.3% (782)	27.0% (339)	100% (1,256)
	College +	12.0% (249)	64.9% (1,349)	23.2% (482)	100% (2,080)
		11.9% (419)	63.5% (2,244)	24.6% (871)	100% (3,534)
Ethn.	White	11.2% (259)	61.2% (1,417)	27.6% (638)	100% (2,314)
	Black	16.6% (66)	65.2% (259)	18.1% (72)	100% (397)
	Hispanic	14.0% (68)	67.1% (327)	18.9% (92)	100% (487)
	Other	7.4% (25)	71.7% (241)	20.8% (70)	100% (336)
		11.8% (418)	63.5% (2,244)	24.7% (872)	100% (3,534)
PID	Dem.	12.5% (147)	65.3% (766)	22.2% (260)	100% (1,173)
	Rep.	13.2% (127)	61.0% (586)	25.8% (248)	100% (961)
	Indep.	9.6% (96)	65.3% (651)	25.1% (250)	100% (997)
		11.8% (370)	64.0% (2,003)	24.2% (758)	100% (3,131)

Note. PID refers to partisan ID, HS refers to 'high school' and College+ refers to' college or more'.

Appendix 6d: Bivariate relationships between concern about PMT using online behavioral targeting and demographic Characteristics

Demographic characteristic		Concern			
		Low (mean acceptance score ≥ 3.5)	Medium (mean acceptance score 2-3.49)	High (mean acceptance score < 2.0)	N
Age	18 to 24	6.1% (27)	71.2% (314)	22.7% (100)	100% (441)
	25 to 44	8.3% (103)	57.4% (713)	34.4% (427)	100% (1,243)
	45 to 64	4.7% (59)	49.3% (625)	46.0% (583)	100% (1,267)
	65 and 65+	3.6% (23)	49.1% (312)	47.3% (301)	100% (636)
		5.9% (212)	54.8% (1,964)	39.3% (1,411)	100% (3,587)
Gender	Male	7.4% (130)	55.8% (982)	36.9% (649)	100% (1,761)
	Female	4.5% (82)	53.8% (982)	41.7% (762)	100% (1826)
		5.9% (212)	54.8% (1,964)	39.3% (1,411)	100% (3,587)
Educ.	No HS	10.1% (20)	51.0% (101)	38.9% (77)	100% (198)
	HS	6.3% (80)	55.4% (704)	38.3% (486)	100% (1,270)
	College +	5.3% (112)	54.7% (1,160)	40.0% (848)	100% (2,120)
		5.9% (212)	54.8% (1,965)	39.3% (1,411)	100% (3,588)
Ethn.	White	4.6% (109)	53.0% (1,247)	42.4% (997)	100% (2,353)
	Black	10.2% (40)	57.4% (226)	32.5% (128)	100% (394)
	Hispanic	9.1% (45)	57.8% (285)	33.1% (163)	100% (493)
	Other	5.2% (18)	59.4% (206)	35.4% (123)	100% (347)
		5.9% (212)	54.8% (1,964)	39.3% (1,411)	100% (3,587)
Partisan ID	Dem.	5.9% (70)	57.0% (680)	37.1% (443)	100% (1,193)
	Rep.	7.5% (73)	54.3% (530)	38.2% (373)	100% (976)
	Indep.	4.2% (43)	53.3% (542)	42.4% (431)	100% (1,016)
		5.8% (186)	55.0% (1,752)	39.2% (1,247)	100% (3,185)

Note. PID refers to partisan ID, HS refers to 'high school' and College+ refers to' college or more'.

Appendix 7: Results of bivariate correlates and multivariate regression for concern about PMT with Don't Knows excluded listwise.

Table 7a Bivariate Relationships between Acceptability of Socio-demographic Targeting and Demographic Characteristics (with no imputation and don't knows excluded)

Demographic characteristic		Mean Acceptance score			
		Low (≥ 3.5)	Medium (between 2 and 3.49)	High (< 2.0)	N
Age	18 to 24	7.5% (23)	78.8% (242)	13.7% (42)	100% (307)
	25 to 44	11.1% (102)	64.9% (599)	24.1% (222)	100% (923)
	45 to 64	11.7% (114)	57.8% (571)	29.6% (288)	100% (973)
	65 and 65+	8.1% (41)	55.4% (280)	36.4% (184)	100% (505)
		10.3% (280)	62.5% (1,692)	27.2% (736)	100% (2,708)
Gender	Male	12.8% (176)	63.7% (878)	23.5% (324)	100% (1,378)
	Female	7.9% (105)	61.1% (813)	31.0% (412)	100% (1,330)
		10.4% (281)	62.4% (1,691)	27.2% (736)	100% (2,708)
Educ.	No HS	12.3% (15)	57.4% (70)	30.3% (37)	100% (122)
	HS	8.8% (81)	61.3% (566)	30.0% (277)	100% (924)
	College +	11.1% (184)	63.5% (1,057)	25.4% (423)	100% (1,664)
		10.3% (280)	62.5% (1,693)	27.2% (737)	100% (2,710)
Ethn.	White	10.1% (183)	60.3% (1,092)	29.6% (535)	100% (1,810)
	Black	13.7% (40)	64.9% (189)	21.3% (62)	100% (291)
	Hispanic	11.8% (41)	65.2% (227)	23.0% (80)	100% (348)
	Other	6.2% (16)	70.7% (183)	23.2% (60)	100% (259)
		10.3% (280)	62.4% (1,691)	27.2% (737)	100% (2,708)
PID	Dem.	10.6% (98)	65.1% (601)	24.3% (224)	100% (923)
	Rep.	12.5% (95)	59.7% (455)	27.8% (212)	100% (762)
	Indep.	8.4% (64)	63.6% (485)	28.0% (214)	100% (763)
		10.5% (257)	62.9% (1,541)	26.6% (650)	100% (2,448)

Note. PID refers to partisan ID, HS refers to 'high school' and College+ refers to' college or more'.

Table 7b: Bivariate Relationships between Acceptability of Online behavioural Targeting and Demographic Characteristics (with no imputation and don't knows excluded)

Demographic characteristic		Concern			
		Low (≥ 3.5)	Medium (between 2 and 3.49)	High (< 2.0)	N
Age	18 to 24	5.1% (18)	69.9% (249)	25.0% (89)	100% (356)
	25 to 44	7.2% (80)	57.2% (634)	35.6% (394)	100% (1,108)
	45 to 64	4.3% (49)	48.3% (547)	47.4% (537)	100% (1,133)
	65 and 65+	3.3% (19)	48.4% (280)	48.4% (280)	100% (579)
		5.2% (166)	53.8% (1,710)	40.9% (1,300)	100% (3,176)
Gender	Male	6.7% (105)	54.6% (859)	38.8% (610)	100% (1,574)
	Female	3.7% (60)	53.2% (852)	43.1% (690)	100% (1,602)
		5.2% (165)	53.9% (1,711)	40.9% (1,300)	100% (3,176)
Educ.	No HS	8.6% (13)	48.3% (73)	43.0% (65)	100% (151)
	HS	5.3% (58)	54.2% (588)	40.5% (439)	100% (1,085)
	College +	4.8% (94)	54.1% (1,050)	41.0% (796)	100% (1,940)
		5.2% (165)	53.9% (1,711)	40.9% (1,300)	100% (3,176)
Ethn.	White	4.4% (95)	52.3% (1,120)	43.3% (926)	100% (2,141)
	Black	9.3% (31)	55.7% (185)	34.9% (116)	100% (332)
	Hispanic	6.7% (27)	56.8% (229)	36.5% (147)	100% (403)
	Other	4.0% (12)	58.8% (177)	37.2% (112)	100% (301)
		5.2% (165)	53.9% (1,711)	41.0% (1,301)	100% (3,177)
PID	Dem.	5.6% (59)	55.9% (591)	38.5% (407)	100% (1,057)
	Rep.	6.7% (59)	53.3% (471)	40.0% (353)	100% (883)
	Indep.	4.0% (36)	53.3% (485)	42.7% (389)	100% (910)
		5.4% (154)	54.3% (1,547)	40.3% (1,149)	100% (2,850)

Note. PID refers to partisan ID, HS refers to 'high school' and College+ refers to' college or more'.

Table 7c: Multivariate analysis of correlates of concern about PMT using socio-demographic data (with no imputation, don't knows excluded)

Independent var.	Mean acceptability score		Beta
	b	(se)	
Age	-.005***	.001	-.099
Gender	.205***	.034	.121
Education (ref: No high school)			
Finished high school	.088	.105	.049
College or more	.176	.105	.101
Income	-.001*	.001	-.045
Ethnicity (ref: White)			
Black	.182**	.054	.066
Hispanic	-.000	.051	-.000
Other	-.048	.064	-.016
Employment status (ref: Full-time)			
Employed part-time	.011	.059	.004
Not in paid employment	-.062	.038	-.036
Party ID (ref: Independent)			
Democrat	.088*	.041	.050
Republican	.146**	.044	.080
Dislike pol ads (gen)	-.332***	.078	-.100
Preference for personalisation	.065***	.006	.237
Constant	2.138***		
R-square	.120		
N	2,398		

*** Significant at $p < .001$, ** $p < 0.01$, *$p < 0.05$, two-tailed. OLS results showing partial and standardized parameter estimates and standard errors for correlates of mean level of concern about PMT using socio-demographic types of data. Source: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample.

Table 7d: Multivariate analysis of correlates of concern about use of online behavioral data in PMT (with no imputation, don't' knows excluded)

Independent var.	Mean acceptability score		Beta
	b	(se)	
Age	-.006***	.001	-.137
Gender	.151***	.029	.093
Education (ref: No high school)			
Finished high school	.073	.088	.043
College or more	.078	.087	.047
Income	-.002***	.001	-.079
Ethnicity (ref: White)			
Black	.154**	.049	.058
Hispanic	.024	.045	.010
Other	-.018	.057	-.006
Employment status (ref: Full-time)			
Employed part-time	.101*	.050	.037
Not in paid employment	.014	.032	.008
Party ID (ref: Independent)			
Democrat	.031	.035	.019
Republican	.091*	.037	.052
Dislike pol ads (gen)	-.338***	.060	-.109
Preference for personalisation	.087***	.006	.329
Constant	1.863***		
R-square	.106		
N	2,780		

*** Significant at $p < .001$, ** $p < 0.01$, *$p < 0.05$, two-tailed. OLS results showing partial and standardized parameter estimates and standard errors for correlates of mean level of concern about PMT using online behavioral data. *Source*: YouGov Pre-election survey, 2020 US Presidential Election, weighted representative sample.