Cultural Divides and Digital Inequalities: Attitudes Shaping Internet and Social Media Divides*

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Abstract

Researchers on digital divides have identified demographic and attitudinal factors associated with inequalities in access, skills, and patterns of Internet use, primarily around age, income, and education. While attitudes and values of Internet users and non-users have been studied over the years, they have rarely been used to identify broader 'cultures of the Internet' and their role in shaping digital divides. This paper builds on research in Britain, which focused on patterns of attitudes underpinning Internet cultures, to explore the degree that similar or distinctive cultures have developed in the USA, and whether and how they are useful in explaining digital divides. This study utilizes original data drawn from a 2016 telephone survey of residents across the State of Michigan that adapts survey items and methods from the Oxford Internet Survey (OxIS) of Britain. Based on these survey responses, the paper identifies and describes the cultures of the Internet among Michigan residents, as an exploratory case of the US as a whole, and shows how these cultures shape digital divides in Internet and social media use across this one American state. The robustness and explanatory power of these explorations of Internet cultures argues for further research on the United States and other nations.

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Introduction: Bringing Cultures into the Study of Digital Divides

Since the earliest years of the Internet, researchers across various fields and disciplines have focused on the phenomenon of digital divides and digital inequalities (e.g. Norris, 2001; Hargittai, 2002; Van Dijk, 2005), and this area is reviving as a focus of research (e.g. Van Deursen & Van Dijk, 2014; Reisdorf & Groselj, 2015). Many factors have been linked to inequalities in access, skills, and patterns of Internet use, primarily around demographic characteristics such as age, income, and education. While attitudes and values of Internet users and non-users have more recently been added as core variables that shape engagement with the Internet, they have rarely been used to identify distinct 'cultures of the Internet' among users and non-users. This leaves unanswered questions in how different types of attitudes are related to demographic backgrounds and whether and how they shape use and engagement with the Internet.

To shed light on these issues, this paper builds on survey research conducted in Britain, which focused on the role of Internet cultures—operationalized by patterns of beliefs and attitudes concerning the Internet—in shaping patterns of use (Dutton and Blank, 2015*a*, 2015*b*). This study utilizes original data drawn from a 2016 telephone survey of 995 residents across the State of Michigan that adapts survey items and methods from the study of Internet users and non-users in Britain. The authors added questions to the State of the State Survey (SOSS), conducted through Michigan State University's Institute for Public Policy and Social Research (IPPSR). Based on these survey responses, the paper describes the status of digital divides in Internet and social media use across Michigan, as well as key factors related to access, including a set of attitudes and beliefs aimed at replicating the UK research on Internet cultures.

Research on Digital Divides and Internet Cultures

As people use or do not use the Internet, they ascribe this technology in all its complexity with meaning, such as it being viewed as a time waster or time saver. Overtime, people socially construct the meanings of a technology, and common patterns of beliefs and attitudes might group individuals into distinct cultures of the

Internet that shape their behavior online (Castells 2010; Dutton and Blank 2013, 2015*b*), including their motivations for getting online, or using social media. For such reasons, the study of Internet cultures is a promising new direction for research on digital divides and inequalities. This section provides a brief overview of research on digital divides before explaining the turn towards study of Internet cultures and the findings of early research in this area.

Decades of Work on Digital Divides

Research on digital divides began well before the Internet diffused among the general public. For example, since the early years of the personal computer, studies of focused on the factors that explain the adoption of computing in households, raising issues of how digital technologies are reinforcing socioeconomic divisions in society (Vitalari et al 1985; Dutton et al 1985; Dutton et al 1987a, 1987b). With the innovations in the Web, browsers, and subsequent global reach of the Internet into households, this work shifted away from computers and toward Internet access (Norris 2001; Rogers 2001; DiMaggio et al 2004; Dutton et al 2007) and later gradations of Internet use (Livingstone & Helsper 2007; Van Deursen & Van Dijk 2014) and how this affects and reinforces social inequalities (Zillien & Hargittai 2009; Hargittai & Hsieh 2013; Van Deursen et al. 2014). Based on Van Dijk's (2005) sequential model of Internet access, a number of scholars have recently introduced attitudinal and motivational measures to expand the classic set of socio-demographic factors related to Internet use and non-use (Reisdorf & Groselj 2015; Van Deursen & Van Dijk 2015).

Early Work on Internet Cultures

Since the birth of the Internet, pundits and academics have spoken of an Internet or 'cyberculture'—a particular pattern of beliefs and attitudes about the virtues of being online (Castells 2001; Bell et al. 2004). Most associated a cyberculture to the 'homesteaders' (Rheingold 1993), the early users of conferencing and discussion forums on the Internet. With large proportions of the public online in the 21st century, discussion of an Internet culture has waned, as characterizations of early Internet

pioneers have become increasingly far removed from the values and attitudes of most users. That said, there is some discussion of groups of users with distinctive cultures, such as a 'youth' (Mesch 2009) or 'born digital' culture among those who grew up with and have become acculturated to the Internet (Palfrey & Gasser 2008; Helsper & Eynon 2009).

However, most categorizations of users have been anchored in technology, such as distinguishing between users and non-users, as well as ex-users (Dutton et al. 2007). Users of the Internet have often been categorized as narrow or broadband users or households. Mobile Internet users are another category. More-skilled and less-skilled users is yet another frequently used distinction (Hargittai 2002). Since 2011, our own work has distinguished between first- and next-generation users, where next-generation users have multiple devices, some of which are portable, to access the Internet (Dutton and Blank 2011; Blank and Dutton 2013). All of these distinctions are meaningful as they have strong relationships with how people use or do not use the Internet, but they are not directly connected to the beliefs or attitudes and values of users, except to the degree that the appropriation of particular technologies signals their acceptance and the affordances they provide.

However, Internet users locally and globally are likely to have diverse attitudes and beliefs about the Internet that do not directly map onto the particular devices and technologies they use. For example, as noted above, one of the most conventional views is that there is a set of younger people who grew up around the Internet and are more comfortable using the Internet in their everyday life (Palfrey & Gasser 2008; Tapscott 2008). While the concept of the 'digital native' has been challenged by a number of researchers (e.g., Helsper & Eynon 2009), the idea reinforces the perception that there may be categories of users with systematically different perspectives on the Internet that might be tied to technologies that predominated when they were young, such as a television generation. Likewise, worldwide research underscores cross-national similarities and differences in cultures of Internet users, such as in the ways they associate freedom of expression, privacy and other values with use of the Internet

(Dutta et al. 2011). However, with few exceptions, the cultures of Internet users has not been a focus of research (Rice & Fuller 2013).

The primary effort to identify cultures of the Internet was based on the Oxford Internet Survey (OxIS) (Dutton & Blank 2013). This survey asked respondents the extent to which they agreed or disagreed with certain statements about the Internet. Each item was measured on an identical five-point Likert scale ranging from 'strongly disagree' to 'strongly agree.' These items have been developed and refined since the first OxIS survey in 2003. The items were analyzed by using a principal components analysis (PCA) with varimax rotation and Kaiser normalization to determine whether a smaller number of dimensions could summarize the variance among the respondents. This analysis yielded four components with eigenvalues greater than 1.0, which the study characterized as the Internet being viewed as: an enjoyable escape; a tool for instrumental efficiency; a problem-generator; or a social facilitator. The factor scores of individuals on these four dimensions were then subjected to a hierarchical cluster analysis to find groups or clusters of respondents. This yielded five groups of users, which were called:

1. *e-Mersives:* who see the Internet as an escape, an efficient tool, and a social facilitator;
2. *Techno-pragmatists:* who see the Internet as a source of 'instrumental efficiency';
3. *Cyber-savvy:* who see the Internet as a source of enjoyment at being online, a way to pass time, easily find information, and become part of a community; but also alert to the potential for the Internet to be frustrating, often a waste of their time, and invading their privacy;
4. *Cyber-moderates:* who are moderate in their view of the Internet and more blasé in their attitudes; and
5. *Adigitals*: who were online but neither comfortable or happy to be online.

These five clusters of users were distinctive and powerful explanatory factors in explaining why various demographic factors were related to patterns of Internet use. This allowed the research to move away from technical, or demographic, categories,

such as senior citizens, and move to cultural groups, such as the adigitals, who were more likely to be seniors, but also included many youth.

The present research sought to replicate the approach of the OxIS study to determine whether similar or different cultural perspectives would emerge, and whether they would be equally explanatory of the adoption and use of the Internet. However, we sought to go beyond this previous research, such as by designing questions that could be asked of users *and* non-users of the Internet, since the OxIS findings were limited to users.

Approach to Research on Cultures in the US Context

To examine whether we can find distinctive clusters of cultures of the Internet in Michigan, as a case study of the US, similar to the analyses conducted with the data on Internet users in Britain from 2013, we added a number of attitudinal questions on the Internet to the Michigan State of the State Survey (SOSS). The SOSS is conducted 3-4 times per year by Michigan State University's Institute for Public Policy and Social Research (IPPSR) via telephone surveys. The SOSS aims to collect a representative sample of Michigan and recruits respondents from previous surveys (about one third), via landline phone numbers, and via cell phone numbers.

The sample size for the SOSS winter wave 2016 used in this paper was 995 adults aged 18 years and older. Interviews took place between December 5, 2015 and March 26, 2016, and the statewide sampling error for this wave was 3.8%. The sample was stratified and weighted to be representative of the population as a whole, and it included users and non-users of the Internet. We weighted the data with the 'statewt' variable created by IPPSR to account for the sampling error before conducting any analyses. After weighting, the sample was 49% male, 51% female, 80% white, 13% African-American, and 7% other ethnic racial identifications.

Eighty-seven percent (86.7%) of the 995 respondents, or 862 respondents, reported using the Internet on any device, which is consistent with the US average of 87 percent measured in a 2014 Pew Survey in (Pew Research Center, 2014). Out of all Internet

users, 78 percent use social media, which is again consistent with the US average of 76 percent measured by Pew in 2015 (Pew Research Center, 2015). As can be seen in Table 1 below, the characteristics of Internet users in Michigan are very similar to those reported for the general population of American Internet users. Although we do not argue that we can generalize from Michigan to the rest of the United States, we believe an analysis of Michigan, particularly given its statistical placement near the US averages, can present a reliable case study of digital cultures in the US.

Table 1. Internet Users in Percent of US (2014) and Michigan (2016)

	US (2014)	**Michigan (2016)**
All adults	87	87
Sex		
Male	87	87
Female	86	87
Race/ethnicity		
White	85	88
African-American	81	78
Other[a]	83	96
Age group		
18-29	97	99
30-49	93	93
50-64	88	86
65+	57	60
Education level		
High school grad or less	76	74
Some college	91	89
College +	97	91
Household income		
Less than $30,000/yr	77	74
$30,000-49,999/yr	85	82
$50,000-74,999/yr[b]	93	91
$75,000+[b]	99	97
Community type		
Urban	88	87
Suburban	87	92
Small City/Town[c]		86
Rural	83	83

Notes: [a]: Pew only included Hispanic, while SOSS included all other races/ethnicities in one group; [b]: SOSS measured in $10,000 increments, so that these categories are $50,000-69,999 and $70,000+ for the Michigan survey; [c]: Pew did not measure small city/town.

Budgetary resources and time limits on the complete survey limited us to 32 questions about Internet use and attitudes, which meant that we had to reduce the number of attitudes and behavior questions from the OxIS survey from 14 to 10. We selected items from the OxIS set of attitudinal questions that loaded strongest on the four principal components so that each dimension of the factors identified in Britain had some items on the Michigan survey.[†]

To replicate the findings from the OxIS study, we conducted the same principal components analysis (PCA) of the 10 attitudinal variables with varimax rotation and Kaiser normalization. In line with the previous OxIS study, we found four strong components with Eigenvalues higher than 1. The components are described in detail in the findings section below (see Table 2). In contrast to the OxIS study, we asked the same questions of both users and non-users, enabling the full sample to be included in these analyses. Questions were formulated slightly differently for non-users, referring to people in general rather than themselves. We compared these results to a PCA of Internet users only and confirmed that they are robust with both the full and the sub-sample.

Using the factor loadings of these components, we conducted a two-step cluster analysis to determine how many distinct Internet cultures could be found among Michigan's population of both Internet users and non-users. In a first step we conducted a hierarchical cluster analysis using Ward linkage to determine how many distinct clusters we would find. In a second step we conducted another hierarchical cluster analysis using Ward linkage, in which we limited the number of clusters to five, guided by the results of the first analysis. We then compared cluster membership of the

[†] The following attitudinal items were included: Going online is an efficient way to find information; The Internet makes life easier; The Internet helps me save time; Going online helps me pass the time when I am bored; When I'm online I don't feel lonely; Going online allows me to keep in touch with people; It is easier for me to meet people online than in person; The Internet is frustrating to use; There is too much inappropriate and bad material online; It's difficult to protect personal information once it's online.

respondents with their values on the various attitudinal components that we found in the PCAs to identify the type of Internet culture in each cluster (see Table 3).

Findings

In line with other studies, use of the Internet in Michigan is associated at a statistically significant level with age, education, and occupation, as a surrogate of socioeconomic status. Nearly 90% of those with further or a higher education degree are online, compared to 77% or fewer online who have no degree or a basic high school education. There is a persistent gap between Whites and African-Americans in Michigan, with 88% of Whites and 78% of African-Americans reporting that they use the Internet.

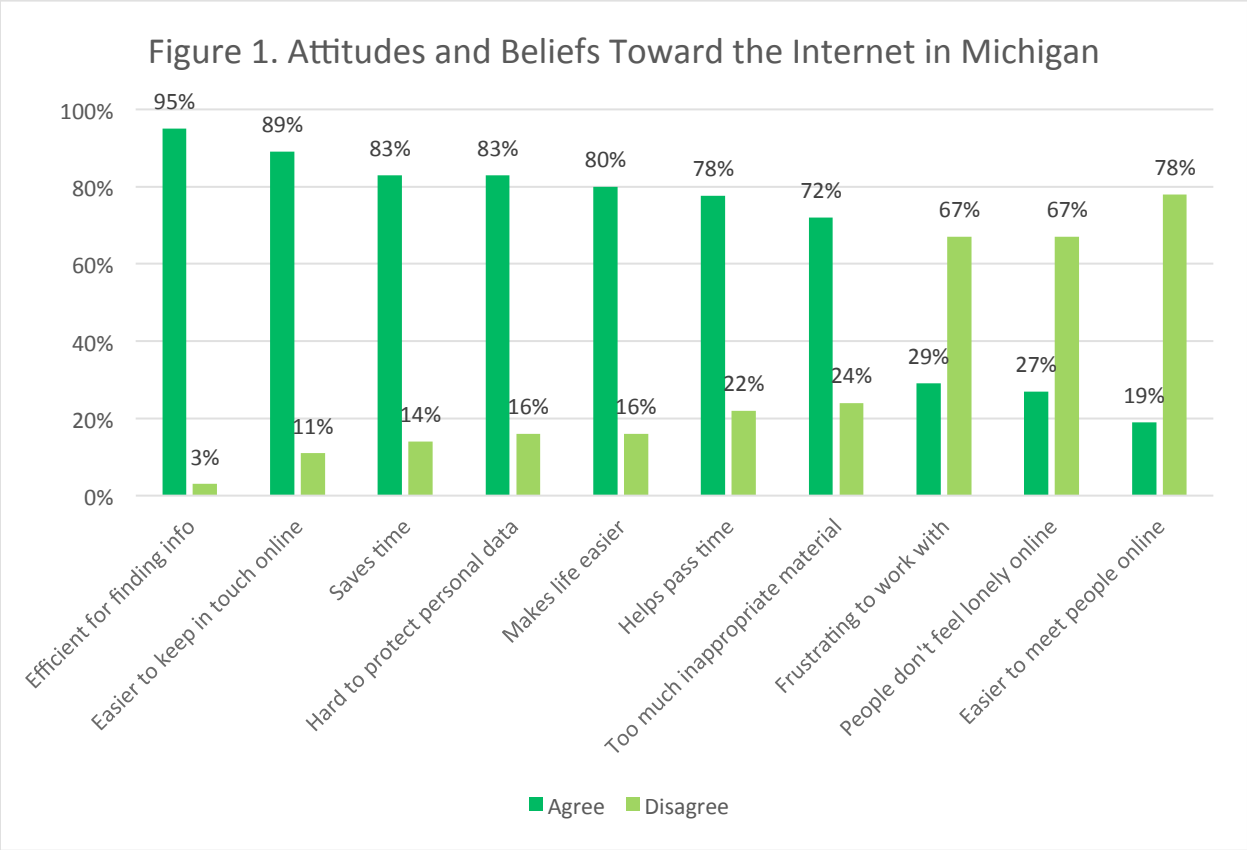
These findings on digital divides in Michigan are discussed in more detail in a companion paper (Reisdorf et al forthcoming), but they open up the question of whether we can determine the role, if any, of Internet cultures in accounting for these demographic and socioeconomic relationships with access to the Internet. Before focusing on these relationships, it is useful to describe the general attitudes and beliefs about the Internet in Michigan.

Attitudes, Beliefs and Values Underpinning Use of the Internet and Social Media: Efficiency Over Conviviality

Individuals in Michigan are generally positive about the Internet, but with some critical tensions apparent in their responses. For example, 80 or more percent of all individuals believe that the Internet is an efficient way to find information, helps them keep in touch with others, saves time, and makes life easier. However, almost 80 percent also believe that it is hard to protect personal information online, and nearly three quarters (72%) believe that there is too much inappropriate material online (Figure 1). In short, there are mixed feelings about the Internet, which are likely to be unevenly distributed across users and non-users as well as social media users and non-users.

It is also possible to discern from these responses a general propensity of ‘Michiganders’ (a nickname for the residents of Michigan) to privilege efficiency over conviviality in their views on the Internet. There are high levels of agreement on the role of the Internet in making life easier and saving time, and more equivocal views on the social role of the Internet. For example, respondents do not feel like it is easier to meet people online, and just over a quarter of Michiganders believe that people do not feel lonely online. It is viewed as an easy way to keep in touch with people that are known to respondents, but less valuable as a means for expanding or participating in their social lives (Figure 1).

Views on the social role of the Internet were often equivocal, illustrating tensions apparent in the data. Positive attitudes about the role of the Internet in social networking and in making one’s life easier are tempered by concerns over privacy, inappropriate material online, and the frustrations of grappling with the technology. In addition, there is the sense from these simple marginal item percentages that some people might be skeptical about the social benefits of the Internet, if not negative, and view it as an intrusion on their privacy and a risk to their personal information.



Notes: N=995, full sample.

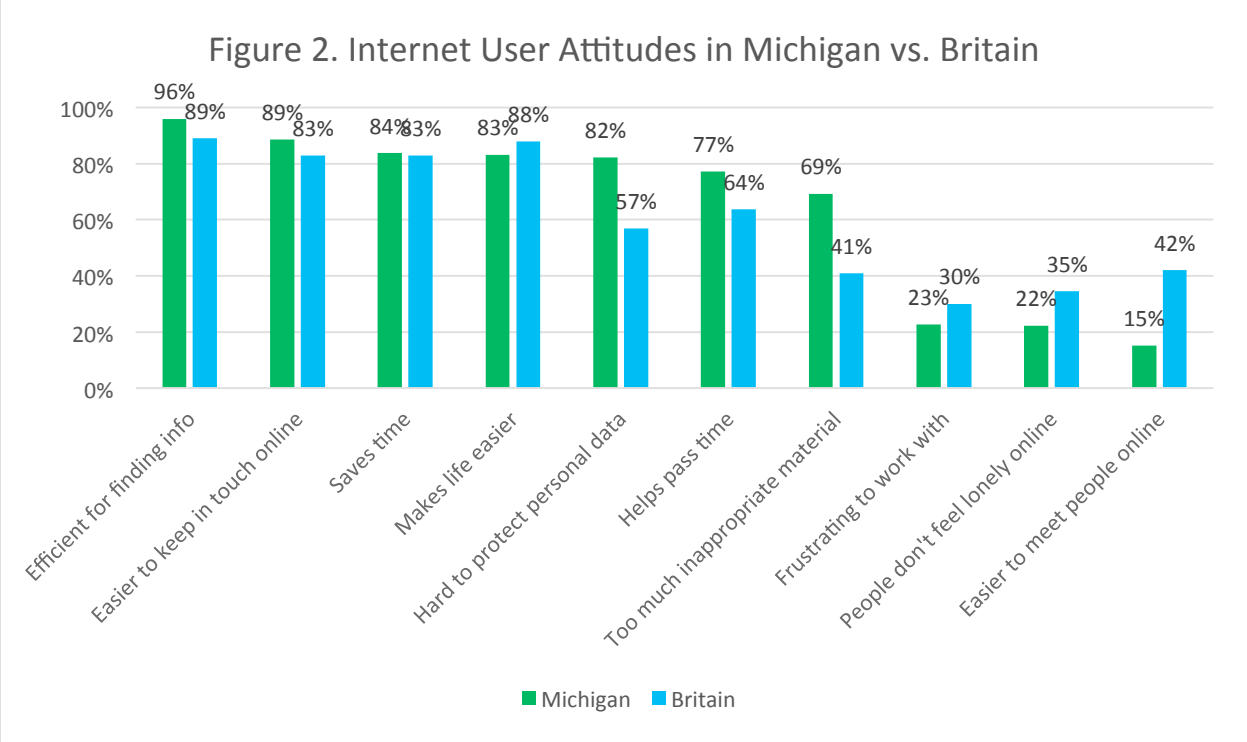
A Comparative Perspective on the Social Role and Risks of Internet Use

Since we replicated a number of items asked in Britain in 2013, it is useful to compare the responses of users in Britain to those of Internet users in Michigan, even though there were differences in the sample size and means of data collection (phone vs. field interviews). Figure 2 shows that on a number of items, such as the role of the Internet in making it easier to find information and saving time are remarkably similar cross-nationally. However, there are marked differences to at least two areas.

First, Michiganders tend to perceive greater risks to privacy than users in Britain (Figure 2). Perhaps this is due to the passage of time, since privacy issues have been a rising focus of global media coverage, or it could be a reflection of cultural differences across these jurisdictions, but this difference is clear and dramatic.

In addition to privacy, Michigan respondents see a greater risk in finding inappropriate and bad material online than do the respondents in Britain. This could be due to a rewording of the question, from finding 'immoral' material, which we asked in Britain, to finding 'inappropriate and bad' material, which we asked in Michigan, but the difference in percentages agreeing is too large to ignore and fits with conventional wisdom about television cultures in the UK and US, with Americans more sensitive to programming with such elements as nudity.

Secondly, the Michigan respondents are clearly more equivocal about the positive social role of the Internet and social media. For example, they are less likely to say that people don't feel lonely online, as well as less likely to agree that it is easier to meet people online (Figure 2). This reinforces the interpretation of the Michigan data, discussed above, that suggests that Internet users in Michigan are less focused on the opportunities for conviviality offered online compared to its use for efficient access to information and services. Efficiency beats sociality.



Notes: SOSS 2016: N=862; OxIS 2013: N=1,839.

While the responses to these individual items focused on attitudes and beliefs about the Internet are valuable, and intrinsically interesting, it is important to determine if they represent more general underlying dimensions of values and beliefs. To move towards more general value dimensions, a principle components analysis was conducted, using the attitudinal 10 items that we added to the SOSS (Table 2). This analysis identified four dimensions or components on which subsets of the individual items tended to load more or less highly.

The first component has been labeled an efficiency dimension, and the three items most closely related to this dimension are all about making life more efficient, easier, and saving time. Those who see the Internet as more or less efficient as a means for finding information, are also more likely to view it as making life easier and saving time, and so on. This was the strongest dimension and reinforces the degree that efficiency seems to be a particularly strong component of the attitudes and beliefs Michiganders have towards the Internet (Table 2).

Table 2. Principal Components Analysis Items and Factor Loadings

	Components and Factor Loadings				
Item	**Instrumental Efficiency**	**Sociality**	**Problem Generator**	**Privacy**	**N**
Going online is an efficient way to find information.	.597			.215	979
The Internet makes life easier.	.756				951
The Internet helps me save time.	.771			-.259	987
Going online helps me pass the time when I am bored.		.565	-.389	.340	978
When I'm online I don't feel lonely.		.707	.219		985
Going online allows me		.501	-.267		980

to keep in touch with people.					
It is easier for me to meet people online than in person.		.651			980
The Internet is frustrating to use.			.773		970
There is too much inappropriate and bad material online.			.645	.347	988
It's difficult to protect personal information once it's online.				.812	973
Eigenvalues	1.896	1.524	1.112	1.016	

Notes: The sample size (N) varies due to pairwise deletion of missing data; Loadings < 0.20 have been converted to blank spaces. Factor loadings are those after varimax rotation and Kaiser normalization.

The second strongest dimension is labeled sociality. This component is defined by four items that all relate to social and entertainment uses of the Internet. Generally, respondents tend to respond to these items with a positive or concerned attitude toward sociality. These items include passing time when bored (entertainment), not feeling lonely online, being able to keep in touch with people, and it being easier to meet people online (Table 2). In short, increasing one's social connections could be positive, for those who are social, or negative for those valuing their solitude and privacy, such as not wishing to connect with strangers or reconnect with old friends.

A third dimension concerns problems respondents might experience online. The two items that define this dimension are finding the Internet frustrating to use and believing that there is too much inappropriate and bad material online. Those who have high loadings on this dimension find the Internet somewhat unsettling as a place to reside–it generates problems. While the following are weaker relationships, this dimension is also associated with disagreeing that the Internet is a good place to pass time, or that it is a good way to keep in touch with others, reinforcing a negative connotation of sociality and entertainment for some users.

The final dimension is defined primarily by one item: believing that it is difficult to protect personal information once it is online. The dimension is therefore labeled privacy. Notably, as a separate dimension, this belief is not closely associated with any of the other dimensions, meaning that individuals across any of the other dimensions might well score high or low on this privacy concern.

Cultures of the Internet

Building on the dimensions that we found in the PCAs, we conducted cluster analyses to find patterns in these attitudinal dimensions that lead to individuals falling into distinct groups, which we call Internet cultures. We found five clusters of Internet cultures that vary in their attitudes toward the Internet as well as their socio-demographic backgrounds and their use of the Internet in general and social media specifically (Table 3).

Table 3. Culture groups characteristics in %

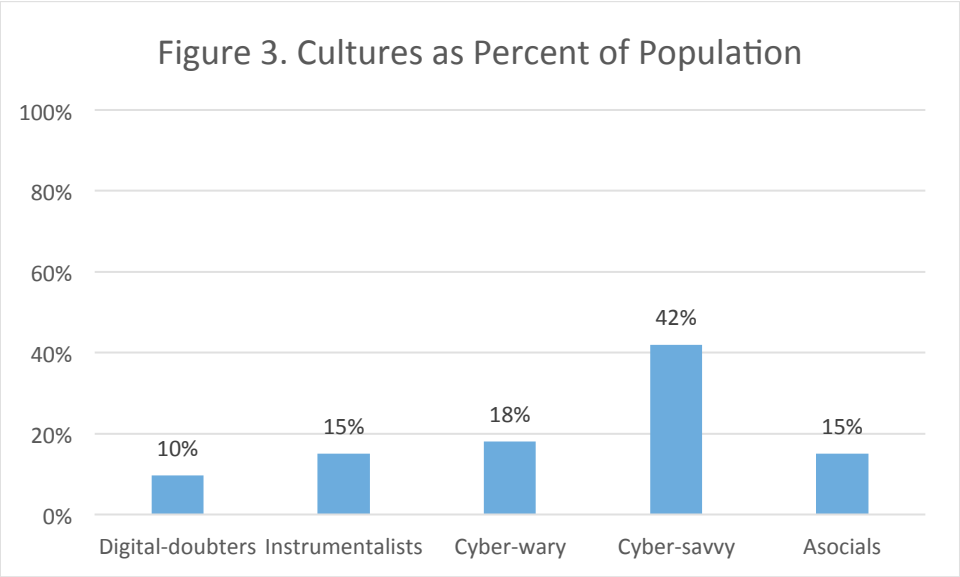
Dimension	Digital-doubters	Instrument-alists	Cyber-wary	Cyber-savvy	Asocials
Instrumental Efficiency	47.7	87.0	0.0	97.4	87.1
Sociality	100.0	34.8	15.2	45.6	4.3
Problem Generator	95.5	29.7	42.4	21.6	75.7
Privacy	70.5	0.0	78.2	81.3	36.4
% of users	9.6	15.1	18.0	42.0	15.3

Notes: N=915. This table shows the percentages that have factor scores above the mean on each dimension. Shaded cells highlight where over 50% are above the mean. Both Internet users and non-users are included in the analyses.

Cultures of the Internet in Michigan

These five cultures of the Internet in Michigan define subtle but distinct differences across the population (Table 3). Each represents a significant proportion of Michiganders from our sample (Figure 3), but the cyber-savvy are clearly the largest

proportion. Here we briefly characterize each of these dimensions, and discuss key demographic underpinnings of each to help concretize the differences.



Notes: N=915.

Digital-doubters

This 'doubter' cluster captures a set of the population that has major reservations about the value of the Internet. They do see the Internet as a place that fosters social connections, and the passing of time, but – very likely – not in a good way. For example, they see the Internet as frustrating to work with and exposing people to too much immoral material online. They also agree that it is hard to protect personal information once it is online, and less than half agree that the Internet is an efficient tool, which saves time. Demographically, the individuals in this cluster are more likely to have lower incomes, lower educational qualifications, are often younger (under 25) or older (over 65), and retired. Two thirds of these individuals live in rural communities or small towns. This cluster is the smallest among the Michigan population (9.6 percent).

Instrumentalists

This ‘instrumentalist’ cluster defines those for whom the Internet is a good efficient tool to finding information or saving time. They do not necessarily agree that the Internet allows people to be more social and they are not very worried about issues with privacy and other problems online, such as too much immoral material or being frustrated to work with the Internet. The individuals in this group are mainly from high income, high education backgrounds, who are employed and live in suburbs and small cities. The dominant age group in this cluster comprises people of working age, from 25-54 years.

Cyber-wary

Members of this ‘cyber wary’ cluster do not tend to agree that the Internet saves time, or that it is an efficient tool to finding information, and very few agree the Internet is a good entertainment and socializing tool. Less than half of the individuals in this group are worried about problems, such as immoral material online and the potential frustrations that come from working with the Internet. Most members of this group do agree, however, that it is hard to protect information once it is online. Demographically, younger people aged 18 to 24 years make up almost a third of this cyber-wary group, and overall 56 percent of this group are between 18 and 44 years. This cluster cannot be distinguished by incomes or the type of community they live in (all income groups and community types are equally represented in this cluster), and is mainly comprised of individuals with moderate levels of education (46 of this cluster has had some college experience or a degree from a community college/technical college, but not a university degree). This cluster also comprises the highest number of unemployed individuals. 37 percent of the (very small) group of unemployed respondents cluster in this group.

Cyber-savvy

This is the largest group, making up 42 percent of Michiganders. Individuals in this group fully agree that the Internet is an efficient tool for finding information or saving time, and a little less than half agree that it might be a good means to passing time or being social. And this group seems comfortable in navigating the Internet, not tending to see the Internet as frustrating to work with or containing too much immoral material.

However, they do believe that it is hard to protect personal information once it is online. Demographically, this cyber-savvy group is comprised mainly of individuals with higher incomes who are employed, highly educated and live mainly in the suburbs or small cities/towns. They are mainly from younger age groups (almost 60 percent are under 45 years of age).

Asocials

Like many of the population, the 'asocials' agree that the Internet is a very good tool for finding information and for saving time, but almost none of those in this cluster perceive the Internet to be a good place to socialize and pass the time. This is paired with a strong belief that the Internet is frustrating to work with and that there is too much immoral material online. Demographically, almost one third (28 percent) of this group is 65 years of age or older and 50 percent of this group is 55 years or older. They are highly educated (almost 90 percent have at least some college experience and/or a college degree), have fairly high incomes and mostly live in rural areas (30 percent) and small cities/towns.

Explaining Digital Divides and Inequalities

Do these cultural dimensions of the Internet shape behavior, particularly digital divides in access to the Internet and social media? The following sections explore this question by first determining if the components of Internet cultures have any independent relationship with behavior, once demographic factors are controlled. As Dutton and Blank (2015*a*, 2015*b*) found, we expect that while demographic factors are shaping attitudes and beliefs about the Internet, that these patterns of beliefs and attitudes – cultures of the Internet – will have more direct implications for behavior and therefore remain significant even for similar demographic groups.

Table 4 shows the multivariate logistic regression coefficients related to the likelihood of being an Internet user. This table shows that even with controls for age, education, gender and ethnicity and race, lifestage, and income, significant associations remain

between attitudes and access to the Internet. High scores on two components – sociality and problems – are negatively and significantly associated with using the Internet. Those who believe the Internet fosters more social connections, and generates problems (frustration in use, and exposure to inappropriate and bad material online) are less likely to use the Internet. Surprisingly, the pro-social role of the Internet – connecting or networking with people – has become a barrier for some cultures of the Internet, who value their privacy and social fences.

Table 4. Logistic Regression Coefficients: Likelihood of Being an Internet User

Variable (reference category)	B	Exp(B)
Age group (65+)		
14-29	29.481	6.359
30-49	1.147	3.148
50-64	1.806	6.084**
Education (less than HS)		
High School	.475	1.608
Some College	1.422	4.146
College+	2.134	8.448**
Gender (Female)		
Male	-.442	.643
Race/ethnicity (Black)		
White	.464	1.590
Other	3.525	33.955
Lifestage (Retired)		
Student	-12.975	.000
Employed	.658	1.931
Unemployed	.159	1.173
Income (<$30,000)		
$30-49,999	.500	1.649
$50-69,999	.859	2.360
$70,000+	1.384	3.992*
Attitudes		
Efficiency	.619	1.857
Sociality	-2.771	.063**
Problem	-1.941	.144**
Privacy	.298	1.347
Constant	.827	2.287
R2 (Nagelkerke)	.58	

% correct	93.7%
Non-Users	13.3%

Notes: Base=995, all respondents; *significant at .05 level; **significant at .001 level

Table 5 shows the multivariate logistic regression coefficients of the likelihood of using social media, comparing Internet users who do and do not use social media. In this case, men are less likely to use social media than women, while younger age groups are more likely to use them. However, controlling for all the demographic background variables, there is still a significant positive relationship between the use of social media and seeing the Internet as a tool for efficiency, and a negative relationship between problems (frustrations with use or exposure to inappropriate material online) and social media use. For both Internet and social media use, dimensions of Internet cultures make a difference.

Table 5. Logistic Regression Coefficients: Likelihood of Being a Social Media User

Variable (reference category)	B	Exp(B)
Age group (65+)		
14-29	1.552	4.719**
30-49	.990	2.691*
50-64	.414	1.513
Education (less than HS)		
High School	.375	1.455
Some College	.170	1.186
College+	-.566	.568
Gender (Female)		
Male	-1.112	.329**
Race/ethnicity (Black)		
White	.037	1.038
Other	.598	1.819
Lifestage (Retired)		
Student	18.333	91618627.5
Employed	.503	1.653
Unemployed	-.363	.696
Income (<$30,000)		
$30-49,999	-1.47	.864
$50-69,999	-.552	.576
$70,000+	-.206	.814

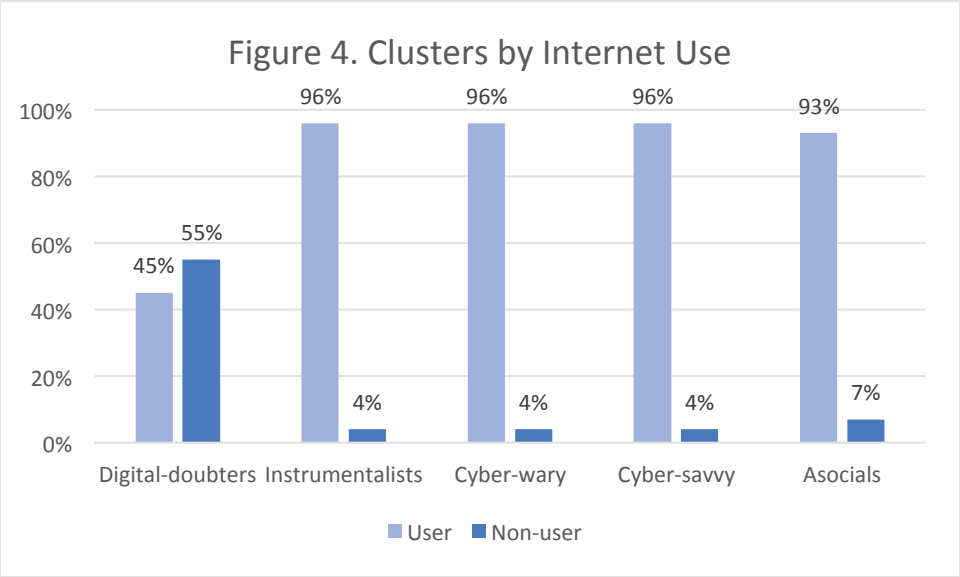
Attitudes		
Efficiency	.585	1.796*
Sociality	.402	1.495
Problem	-1.179	.308**
Privacy	.259	1.295
Constant	1.109	3.031
R2 (Nagelkerke)	.32	
% correct	80.7%	
Social Media Non-Users	22.4%	

Notes: Base=862, Internet users only; *significant at .05 level; **significant at .001 level

Internet Cultures and Digital Divides

Given these findings, we would expect that those occupying different cultures of the Internet will have different profiles in their use of the Internet and social media.

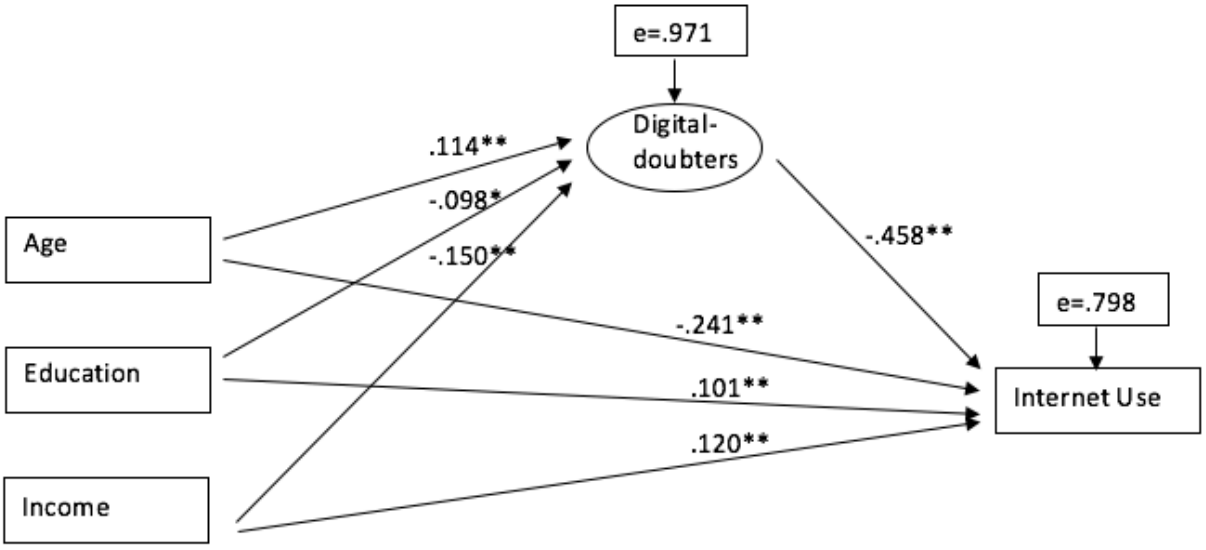
'Digital-doubters' are the most likely to be non-users of any cluster. 55 percent of this cluster are non-users (Figure 4), people who often believe that the Internet makes them more social, when in fact, Internet users themselves are less likely to believe that this is the case. And while they perceive the Internet as promoting social connections, only 43 percent of this group are social media users, well under the average for Michigan.



Notes: N=995.

To uncover direct and indirect relationships between demographic factors as well as cultures of the Internet with Internet and social media use, we conducted a number of path analyses using multiple regression results. A path analysis of the factors shaping Internet access that included 'digital doubters' illustrates the moderating role of Internet cultures in shaping digital divides (Figure 5). Older users are more likely to be doubters, as are less educated and lower income groups. However, even when controlling for these demographic factors, doubters are significantly less likely to use the Internet. Still, culture does not explain all the variance of age, education or income, as all continue also to have direct and significant relationships with Internet access.

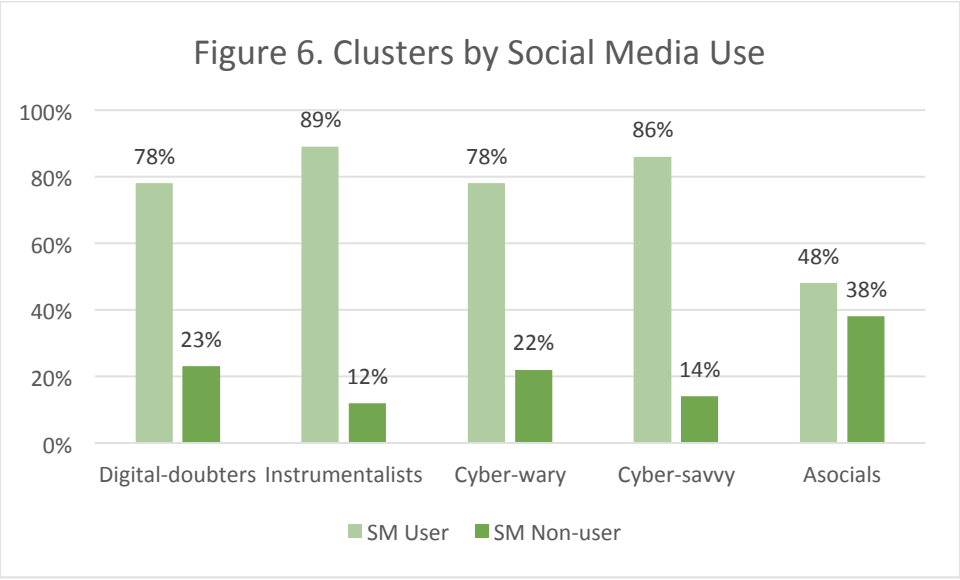
Figure 5. Path Model—Digital Doubters



Notes: Base=995, all respondents.

Figure 4 also shows that the 'instrumentalists' are mainly comprised of Internet users (96 percent) and social media users (89 percent; the highest percentage among all groups). Their use of both the Internet and social media appears to be motivated by the efficiency of these technologies for finding information and keeping in touch with friends, family and connections in everyday life and work.

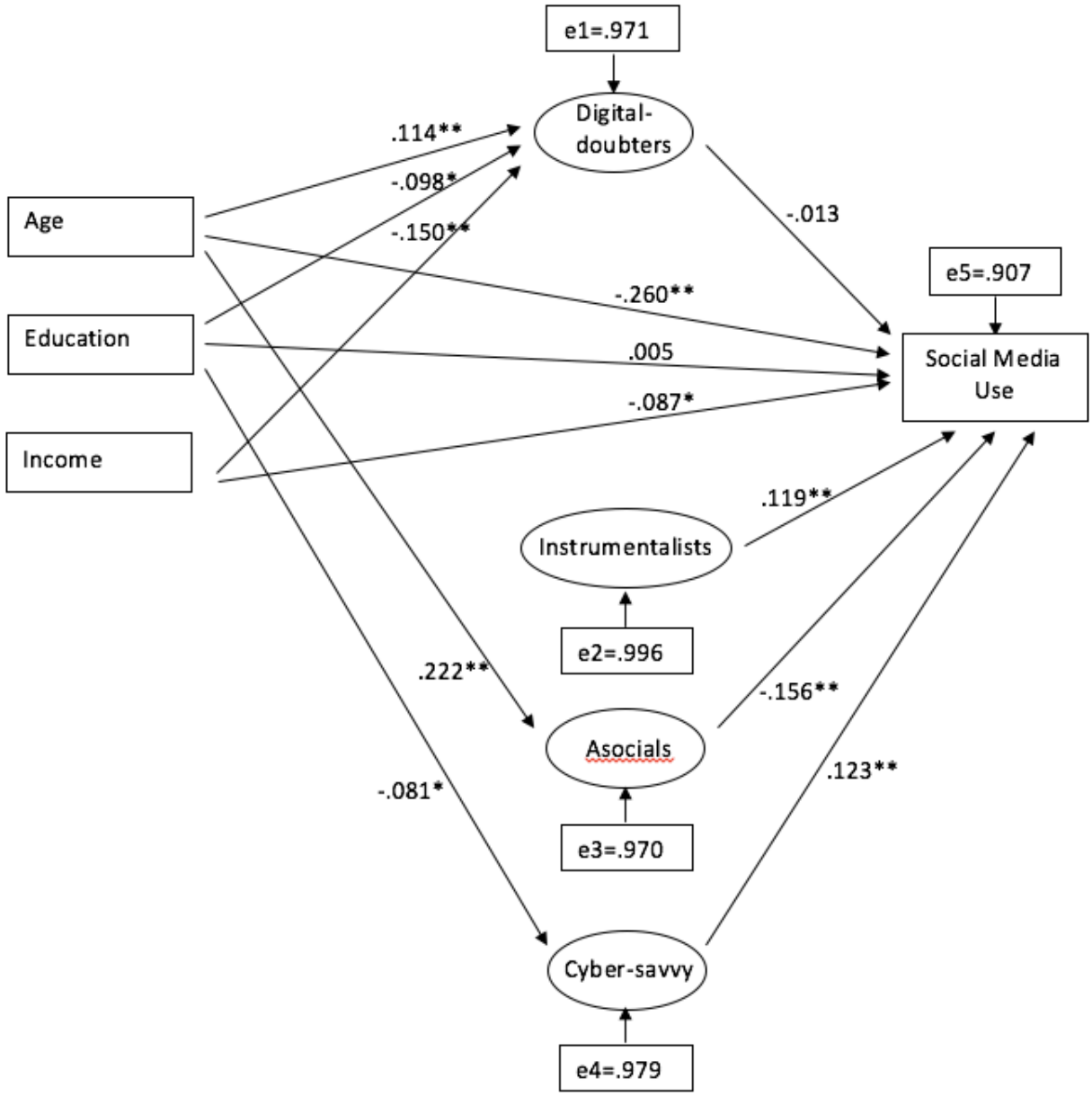
The ‘cyber-wary’ are comprised mainly of Internet users, but have a lower number of social media users than the ‘instrumentalist’ and the ‘cyber-savvy’ (Figure 4). In contrast, the ‘cyber-savvy’ are the core of users. This group is comprised of Internet users (96 percent) and a high proportion of social media users (86 percent). Finally, the ‘asocials’ are comprised of only 48 percent of social media users. The ‘asocials’ do not believe that social media can make people more social. This cluster contrasts with the ‘cyber-savvy’ who agree that social media make it easier to meet people online and that people who are online feel less lonely.



Notes: N=862, Internet users.

There is more variation in our sample on the use of social media, and cultures of the Internet are more useful in helping to explain social media use than Internet use. To distinguish which cultures and which socio-demographic factors contribute to social media use, we conducted a second set of multiple regressions and path analyses that included all Internet cultures and those socio-demographic variables that were significantly related to Internet and social media use in the logistic regressions presented above.

Figure 7. Full Path Model for Social Media Use (Cyber-wary Dropped from the Model)



Notes: Base=995. Non-significant paths from demographic variables to cultures are not depicted in this model to reduce complexity and increase interpretability.

As Figure 7 shows, controlling for demographic factors (age, education and income), 'asocials' are less likely to use social media, while 'instrumentalists' and the 'cyber-savvy' are more likely to use social media. There is also a positive relationship between higher age and being part of the 'asocial' cluster as well as a negative direct relationship

between higher age and social media use. Accordingly, age has both a direct and indirect negative effect on being a social media user. ‘Digital doubters’ are less likely to use social media, but since so few digital doubters are online, this factor does not reach statistical significance.

Discussion

This research has connected patterns of Internet and related social media (non)use to cultural values and beliefs among Michiganders. The survey enables us to identify groups that represent distinctive cultural perspectives on the Internet. We compare these groups with patterns of attitudes found in Britain, and focus on the ways in which these ‘Internet cultures’ are shaping Internet and social media use in Michigan. We find distinctive cultures of the Internet, which are closely related to the use of the Internet and social media. The results reinforce the significance of attitudinal dimensions, as compared to more distant demographic factors, for explaining Internet use. To the degree that these cultures influence Internet adoption, skill development and other digital choices, they provide direction for efforts aimed at closing digital divides and inequalities by better addressing issues of demand and interest in the Internet.

Limitations

This was an exploratory study, seeking to replicate research in Britain, in the US context. While this replication supported the significance of Internet cultures in the US as well as Britain, and suggested important differences, it is limited by the sample, method, and questions addressed. Ideally, we would have surveyed a random sample of the US through field interviews, as done in the UK, and also asked all the questions used in Britain. Despite these limitations, our results closely approximate other research on Michigan, which is about average among US states, and therefore a useful case for exploratory research. Also, there were strong parallels with findings cross-nationally, supporting the validity and reliability of our approach, while making the case for expanding the research to a national sample with additional questions. For example, the

prevalence of efficiency over conviviality might be a product of Michigan's Midwestern cultural roots, and not representative of the East or West Coast.

Summary and Policy Implications

Previous research on digital divides, focusing on access to the Internet, has not examined what we have defined as cultures of the Internet. However, this research indicates that cultures of the Internet can be identified on multiple dimensions, and used to help explain why particular demographic characteristics and opinions are related to Internet access. Generally, we suggest that cultures of the Internet are shaped by demographic and contextual changes, including technical change, and in turn shape choices about access to the Internet and related technologies, such as social media.

In this particular study, it appears that cultures of the Internet in Michigan are more focused on instrumentalism – the efficiency of everyday life and work – than on supporting social connections, or conviviality. Michiganders appear more concerned about the privacy and the invasive potential of social media and the Internet than their counterparts in Britain. They are also more concerned with the appropriateness and morality of information available online. Efforts to be left alone, protect personal information, and avoid unwanted contacts or information, could all be constraints on more extensive use of the Internet in Michigan, and potentially across the US.

In addition, it is clear that attitudes towards the Internet are not one-dimensionally positive or negative. Instead, there are a number of cultures, each of which incorporates different attitudes and beliefs that underpin use of the Internet. 'Digital-doubters' are likely to remain offline, but our findings indicate a number of ways that 'digital doubters' can be motivated to get online, such as by:

- demonstrating the relevance of the Internet to making one's life easier and more efficient;
- conveying a more realistic understanding of the sociality required of the Internet and social media, which is not overly invasive as feared by the doubters;

- training that enables users to avoid some of the frustrations they experience in trying to get online and avoiding unwanted information; and
- understanding how personal information can be of value in meeting some needs, such as for shopping, but that it can be protected reasonably well through good information practices.

Likewise, our findings suggest specific ways to encourage individuals to use social media, such as by addressing concerns over unwanted social contacts, and stressing the value of social media in saving time and energy in staying in touch with friends and family. These lessons learned could be of value to policy and practice as government agencies, and organizations seek to reduce digital divides in society.

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