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THE THIRD-LEVEL DIGITAL DIVIDE: WHO BENEFITS MOST FROM BEING ONLINE?

11 Alexander J. A. M. van Deursen and Ellen J. Helsper

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ABSTRACT

17 Purpose – *Research into the explanations of digital inclusion has moved*
19 *from investigations of skills and usage to tangible outcomes, what we label*
21 *here as the third-level digital divide. There is a lack of theoretical develop-*
23 *ment about which types of people are most likely to benefit. Understanding*
25 *how achieving outcomes of internet use is linked to other types of (dis)*
27 *advantage is one of the most complex aspects of digital inclusion research*
29 *because very few reliable and valid measures have been developed. In the*
31 *current study we took a first step toward creating an operational frame-*
33 *work for measuring tangible outcomes of internet use and linking these to*
35 *the inequalities identified by digital divide research.*

Methodology/approach – *After having proposed a classification for*
internet outcomes, we assessed these outcomes in a representative sample
of the Dutch population.

Findings – *Our overall conclusion in relation to the more general rela-*
tionship between offline resources and third-level digital divides is that

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1 *the internet remains more beneficial for those with higher social status,*
2 *not in terms of how extensively they use the technology but in what they*
3 *achieve as a result of this use for several important domains.*

5 Implications – *When information and services are offered online, the*
6 *number of potential outcomes the internet has to offer increases. If indi-*
7 *viduals with higher social status are taking greater offline advantage from*
8 *digital engagement than their lower status counterparts, existing*
9 *offline inequalities could potentially be acerbated.*

11 Keywords: Outcomes; third-level digital divide; internet use; digital
12 inequality; social inequality

15 INTRODUCTION

17 By now a vast array of studies have illuminated the consequences of digital
18 inequalities for many different offline activities and life realms. Examples
19 include research on political participation, educational attainment, and
20 employment outcomes. What the field lacks is a comprehensive and sys-
21 tematic study which charts gaps in offline outcomes among sociodemo-
22 graphic and socioeconomic groups across multiple domains of activity.
23 More specifically, we know little about such gaps in societies where internet
24 access is very widely diffused within the population.

25 Such a task is important if we want to gain a deeper and broader under-
26 standing of the third-level digital divide and its repercussions for offline
27 inequalities. The third-level digital divide concerns disparities in the returns
28 from internet use within populations of users who exhibit broadly similar
29 usage profiles and enjoy relatively autonomous and unfettered access to ICTs
30 and the internet infrastructure. Third-level divides, therefore, relate to gaps in
31 individuals' capacity to translate their internet access and use into favorable
32 offline outcomes. Research into the third-level divide, therefore, seeks to
33 determine who benefits in which ways from internet use in terms of a broad
34 range of offline outcomes (Amichai-Hamburger, McKenna, & Tal, 2008;
35 Stern, Adams, & Elsasser, 2009; van Deursen, van Dijk, & Helsper, 2014).

37 Research into the third-level divide has taken many steps forward in
38 recent years, but it has not yet attempted to chart gaps in returns from inter-
39 net usage across multiple life realms within a uniformly wired society where
internet access is almost universal. Advancing this research necessitates

1 linking types of digital engagements to specific offline life realms such as eco-
3 nomic, social, and political life realms. Quantitative research into the third-
5 level divide stands to gain, if specific digital engagements can be linked to
7 outcomes in particular life realms, a deeper understanding of the mechanisms
9 translating internet use into specific offline outcomes (e.g., Stern et al., 2009).
Such an exercise would also afford the opportunity for the development of
11 theoretically informed classificatory schemes by which researchers can sort
13 internet users in terms of the likely offline benefits accruing to specific types
15 of internet use. Rather than assuming that more digitally advantaged users
17 will automatically enjoy greater offline benefits across all life realms, the
19 strength and character of the links between skills, online activities, and
offline outcomes should be treated as factors which can potentially vary
21 across domains and fields of activity. Indeed, where existing digital divide
23 research does touch on the third-level divide, it suggests that, as a rule, inter-
25 net use and online activities will confer greater benefits to internet users
27 in life realms where the user already has significant resources at his or her
29 command (DiMaggio & Hargittai, 2001; Hargittai & Hinnant, 2008;
Helsper, 2012; van Deursen & van Dijk, 2011, 2014; van Dijk, 2005).

19 The study presented in this paper should be considered as a preliminary
step toward devising an operational framework useful for charting the con-
21 tours of the third-level digital divide in a society where internet access is
near-universal. It also will serve to elucidate some of the mechanisms
23 through which internet usage is converted into offline benefits. It does so
by identifying which groups derive greater and lesser offline returns, given
25 particular levels of internet usage, across distinct economic, political, and
institutional life realms. We therefore ask: *What are the returns on internet*
27 *use for particular sociodemographic groups identified by digital divide research*
and how are these returns linked to particular usage patterns?
29 We hypothesize at the outset that greater returns will accrue to those more
favorably situated users.

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THEORETICAL BACKGROUND

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Digital Divides

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39 Conceptualized at the dawn of the digital age, the notion of the first-level
digital divide trains attention on individuals' access to the ICT infrastruc-
ture, including such dimensions as autonomy and continuity of access

1 (Newhagen & Bucy, 2005; van Dijk, 2005). As more and more people
2 obtained access to this infrastructure, second-level divides in skills and
3 usage patterns became more evident and drew more attention from
4 researchers (e.g., Dimaggio et al., 2004; Katz & Rice, 2002; Selwyn, 2006;
5 van Dijk, 2005; Witte & Mannon, 2010; Zillien & Hargittai, 2009). Studies
6 of second-level digital divides have now provided, for example, useful clas-
7 sifications in terms of the types of skills needed to use ICTs and the types
8 of activities people perform online (e.g., Blank & Groselj, 2014; Kalmus,
9 Realo, & Siibak, 2011; van Deursen & van Dijk, 2011, 2014; Warschauer,
10 2003) and how these digital divide aspects interact (e.g., Livingstone &
11 Helsper, 2007; van Deursen & van Dijk, 2015). It is well known that first-
12 level and second-level digital divides have important implications for offline
13 outcomes in societies or groups where access is unevenly distributed
14 (Robinson, 2009; Witte & Mannon, 2010).¹

15 The third-level digital divide differs from first-level and second-level
16 divides, inasmuch as the first-level digital divide concerns differences in
17 infrastructural access, and second-level digital divides have to do with dif-
18 ference in skills and usage patterns (Hargittai, 2002). Insufficient skills
19 have been found to play a role in limiting success or efficiency in the
20 undertaking of specific online tasks. In societies such as the Netherlands
21 with near-universal internet access, however, third-level digital divides have
22 become increasingly salient. Research into third-level divides pre-
23 sume that, even among users with autonomous and unlimited access to the
24 ICT infrastructure, there will be important differences in their profi-
25 ciency in enlisting digital resources for the achievement of specific objec-
26 tives. Even when two users have high-quality autonomous access and
27 adequate skills, they may not obtain the same returns on their internet use
28 (Stern et al., 2009; van Deursen et al., 2014). Moreover, individuals who
29 consistently convert their internet use into high offline returns such as
30 earnings may benefit from a feedback effect where greater economic
31 resources enable them to further develop their internet skills. For exam-
32 ple, someone gaining a better job through the use of the internet might
33 have access to an increased wage which in turn can be used to get better
34 access, improve their skills and, thus, buy products cheaper online.
35 The outcomes achieved from internet use provide feedback into someone's
36 offline status which then again influences the digital inclusion factors as
37 illustrated in Fig. 1.

38 In this paper, we focus on measuring the benefits that result from inter-
39 net use across multiple life realms and how these benefits relate to member-
ship in specific sociodemographic groups. These outcomes are rarely

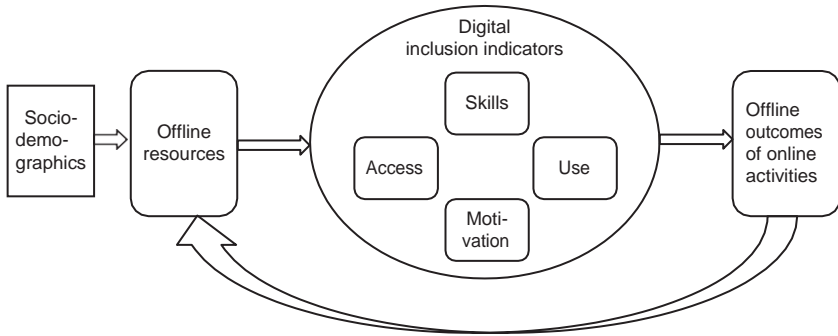


Fig. 1. A Model for Replications of Inequalities in a Digital Society.
 Source: Adapted from Helsper (2012) and van Dijk (2005).

measured in large-scale, population-wide surveys that aim to provide a broader understanding of what people gain from internet use. Some studies focused on the so-called “opportunity divide” (e.g., Akca, Sayili, & Esengun, 2007; Mossberger, Tolbert, & Stansbury, 2003; Stern et al., 2009). These studies are mostly concerned with tracking different types of internet use, rather than identifying the offline outcomes that result from these online usage patterns. Many other studies focus only on one particular type of outcome, for example on establishing social networks (e.g., Boase, Horrigan, Wellman, & Rainie, 2006) or increasing political participation (e.g., Sylvester & McGlynn, 2010). As a result, the actual implications of internet use in terms of real opportunities in everyday life are increasingly important to digital divide research.

When studies measure outcomes they either focus on a very narrow range of indicators of one particular type (e.g., Boase et al., 2006; Sylvester & McGlynn, 2010) or collapse a whole range of outcomes together without specifying why different types of outcome items were included (Stern et al., 2009). To enrich quantitative work in this area, we gauge offline outcomes across multiple fields of activity as effects of specific types of internet usage, laying the groundwork for generalizations about the linkages between pathways from attitudes, access, skills, use, and digital engagements to offline outcomes. However, before we begin this exercise, we need to settle on an analytical framework which allows us to categorize the relevant fields of offline activity. In this regard, systematic theorization-based conventional understandings of offline inequality can serve as a useful starting point.

Classifications of Internet Outcomes

1
3 In this study, we conceptualize and operationalize offline outcomes in economic, social, political, institutional, and educational fields of activity. We
5 then relate these outcomes to individuals' digital engagements. The outcome classification scheme we employ in the current study follows van
7 Dijk's (2005) fivefold categorization of activity fields into economic, social, political, institutional, and educational fields. One of the advantages of this
9 scheme is that it meshes well with Bourdieu's (1984) division of individualized forms of capital into economic and noneconomic forms, a distinction
11 used in many studies to explore associations between online and offline inequalities (e.g., Halford & Savage, 2010; Robinson et al., 2015; Witte &
13 Mannon, 2010). While this fivefold scheme could be further refined and elaborated, as each of these fields of activity could be operationalized along
15 many dimensions of variation, this classificatory scheme serves as a useful starting point for our analysis.

17 Studies regarding the effects of internet use on economic outcomes have already revealed that, in societal contexts where internet usage is less uniform
19 than in the Netherlands, more intensive internet usage can lead to increased employment earnings (DiMaggio & Bonikowski, 2008). Some
21 preliminary research suggests that more engaged internet users enjoy advantages when it comes to finding information about job opportunities
23 (Kuhn & Mansour, 2014). From the consumption side, digitally advantaged individuals may be able to obtain goods and services at better prices
25 than their less advantaged counterparts, enjoying a digital consumer dividend (Bhatnagar & Ghose, 2004).

27 Studies of social outcomes have likewise identified a range of payoffs accruing to the digitally advantaged, such as an increased diversity and
29 scale of social connections, often theorized as social capital (Putnam, 2000). Internet use can open the door to the acquisition of many kinds of
31 social resources (van Dijk, 2005). Individuals who engage more intensively and effectively with digital resources can capitalize on social media sites
33 and online dating sites to make new friends, find romantic partners, and generally augment their social networks (e.g., Muscanell & Guadagno,
35 2012). Furthermore, online communication boosts both the amount and intensity of interactions within local communities (e.g., Kavanaugh et al.,
37 2005). In the view of Katz and Rice (2002), certain applications of the internet reinforce preexisting offline interactions, as the internet "provides
39 frequent uses for social interaction and extends communication with family and friends" (p. 326).

1 As individuals with larger and more diverse social networks tend to participate more actively in civic and political affairs than those with smaller
3 networks (Son & Lin, 2008), digital engagements can also lead to increased participation in formal and informal politics, particularly among those citizens
5 already oriented toward political activity. Political participation encompasses both engagement with formal political processes and institutions
7 (e.g., elections, being a member of a political party) as well as less formally organized politics (e.g., opinion formation and engagement with
9 political issues outside of formal political structures and parties).²

11 Where the individual is interacting directly with state institutions, and such institutions have adopted digital communication technologies, it stands
13 to reason that digitally advantaged citizens would get more out of their encounters with such institutions. This is particularly the case in countries
15 such as the Netherlands, where digital communication channels have been widely promoted as a means of improving contact between citizens
17 and the government.³ Existing investigations have disclosed a prominent effect of internet usage on civic participation; citizens who used the internet
19 more often in their homes are more likely to contact governmental entities (Sylvester & McGlynn, 2010). We would imagine that digitally advantaged
21 individuals would have an easier time interacting with a wide range of governmental entities in such countries, including tax authorities and public
23 health providers for example.

25 Because of the wealth of research dealing with educational outcomes and internet use, we distinguish educational outcomes from other kinds of
27 outcomes. We know that the internet provides access to a wealth of formal and informal learning opportunities – from primary schools to university
29 training and from hobby courses to professional training (Moore & Kearsley, 2011), but it is unclear whether some groups acquire more educational
31 resources (whether defined as credentials or learning outcomes) because of their more productive internet use.

33 *General Differences in Engagement*

35 Digital divide research has defined several socio-demographic variables linked to differences in these offline resources which are related to differences
37 in internet use; the ones most commonly examined are income, gender, age, and education (van Deursen & van Dijk, 2014). High education and
39 income levels are considered indicators of socio-economic resources, linked by Dimaggio et al. (2004) to more productive use of the internet. Other

1 factors such as a disadvantage in health (e.g., disability) or a certain occupa-
3 tional status (retirement, unemployment, or caretaking) are also frequently
5 associated with lags in internet adoption (e.g., Dobransky & Hargittai, 2006;
7 Pautasso, Ferro, & Raguseo, 2011). Furthermore, lower levels of social iso-
9 lation (e.g., not living alone or being in a relationship) improve one's
11 chances of engaging more widely with the internet (e.g., van Deursen &
Helsper, 2015). Besides the socio-demographic factors linked to different
types of individual resources, internet patterns also mirror aspects of social
(infra) structures (Graham, 2008) which are reflected, for example, in that
people in rural areas have lower levels of access to high-quality internet con-
nections (Hale, Cotten, Drentea, & Goldner, 2010; Stern et al., 2009).

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METHOD

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Sample

19 We conducted an exploratory study in the Netherlands, a country with a
well-developed digital infrastructure and near-universal access; in 2013,
21 97% of the population had a broadband internet connection at home (71%
used the internet on a desktop computer, 79% on a laptop, 72% on a
23 smartphone, and 64% on another device). The Netherlands provides a perfect
setting for this study, because internet access and use are near-universally
25 distributed throughout this society.

Participants were recruited from a Dutch online panel (PanelClix) con-
27 sisting of 108,000 individuals comprising a representative sample of the
Dutch population. Members of the panel receive a few cents for every sur-
29 vey in which they participate. In total, 2,600 people were randomly selected
to represent the population in terms of age, gender, and educational level.
31 The selected panel members received an e-mail inviting them to participate
and explaining the topic of the survey and how much time it would take to
33 complete. A total of 1,159 responses were received (46%), of which 10 were
rejected for being incomplete. Thus, a total of 1,149 responses were used
35 for data analysis. The sample represented the Dutch population (see van
Deursen et al., 2014). The mean age of the respondents was 48 years
37 (SD = 17.4), ranging from 16 to 87.

Several measures were taken to increase the survey response rate. The
39 time needed to answer survey questions was limited to approximately 15
minutes. In addition, the online survey used software that checked for

1 missing responses. Two rounds of survey piloting were conducted with 10
 3 internet users and amendments were made at the end of each round based
 on the feedback provided. Respondents in the second round gave no major
 comments, at which point the survey was finalized.

5 The variables of gender, age, and education were compared with official
 census data from the Netherlands. Because amendments were made during
 7 data collection to ensure accurate population representation, analyses
 showed that the gender, age, and formal education of our respondents
 9 matched official statistics. As a result, only a very small correction was
 needed post hoc. Finally, we recognize that this form of data collection
 11 would not be appropriate for less uniformly wired populations.

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Measures

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To determine which groups benefit the most from internet use, the fields of
 17 participation discussed in the theoretical background are used as a starting
 point. For each field, we designed use items from existing classifications of
 19 internet use. Then, we translated these uses into items that measured a cor-
 responding outcome. For example, using the internet for job hunting could
 21 potentially result in the outcome of finding a better job, or online dating
 might result in finding a potential partner.

23 The following categories of internet use were based on previous research.

25

- *Economic uses* (divided into commerce and labor related activities):

27

Trading goods, booking holidays (e.g., Zillien & Hargittai, 2009), buying
 products (e.g., Bhatnagar & Ghose, 2004), and job searching (e.g.,

29

Fountain, 2005).

31

- *Social uses*: Meeting people (Ridings & Wasko, 2010), social interaction
 (e.g., Quan-Haase et al., 2002), and online dating (e.g., Valkenburg &
 Peter, 2007).

33

- *Educational uses*: Searching educational information.

35

- *Political uses*: Political participation and online voting (e.g., Bakker & de
 Vreese, 2011).

37

- *Institutional uses* (divided into government and health activities):

39

Contacting the government (e.g., Sylvester & McGlynn, 2010) and
 searching medical information (e.g., Rice, 2006).

39

Table 1 provides an overview of the outcomes derived from these use items
 that were used in this study.

Table 1. Internet Outcomes.

Field	Through the Internet, ...	%
Economic labor	I found a (better) job	18
Economic commerce	I earn more money	14
	I bought a product more cheaply than I could in the local store	75
	I booked a cheaper vacation	62
Social	I traded goods that I would not have sold otherwise	68
	I have more contact with family and friends	67
	It is easier for friends and family to get ahold of me	70
Political	I made new friends whom I met later offline	34
	A met a potential partner using online dating	13
	I expressed my political opinion in online discussions	13
Institutional governmental	I joined a political association, union, or party	5
	I found what political party to vote for	30
Institutional health	I am better up-to-date with government information	63
	I have better contact with the government	33
Educational	I have discovered that I am entitled to a particular benefit, subsidy, or tax advantage	30
	I determined the medical condition from which I was suffering	16
	My life is healthier because of online medical information	29
Educational	I found the best hospital for a condition I suffered from	17
	I found an educational course that suits me	21
	I followed a course that I would not have been able to follow offline	14

Note: Base - All respondents to the survey $N=1,149$ (weighted data).

The outcome measures designed for this study reflect benefits that are commonly assumed to result from internet use for a wide range of individuals, outcomes that can be observed and verified relatively easily. For each potential outcome, respondents reported on whether they had ever obtained that particular benefit from using the internet. The question was asked in a straightforward manner using items with a dichotomous response scale (no/yes) asking respondents to report on actual behavior (facts of outcomes) and not subjective opinions or attitudes, overcoming some of the issues with self-report measures.

Frequency of internet use was measured by employing a five-point Likert scale ranging from "monthly" to "several times a day" ($M=4.05$, $SD=0.64$). To measure *age*, respondents were asked for their year of birth. *Gender* was included as a dichotomous variable. To assess *education*, data regarding degrees earned were collected, which were used to divide respondents into three overall groups according to low, medium, and high

1 educational achievement. *Occupation* was coded as dummy variables for
the following groups: the employed, the retired, the disabled, househus-
3 bands or housewives, the unemployed, and students. Income was measured
using total family income over the last 12 months, assessed on an 8-point
5 scale ranging from “10,000 euros” to “80,000 euros or more.” *Marital sta-*
tus was coded as dummy variables of the following categories: single, mar-
7 ried, living together, divorced, and widow(er). Finally, *residency* was
included as a dichotomous variable (urban and rural).

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Data Analyses

13 Principal axis factoring (PAF) with varimax rotation was used to determine
the factor structure of the 20 outcome items. Costello and Osborne (2005)
15 suggest the use of the PAF method if the assumption of multivariate nor-
mality is violated. Here, the multivariate normality assumption will not be
17 met because the scales of the internet outcomes are composed of binary
items that can take only one of two values. An eight-factor structure repre-
19 senting the theoretical concepts identified a priori fitted the results best.
This solution accounted for 68% of the variance. A Kaiser-Meyer-Olkin
21 Measure of Sampling Adequacy (KMO) of .82 was obtained, which
exceeds the target of 0.7 suggested by Pett, Lackey, and Sullivan (2003).
23 This result indicates that factor analysis was an appropriate strategy for
analyzing this study’s data. Bartlett’s Test of Sphericity was also statisti-
25 cally significant, $\chi^2 = 3516.60$, $p < .001$. Tabachnick and Fidell (2001) sug-
gest .32 as a good rule of thumb for the minimum loading of an item. In
27 total, 17 items (all with factor loadings exceeding .40) were used to con-
struct the eight-factor structure (Table 2).

29 The factors were interpreted as follows: Factor 1 represents educational
outcomes, Factor 2 economic commerce outcomes, Factor 3 social out-
31 comes, Factor 4 political outcomes, Factor 5 institutional government out-
comes, Factor 6 institutional health outcomes, Factor 7 economic labor
33 outcomes, and Factor 8 relationship outcomes. For each factor, we created a
summary scale from the underlying dichotomous items. This summary
35 scale was then transposed to a dichotomous scale (i.e., if one of the questions
for each factor was answered with “Yes,” the factor value was 1. If all of the
37 questions were answered with “No,” the factor value was 0). Logistic regres-
sion analyses were performed for the newly created dichotomous scales to
39 determine the nature of the relationship between people’s socio-demographic
background and internet outcomes. The regression models included the

Table 2. Subscale Loadings of Internet Outcomes.

Subscale	Factors							
	1	2	3	4	5	6	7	8
Through the Internet, ...								
I found an educational course that suits me	.73							
I followed a course that I would not have been able to follow offline	.67							
I bought a product more cheaply than I could in the local store		.67						
I booked a cheaper vacation		.48						
I traded goods that I would not have sold otherwise		.40						
I have more contact with family and friends			.60					
It is easier for friends and family to get ahold of me			.50					
I made new friends whom I met later offline			.45					
I expressed my political opinion in online discussions				.59				
I joined a political association, union or party				.53				
I am better up-to-date with government information					.60			
I have better contact with the government					.54			
I determined the medical condition from which I was suffering						.56		
My life is healthier because of online medical information						.52		
I found a (better) job							.58	
I earn more money							.42	
I met a potential partner using online dating								.68
R^2	24%	10%	7%	6%	6%	5%	5%	5%
A		.64	.67					
r (significant at 0.01 level)	.57			.41	.41	.34	.37	

Note: Base - All respondents to the survey $N=1,149$.

independent variables of gender, age, education, employment status, income, household composition, residency (rural/urban), and amount of internet use.

RESULTS

To determine which group benefits most from internet use we investigated the relationship between the eight outcome factors and the independent variables through a logistic regression. The results (see Table 3) will be discussed by relating them to the five outcome fields.

Table 3. Logistic Regression Analyses for Internet Outcome Clusters.

Explanatory Variables	Economic Commerce Odds-ratio	Economic Labor Odds-ratio	Social Friends Odds-ratio	Social Dating Odds-ratio	Political Odds-ratio	Institutional Government Odds-ratio	Institutional Health Odds-ratio	Educational Odds-ratio
Constant	1.72	0.39	0.10**	0.10	0.15*	0.14	0.08***	0.13**
<i>Gender</i>								
Female	1.31	1.06	1.01	0.43***	0.65*	0.87	1.15	1.02
<i>Age (ref. 16–35)</i>								
36–45	2.25	0.57*	1.25	1.33	0.80	1.69*	0.78	0.50**
46–55	1.68	0.26***	1.13	0.51*	0.43**	1.78*	0.90	0.87
56–65	1.04	0.11***	0.85	0.57	0.28**	1.76*	0.60*	0.45**
66+	0.56	0.09***	1.07	0.12**	0.94	1.40	0.60	0.45
<i>Educational level (ref. low)</i>								
Medium	1.72*	1.04	0.95	1.68*	1.10	1.64**	1.69**	1.20
High	2.62**	1.38	0.94	1.86*	1.02	2.75***	1.24	2.48***
<i>Income (ref. below average)</i>								
Average	2.27**	1.11	1.32	1.77*	1.16	1.49*	1.66**	1.36
Above average	1.68	1.32	0.87	1.31	1.56	2.28***	1.41	1.60
<i>Marital status (ref. single)</i>								
Married	1.76	1.00	0.99	0.27***	1.27	1.05	0.83	0.61*
Living together	2.86*	0.93	2.21*	0.82	1.44	1.51	1.18	1.16
Divorced	2.33	1.30	3.14**	2.49**	1.65	2.03*	1.26	1.02
Widow(er)	0.99	1.58	1.04	4.41**	1.66	0.85	0.51	0.64
<i>Occupation (ref. employed)</i>								
Unemployed	1.97	1.78*	1.31	1.49	1.40	3.44**	2.68***	1.51
Disabled	0.54	0.33**	0.81	0.62	0.99	0.86	1.75*	0.51
Retired	0.94	0.40	1.34	1.00	0.79	1.50	1.47	0.60
Househusband/wife	0.67	0.22**	1.11	1.80	1.05	0.71	1.60	0.40*
Student	2.85	0.89	1.00	0.65	1.64	1.47	1.72	1.04

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Table 3. (Continued)

Explanatory Variables	Economic Commerce Odds-ratio	Economic Labor Odds-ratio	Social Friends Odds-ratio	Social Dating Odds-ratio	Political Odds-ratio	Institutional Government Odds-ratio	Institutional Health Odds-ratio	Educational Odds-ratio
<i>Residency (ref. rural)</i>								
Urban	1.02	1.17	0.98	0.75	0.82	1.35*	0.91	0.91
Frequency of internet use	2.04***	1.14	2.24***	1.23	1.18	1.35*	1.31*	1.26
<i>Nagelkerke R²</i>	.19	.29	.14	.22	.07	.16	.08	.18
<i>Chi-square</i>	101.86***	234.73***	87.93***	138.03***	44.38***	127.25***	64.06***	138.91***

Note: Base - All respondents to the survey $N=1,149$.

*Significant at the 5% level, **significant at the 1% level, ***significant at the 0.1% level.

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1 *Economic Outcomes*

3 Gender and residency were not related to either of the economic outcome
5 indicators, and only occupation was related to both commerce and labor
7 outcomes. The youngest group (i.e., those aged 16-35) was more likely
9 than the older groups to achieve labor outcomes. Individuals with medium
11 and high levels of education were more likely to experience economic out-
13 comes related to commerce than less educated individuals. People with an
15 average income were more likely to benefit from internet use than those
17 earning a below-average income. Students were more likely to achieve
commerce-related outcomes than employed people. People living together
in one household were more likely than singles to benefit in this respect. As
expected, unemployed people were more likely to benefit from internet use
in terms of labor (i.e., finding jobs) than employed people. Disabled per-
sons and househusbands/wives were less likely than employed individuals
to reap these benefits. Finally, frequency of internet use was positively
related to commerce.

19 *Social Outcomes*

21 Educational level, income, and occupation, three economic resources, did
23 not relate significantly to enjoying social benefits from internet use. Amount
25 of internet use was positively related. Furthermore, people living
27 with others and divorced individuals were more likely than singles to enjoy
29 social benefits. Outcomes related to dating were more likely among men
31 than women and less likely among people aged 46-55 and over 66, as com-
pared to those aged 16-35. Medium and higher-educated people were
more likely to achieve outcomes related to dating as compared to those
lower educated. Unsurprisingly, married people were less likely than singles
to benefit from online dating, while divorced and widow(er)s were much
more likely.

35 *Political Outcomes*

37 Educational level, income, marital status, occupation, and residency did not
39 relate significantly to political participation. However, men were more
likely to gain political outcomes than women. These outcomes were less
likely among people aged 46-65, as compared to people aged 16-35.

1 *Institutional Outcomes*

3 Gender was the only factor that was not related to any institutional out-
4 come. All the other factors, with the exception of marital status and resi-
5 dency, were related to both health and government services outcomes.

6 Achievement of institutional outcomes related to the public services of the
7 government was more likely among people aged 36–65, as compared to peo-
8 ple aged 16–35. With respect to healthcare-related institutional outcomes,
9 people aged 56–65 benefitted less than people aged 16–35. Finally, fre-
10 quency of internet use was positively related to both institutional outcomes.

11 Individuals with a medium or high level of education were more likely
12 than their less educated counterparts to obtain government outcomes such
13 as staying up-to-date with public information and maintaining better con-
14 tact with the government. People with a medium level of education bene-
15 fited more than people with a lower level of education. Furthermore,
16 people with an average or above average income were more likely to benefit
17 politically. Those with an average income benefitted more than those earn-
18 ing a below-average income. Divorced people seemed to achieve more poli-
19 tical outcomes than singles. Furthermore, it seems that unemployed people
20 benefitted more than employed people. Students and unemployed people
21 benefitted more than employed people from health outcomes. Finally, indi-
22 viduals from urban areas benefitted more than people living in rural areas.

23

25 *Educational Outcomes*

27 Gender and residency did not significantly relate to educational outcomes.

28 All the other factors did; individuals aged 36–45 and 56–65 were less likely
29 to benefit than people aged 16–35. Furthermore, individuals with a higher
30 level of education benefitted more. Married people benefitted less than sin-
31 gles, and househusband/wives benefitted less than employed people.

33

35 **DISCUSSION**

37 *Main Findings*

39 Digital divide research has demonstrated the important consequences of
first-level and second-level digital divides in a range of offline life realms.

1 As it has now expanded its purview to include third-level divides (Helsper,
2012), it is critical to understand how internet usage itself contributes to
3 particular offline outcomes across a range of life realms, particularly in
societal contexts with near-universal access. In this paper we explore how
5 sociodemographic and socioeconomic differences translate into inequalities
in the offline benefits gained through internet use. We asked whether tradi-
7 tional frameworks of digital exclusion that link disadvantages in economic,
social, institutional, political, and educational fields to lower levels of moti-
9 vational, material, skill, and usage access (van Dijk, 2005) can be applied
to inequalities in the outcomes achieved from internet use.

11 In the exploratory study presented in this paper, we examined a set of
eight specific, theoretically grounded categories of outcomes from internet
13 use in the Netherlands, a country with very high household internet penetra-
tion and a high level of educational attainment by citizens. We used self-
15 report measures of beneficial outcomes that were easily verifiable by an
external observer and, therefore, testable as factual outcomes in a person's
17 everyday life. Our analysis of the data from a representative population
survey suggests that the internet contributes to the lives of many Dutch
19 individuals in the economic, social, political, educational, and institutional
fields. Common economic outcomes achieved relate to commerce, such as
21 gaining price advantages. Social gains facilitated by internet use include
increased contact with family and friends and the creation of new friend-
23 ships online that continue offline. Furthermore, the internet facilitates insti-
tutional engagement by providing access to up-to-date public information.
25 Striking is the fact that over a quarter of the respondents claimed to live
healthier due to online information.

27 The results suggest that most of the digital divide indicators related to
skills and types of internet use contribute to similar levels of inequalities in
29 the categories of outcomes. We observed differences in economic outcomes
related to economic resources such as education and income. Differences in
31 social outcomes related to social resources such as marital status.
Institutional outcomes related to economic and social resources, and politi-
33 cal outcomes to educational resources. Furthermore, differences in educa-
tional outcomes related to economic, social, and educational resources.

35 To some extent the findings suggest that access to and use of the internet
might amplify existing inequalities above and beyond the intensity of inter-
37 net use. For example, when comparing outcomes by gender, the differences
that emerged concerned relationship and political outcomes. It is a com-
39 mon and consistent finding in political science research that in most coun-
tries women exhibit lower levels of political knowledge and participation

1 than men (Dolan, 2011). This difference in knowledge may influence the
political outcomes of online engagement. Nevertheless, the results from this
3 study suggest that, at least in the Netherlands, gender inequalities in rela-
tion to who benefits from internet use are overall small or inexistent.

5 Generational inequalities in outcomes were apparent across the life
realms. With respect to economic outcomes related to commerce, findings
7 in prior studies regarding age have been inconsistent; some research showed
that older internet users are more likely to buy products online, while other
9 research found that younger consumers are more likely than older consu-
mers to shop online (Coward & Goldsmith, 2007). In the political domain,
11 middle-aged people seem to benefit more than the youngest and oldest
groups. Other research has shown that people in their 40s are more politi-
13 cally engaged (e.g., Putnam, 2000; Rosenstone & Hansen, 2003). Perhaps
younger people have not developed traditional political habits and are
15 therefore much more open to being influenced by new political experiences
online (Quintelier & Vissers, 2008). Thus our findings suggest that this off-
17 line gap in resources is only partly reflected in inequalities in outcomes,
with the middle aged benefitting more than others but not the older genera-
19 tions which were assumed to have more political resources. That young
and middle-aged people seem to benefit more from the internet in the area
21 of healthcare is concerning since this is a domain in which people over 55
have relatively high needs. Overall, it seems that age has a negative influ-
23 ence on internet outcomes, suggesting that the young gain more from inter-
net use than the elderly. This does support the hypothesis that traditional
25 digital exclusion frameworks can be applied to outcomes as well, since the
elderly in the Netherlands tend to be socially and economically excluded
27 offline, and this seems to replicate itself to some extent in the outcomes
they achieve from internet use.

29 The results suggest that highly educated individuals benefit more from
the internet than those with less education, especially in the domains of
31 economic commerce, institutional government, and educational outcomes.
This again suggests an amplification of traditional inequalities in outcomes
33 similar to that proposed for inequalities in first- (i.e., access) and second-
level (i.e., skills and use) digital divides. Similar results can be observed
35 when investigating differences in income. Economic resources such as
income and occupation are especially strongly related to economic out-
37 comes and political and institutional outcomes rather than social and edu-
cational outcomes.

39 Our overall conclusion is that although more and more people might be
online, the internet has the most to offer to people with higher social status

1 for several important outcome domains. When information and services are
2 offered online (or replaced by online counterparts), the number of
3 potential outcomes the internet has to offer increases. If individuals with
4 higher social status are better at achieving offline benefits from digital
5 engagement than their lower-status counterparts, existing offline inequalities
6 could potentially be amplified. Conversely, the internet can affect an
7 individual's access to these types of capital, for example, it enables users to
8 obtain economic capital by facilitating access to commercial and labor
9 resources, social capital by extending physical networks to virtual ones, and
10 educational capital by enabling learning experiences. It is, therefore,
11 important to systematically conceptualize and measure different types of
12 outcomes and not group them all together or assume outcomes are
13 achieved automatically from use.

14 As previous investigations of access, skills, attitudes, and internet activities
15 emphasize, overcoming digital exclusion is a complex challenge. The
16 current study's results concerning occupational and marital status, both of
17 which affect specific outcome domains, highlight this complexity. Divorced
18 people seem to gain social benefits, inasmuch as they broadened their pools
19 of friends and potential romantic partners. Notably, widow(er)s benefit
20 socially by finding potential new partners through internet use. In contrast
21 to previous research, this study's results indicate that unemployed people
22 gain more benefits from internet use than employed people. Unemployed
23 individuals are often considered to have a low labor market status. However,
24 at least they have time to spend using the internet. Such contradictory
25 findings may be attributable to some weaknesses in the design of
26 the study, but this does not mean that this complexity should be ignored.
27 For example, the classification of resources used in this study did not look
28 at compound disadvantage (Helsper, 2012). Future research should not just
29 look at occupational status or social isolation or educational level but
30 should, for example, investigate how these interact by looking at differences
31 in outcomes for those who are unemployed and have higher levels of education
32 as compared to those who are unemployed and have lower levels of
33 education.

35

Limitations

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38 This study should be considered exploratory in the sense that it was a first
39 attempt at conceptualizing and measuring a wide range of outcomes for a
40 population study of the digital divide in a society where access is

1 near-universal. We attempted to broaden our focus to encompass multiple
2 life realms in which internet use may bear on offline outcomes. Our goal
3 was to establish a systematic framework to think about and operationalize
4 outcomes of internet use rather than to arrive at definitive measurement
5 tool. We proposed a new instrument, creating items for several outcomes
6 loosely related to fields as defined by van Dijk (2005). Although a factor
7 structure emerged that corresponded to eight fields, the outcome domains
8 were represented by only two or, in some cases, three items. Future
9 research should build upon these results, making it possible to develop
10 more robust classifications of internet-dependent outcomes. In these investigations,
11 we should also control for access, skills, or internet use. There is
12 little empirical evidence showing how skills and use translate into specific
13 outcomes.

14 Although our measures are designed with specificity and objectivity in
15 mind, they are still grounded in self-reports of offline outcomes, rather than
16 independently verifiable third-party information such as reports from
17 governmental entities. This is unavoidable in cohort-based survey research.
18 Future studies should validate outcome measures through observational
19 and longitudinal research backed up by qualitative in-depth research around
20 outcomes. The authors of this article recently undertook a study in
21 which a broad range of outcomes was validated in cognitive interviews
22 (Helsper, van Deursen, & Eynon, 2015). Field tests are time-consuming
23 and expensive but would be the best way of validating these self-report
24 measures.

25 Some of the findings in this study, such as that unemployed individuals
26 get more labor-related benefits, could be explained by the fact that
27 employed people do not use the internet for labor-related purposes in the
28 way it was defined here. That is, employed people do not look for jobs
29 online and therefore do not find a better job since they already have jobs.
30 Similarly people in a relationship probably do not use online dating sites
31 and therefore have less outcomes related to this than those who are not in
32 a relationship. Research currently in progress by the authors has taken up
33 some of these weaknesses (Helsper et al., 2015), using a slightly different
34 classification of offline resources. Nevertheless, the current study is a valuable
35 exploration on a nationally representative sample using established
36 theoretical frameworks for domains in which inequality manifests itself and
37 gives pointers for many future directions of research. The notion of digital
38 exclusion has become important in communications research, and this
39 study suggests that the internet has an impact in economic, social, political,
40 educational, and institutional domains.

NOTES

1
3 1. Digital inclusion research is rooted in discourses around digital divides which
refers to inequalities in access to and use of Information and Communication
5 Technologies (ICTs). Although much of the digital divide research is based on the
presupposition that more intensive usage is better, a number of studies have pin-
7 pointed ways in which unproductive kinds of usage can actually hinder the achieve-
ment of offline objectives.

9 2. Although several scholars argued that the internet may alter politics by invol-
ving individuals from social groups previously less engaged in political participation
(e.g., Willis & Tranter, 2006), other investigations suggest that the internet does not
11 particularly draw more people into the political process from disadvantaged groups,
as technical opportunities cannot compensate for a lack of political engagement by
13 citizens (Brundidge & Rice, 2008; Hindman, 2010). Note that the assumption of a
lack of motivation is considered unnecessary since most citizens fall into categories
15 along a continuum from motivated to apathetic (Chadwick, 2013), and empirically
disputed (Delli Carpini, Cook, & Jacobs, 2004).

17 3. In the ideal case, digital access to public entities could provide for round-the-
clock government, open public access to information, continuously updated infor-
19 mation (e.g., Reddick, 2005). Similarly, providing online health information and
services has many potential benefits, including saving time and effort, easier access,
21 getting help when feeling embarrassed or stigmatized, lifestyles, early detection of
potential medical problems, collaborative treatment of illnesses, and access to treat-
ments that a local provider may not have access to (e.g., Griffiths, Lindenmeyer,
Powell, Lowe, & Thorogood, 2006).

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