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The Impact of Social Capital on Organ Donation: Evidence from the Netherlands

Hans Schmeets^{1,2} · Floris Peters²

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Abstract

The Netherlands faces a shortage of organ donors. Figures from Statistics Netherlands show that of Dutch residents aged 12 and over, only one in four is a registered organ donor. In July 2020, a new law has changed the system from ‘opt-in’ to ‘opt-out’, with the aim of increasing the number of registered donors. Under the new system, everyone is in principle automatically registered as a donor unless they decline permission for their organs to be used. But what are the drivers of organ donation? This question is particularly interesting in the Netherlands, not only because of the new law, but also in light of the diversity in social capital and religious involvement which may play an important role in the decision to donate. This paper explores the impact of social capital on organ donation. It uses a unique database which contains information on organ donation for the whole Dutch population over 12, enriched by the Survey on Social Cohesion and Wellbeing covering the period 2012–2017 (N = 45,645). Results demonstrate a linear increase in registered organ donors as individual social capital, measured by a composite index based on 17 participation and trust indicators, increases. The results further show that religion has a detrimental impact on organ donation. The paper also discusses the effects of the separate social capital indicators on organ donation and their policy implications.

Keywords Organ donation · Social capital · Religion · The Netherlands

1 Introduction

The Netherlands faces a shortage of organ donors. At the end of 2018, 1,195 people were on the waiting list for an organ, and this number has increased by 151 since 2014 (Nederlandse Transplantatie Stichting, 2019).¹ Figures from Statistics Netherlands show that currently only 42% of the Dutch population aged 12 years and over is listed in the official

¹ See: <https://www.transplantatiestichting.nl/donatie-transplantatie/wachttijst-voor-orgaantransplantatie>.

✉ Hans Schmeets
hshs@cbs.nl; h.schmeets@maastrichtuniversity.nl

¹ Department of Social-Economic and Spatial Statistics, Statistics Netherlands, CBS-weg 11, 6412 EX Heerlen, The Netherlands

² Faculty of Arts and Social Sciences, Maastricht University, Grote Gracht 90-92, 6211 SX Maastricht, The Netherlands

government Donor Register, which records whether or not a person is willing to donate an organ, and 24% of Dutch residents are potential organ donors. These figures have hardly changed since 2014.² A new law, which will change the Dutch organ donation system from 'opt-in' to 'yes unless' (also known as 'deemed consent'), aims to reduce the long waiting list for organs.³ The law came into effect in July 2020. Until then, the old 'opt-in' law applies, which means that if a person is not registered with the Donor Register, his or her relatives decide whether or not the deceased individual will donate (which in practice often results in no donation). The Ministry of Health, Welfare and Sport has started a campaign to inform the public about the new system.

This paper aims to investigate the impact of social capital on organ donation. Organ donation relates to other forms of social connectedness, such as donating to charity (Bekkers & Schuyt, 2008; Bekkers, 2003, 2006) and blood donation (Piersma et al., 2019). However, unlike donating to charity, being an organ donor implies that you remain ignorant of whom you eventually might help. Indeed, since the offer of an organ is not directed towards a certain institution, group or individual, but rather towards society as a whole, there is no reason to become an organ donor if you feel no connection to society. For this reason, and in line with other studies (Callendar et al., 2016; Ladin et al., 2015; Sharp & Randhawa, 2012, 2016), we take the position that organ donation may be difficult to facilitate in a society with low levels of social capital.

In the literature, organ donation is, like voting behavior, treated as a form of collective action (e.g. Healy, 2004, 2005; Ladin et al., 2015) or as a form of prosocial behavior (e.g. Bekkers, 2006; Merz et al., 2017), like volunteer work (Piersma et al., 2019). Organ donation is a collective action problem because individual incentives are low. From this perspective, social capital is a prerequisite for organ donation. Moreover, higher levels of social capital may improve the sharing of information on organ donation through social networks with shared values, and as such, foster organ donation as a form of collective action.

The current opt-in system in the Netherlands creates a unique opportunity to distinguish two aspects of pro-sociality: whether citizens register a choice with respect to organ donation; and if so, which one. The decision to sign up to the Donor Register is, like many acts of volunteering (see Bekkers & Schuyt, 2008), a decision to comply with a request. The actual choice that one registers is much more dependent on beliefs, such as beliefs in the expertise and ability of doctors, the efficiency of the transplantation system, and religious beliefs about the preservation of the body after death (Vorstius Kruijf et al., 2018). The main barriers to enrolling in the Donor Register are the difficulties people face in registering and the doubts they have about their own ability to cope with the consequences of agreeing to be a donor, especially concerns about what others will think of them.

There are five options when registering in the Donor Register (percentages of the total population from 2019 are in brackets): (1) permission for organ donation given without restriction (19.3%); (2) permission given but with exclusion of specific organs (5.2%); (3) no permission given (12.9%); (4) decision left to partner or relatives (4.1%); (5) a specified person decides (0.7%). This leaves a sixth category of individuals who are not registered (57.8%).

² See: <http://opendata.cbs.nl/statline/#/CBS/nl/dataset/82814NED/table?ts=1564745699901>.

³ See: <https://www.rijksoverheid.nl/onderwerpen/orgaandonatie-en-weefseldonatie/vraag-en-antwoord/wat-houdt-de-nieuwe-donorwet-adr-in>.

For those willing to donate an organ, option 1 is clearly the most common choice, followed by option 2. Options 4 and 5 are similar to the non-registered category in the sense that whether the person has a desire to donate or not remains ambiguous. Option 3, a refusal to donate, is basically the only one in which a person responds with a clear no. With these considerations in mind, we argue that the positive impact of social capital on organ donation will be strongest for option 1, followed by option 2, and then options 4 and 5. Social capital will have a detrimental effect on organ donation in the case of option 3 compared to the non-registered group.

This leads us to the following three hypotheses:

(H1) The more individual social capital, the more people will sign up to the Donor Register (options 1–5 vs. 6).

(H2) The more individual social capital, the more people will register as potential organ donors (options 1–2 vs. 3–6).

(H3) The more individual social capital, the less people will register a refusal to donate (option 3 vs. 6).

We consider individuals within the community to be the owners or possessors of social capital rather than the community as a whole (Gannon & Roberts, 2018; Inkeles, 2001). To explore whether our hypotheses hold, we adopt the measure of individual social capital introduced by Statistics Netherlands (Van Beuningen & Schmeets, 2013). This measure is based on a composite index that includes nine indicators of a person's participation in society and eight indicators of trust (see Annex 1). We will also control for other mechanisms that may correlate with registration as an organ donor. The main predictor of organ donation is religious involvement (see also Bolt et al., 2011). Based on the Dutch Labor Force Survey 2010–2015, Schmeets and Peters (2016) demonstrated that people with a religious affiliation, and in particular Muslims, are less likely to register as organ donors than people who do not have a religious affiliation. This is a puzzling finding as religion is often considered to foster social capital [for the United States and Canada, see Putnam and Campbell (2012), Smidt (2003), Wuthnow (2002); for the Netherlands, see Bekkers and Schuyt (2008), De Hart (2014); for various cross-national studies, see Lam (2006) and Ruiter and de Graaf (2006)].

In the Netherlands, there is a clear religious divide in both single and composite indicators of social cohesion (Van Beuningen and Schmeets, 2014, 2015). High levels of social cohesion are found among Protestants and people who frequently attend religious services, and low levels among Muslims and the non-religious. Given the relationship religion has with organ donation and social capital, it is important that we include religion, along with some social-demographic background characteristics, as a control in our models.

Our aim, then, is to advance our understanding of social capital as a driver of organ donation. More specifically, our contribution is fourfold. We will (1) explore a specific indicator of connectedness with society—organ donation—that has not yet been studied in the Netherlands; (2) make a detailed assessment of the impact of social capital on organ donation using a composite index that incorporates underlying trust and participation indicators; (3) explore other possible determinants of organ donation, in particular religious involvement within a country characterised by a wide variety of religious

affiliations; and (4) use a rich and unique dataset based on a register of organ donation covering the entire population of the Netherlands aged 12 years and above, linked to data on almost 46,000 individuals aged 15 and over from the Dutch Survey on Social Cohesion and Wellbeing for the 2012–2017 time span.

2 Social Capital: Concept and Measurement

Social capital refers to social networks and trust, and research on this concept often draws on the work of Bourdieu (1983), Coleman (1988) and Putnam (2000). Many definitions of social capital exist in the literature (for an overview see Neira et al., 2009), and social capital is primarily understood as a community property. Putnam (2000, p. 19) defines social capital as “connections among individual social networks and the norms of reciprocity and trustworthiness that arise from them”. This definition comes very close to that adopted by the OECD: “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (Coté & Healy, 2001, p. 41; see also Keeley, 2007, pp. 102–105). The OECD definition has been widely approved by various national statistical institutes (Jeannotte, 2000).

Social capital is related to the concept of social cohesion. Often, social capital is considered to be a building block of social cohesion (Berger-Schmitt, 2002), or a dimension of it next to factors such as shared values, social control and reduction of welfare inequality (Beauvais & Jenson, 2002). Others see social cohesion as a consequence of social capital (Coté & Healy, 2001; Jeannotte, 2000). Some scholars discern different forms of social capital: bridging social capital refers to the networks between subpopulations, while bonding social capital relates to social networks within groups (Putnam, 2000, pp. 22–24). Both social capital forms are essential to society: social capital is the lubricant that promotes both prosperity and well-being (Hudson, 2006; Iyver et al., 2005; Knack & Keefer, 1997; Neira et al., 2009; Poortinga, 2006; Portela et al., 2013; Putnam, 1995a, 2000; Stiglitz et al., 2009). Similarly, there is a wide range of operationalizations of social capital (Iisakka, 2006; Lochner et al., 1999; Nieminen et al., 2008; Ponthieux, 2004; Portes, 1998). However, while theories of social capital explicitly recognize it as a multi-dimensional concept, most studies only employ a limited number of indicators of social capital, e.g. volunteering (Alesina & La Ferrara, 2000) and generalized trust (Rocco & Fumageli, 2014).

Some studies of social capital are based on micro (individual) data (e.g. Guillen et al., 2011; Paxton, 1999), whereas most research reports national social capital averages. A typical example is Putnam’s study ‘Bowling alone’ in which unweighted scores on 14 indicators, such as the percentage of volunteers and average score on social trust, are used to define the social capital index (Putnam, 2000, p. 291). Other research has included aggregated weighted composite scores based on separate social capital indicators (e.g. Hooghe & Vanhoutte, 2011; Nieminen et al., 2008).

3 Social Capital in the Netherlands

In the last 20 years, Dutch society has shown little political stability (Tilly et al., 2016). Since 2002, there have been six parliamentary elections. These have been accompanied by strong political shifts, such as the rise of new parties and political movements, including the anti-Islam and anti-EU parties, and parties for animals, the elderly and immigrants.

These political shifts suggest that the interests of specific populations are increasingly represented in the political arena. They might also be seen as a manifestation of contradictions and potential tensions in Dutch society. Indeed, in 2016, 82% of the adult population in the Netherlands perceived tensions between the young and the elderly, the lower and higher educated, the poor and the rich, between religious groups, and between natives and immigrants (Schmeets & De Witt, 2017).

There is some suggestion that these tensions reflect a decline in social capital. The Netherlands Institute for Social Research (SCP) predicted that due to a lack of social capital, tensions between various subpopulations will increase in the next 35 years (SCP, 2016, p. 2). ‘Bridging social capital’, i.e. links that stretch beyond a shared sense of identity (see also Keeley, 2007), would be needed to face the challenges brought by the increased tensions (Verweij & Den Ridder, 2016). And as in the United States (Putnam, 1995a, 1995b), scholars suggest that social capital is also eroding in the Netherlands and that the country has changed from a high trust to a low trust society (Fukuyama, 2010).

Contrary to an alleged decline in social capital, however, there is little empirical evidence for downward trends. Indeed, there is no evidence at all of a decrease in participation rates, and there is evidence of an increase in generalised trust as well as trust in (political) institutions (Schmeets and Te Riele, 2014; CBS, 2019a). We do, however, observe discrepancies between subpopulations in scores on individual social capital. In particular, the less educated, the elderly (aged 65+), and (non-western) immigrants score lower than the rest of the population (Van Beuningen & Schmeets, 2015).

Under the assumption that social capital matters for donor registration, these patterns should be reflected in the proportion of individuals who give permission for organ donation. As mentioned, we expect social capital to play a crucial role in deliberations over organ donation because—unlike other forms of giving, such as charity—one cannot designate the recipient. Without any sense of connection to society, there would be no reason to become an organ donor.

4 Controls: Religious Involvement and Background Characteristics

Often referring to the classic work of Durkheim (1912), scholars have observed that religious involvement has a positive impact on social capital in the Netherlands (Bekkers & Schuyt, 2008; De Hart, 2014), the United States (Putnam & Campbell, 2012; Smidt, 2003; Wuthnow, 2002), Iran (Akbari, 2013) as well as in various cross-national studies (e.g.; Kaasa, 2013; Lam, 2006; Ruiter & de Graaf, 2006). For the Netherlands specifically, high levels of social capital have been found among Protestants and people who frequently attend church, and low levels among Muslims and those without a religious affiliation (Van Beuningen & Schmeets, 2013; De Hart, 2014; Schmeets, 2019; Schmeets & Te Riele, 2014).

From this social capital perspective, we would expect to find higher numbers of organ donors among the more frequent attenders of religious services and among the Protestant denominations, and lower numbers among Muslims. But from a different perspective, we might expect religion to have a negative impact on organ donation. Although most of the major religions worldwide encourage organ donation (Abdeldayem et al., 2016; Blake, 2015; Bruzzone, 2008; Oliver et al., 2012), many arguments against organ donation have a religious origin (Abdeldayem et al., 2016; Alam, 2007; Job & Antony, 2018; Tarhan et al., 2015; Wakefield et al., 2010, 2011). The skepticism is often related to the processes

surrounding death, as well as to notions of brain death and the sanctity of the body, which are important deterrents to becoming an organ donor.

Religion is an interesting research topic in a country such as the Netherlands. Religious involvement has declined with ongoing secularization over recent decades (Aarts, 2010; Kregting et al., 2019). In 1980, 74% of adults belonged to a religious group, but this dropped to 60% in 2000 and to 50% in 2017 (CBS, 2019b). Regular attendance of religious services declined from 38 to 16% in that period (CBS, 2019c). But the religious landscape in the Netherlands is diverse. In 2017, one in four was Roman-Catholic. One in six was Protestant: seven% were Dutch Reformed, 3% were Calvinists, and 6% belonged to the Protestant Church in the Netherlands (PKN), formed in 2004 as a new, integrated church of the Dutch Reformed, Calvinists and Lutherans. In addition, 5% of the population were Muslim, and 6% belonged to another denomination or religious group, including Jews, Hindus, Buddhists and Orthodox Protestants. There was strong variation in church attendance between the denominations. Protestants showed a much higher attendance level than Roman Catholics: two in three Calvinists, half of the Dutch Protestants and three in ten Dutch Reformed attended a religious service at least once per month, while only 18% of Roman Catholics attended a service on such a regular basis. Muslims fell in between: four in ten Muslims attended a service in a mosque at least once per month.

Besides religious involvement, a range of studies link various other socio-economic and demographic characteristics to the propensity to become an organ donor. Studies show that the elderly are less willing to donate organs than their younger counterparts (Nijkamp et al., 2008; Wakefield et al., 2010). The underlying reason for this is the perception among the elderly that their organs are not usable (Friele et al., 2003; Nijkamp et al., 2008; Wakefield et al., 2010). There is no clear gender pattern in organ donation. According to Cox (2005), women have more doubts about organ donation than men, as they fear that their body will be damaged, but they are also more likely than men to feel that saving a life is important. Other studies show that women are more often donors than recipients (for Italy: Puoti et al., 2016) and are more willing to donate their organs than men (for the United States, see Thompson et al., 2003; for Australia, Balbin, 2016; for the Netherlands, Merz et al., 2017), while studies in India (Poreddi et al., 2017) and Pakistan (Ashraf et al., 2005) show the opposite. Highly educated individuals are more positive toward organ donation than those with lower levels of education (Cox, 2005; Davis & Randhawa, 2006; Nijkamp et al., 2008; Wakefield et al., 2010). Immigrants (in particular from non-western countries) are more reluctant to register as organ donors than the native born (CBS, 2019c).

5 Data and Method

5.1 Organ Donation

Statistics Netherlands has access to data on organ donation from 2014 onwards. The data are drawn from the Donor Register, which is maintained by an agency within the Ministry of Health, Welfare and Sport. In the Netherlands, any individual aged 12 or above who is registered in a Dutch municipality is eligible to register his or her choice regarding the transplantation of organs. The dataset we have access to thus contains individual-level information on the entire Dutch population aged 12 and over ($N = 14,610,125$).

There are five options in the Donor Register from which a person may select: (1) 'I give permission for the transplantation of my organs after passing away'; (2) 'I give permission

for the transplantation of my organs after passing away, but I exclude specific organs from transplantation'; (3) 'I do not give permission for the transplantation of my organs after passing away'; (4) 'I leave the decision to my relatives or potential partner. They will decide whether my organs will be transplanted or not after I pass away'; (5) 'I leave the decision to a specific individual. He or she will decide whether my organs will be transplanted or not after I pass away. If the given individual is unavailable at the time of death, the decision will be left to my relatives'. Because we focus on the relationship between individual social capital and the individual giving of permission for the transplantation of organs, in most analyses in this paper we dichotomize between being a donor and not being a donor. We thus aggregate options 1 and 2 into the category 'donor', and options 3–5, as well as all unregistered individuals, into the category 'not donor'. In addition, we explore the distinction between registered (No, Yes) and the specific registration options.

5.2 Data Linkage

To analyze the relationship between donor registration and social capital, as well as other relevant personal characteristics, religious involvement in particular, we link information from the Donor Register to the Dutch Survey on Social Cohesion and Wellbeing from Statistics Netherlands. This survey was undertaken in the period 2012–2017 and covers 45,695 individuals aged 15 and above. The data were collected in a sequential mixed-mode design. Based on a random sample the selected persons were invited to participate in the survey by internet. After two reminders, the non-respondents were approached for a telephone or a face-to-face interview at home. Response rates varied from 65 to 70% in the 2012–2017 period. In order to reduce possible non-response bias, data were reweighted based on population characteristics.

The survey contains 17 social capital indicators of which nine measure various aspects of participation and eight of trust (see Fig. 1 and Appendix 1). Furthermore, it contains a question on whether an individual considers him or herself part of a religious denomination. This question offers the following answer categories: (1) no religion; (2) Roman Catholic; (3) Reformed; (4) Calvinist; (5) Dutch Protestant; (6) Islam; (7) Hinduism; (8) Buddhism; (9) Judaism; (10) other. Due to the limited number of Hindus, Buddhists and Jews in the Netherlands, we aggregate these groups into the category 'other'. The extent to which individuals practice their beliefs can be discerned from a question about how often they attend religious services, which provides the following answer categories: (1) at least once per week; (2) 2–3 times per month; (3) once per month; (4) less than once per month; (5) rarely or never. Besides data on religion, we use data on level of education from the survey, as well as data on gender, age, marital status, and migration background from municipal population registers. Individuals in the sample are weighted to the composition of the population.

5.3 Social Capital

Our analysis uses the social cohesion framework developed at Statistics Netherlands in 2008. This framework measures social capital along two key dimensions—participation and trust—but, partly based on Putnam's social capital index (Putnam, 2000), it integrates them into a single index (Van Beuningen & Schmeets, 2013; see Fig. 1 and Appendix 1). For both the participation and trust dimension, the model makes distinctions at the social (micro), organizational (meso) and political (macro) level (see also Halpern, 2005; Sharp

Fig. 1 Structural model of the social capital index

& Randhawa, 2012). On the participation dimension, the social level captures contacts with family, friends and neighbors, and help provided to other people. The organizational level covers volunteering, activities in associations, and paid work. And the political level includes voting in parliamentary elections and participation in other political actions. The trust dimension contains information on trust in other people (social level); trust in the army, police, lawyers, civil servants, media and large companies (organizational level); and trust in parliament (political level). The model thus contains six subdimensions, three for participation and trust each, and a total of 17 different indicators (see Table 9 for descriptive statistics). Missing data were imputed by means.

The formative model was identified by Multiple Table Analysis, also called a hierarchical components model (Lohmöller, 1989; Tenenhaus, 2004), and estimated in R using the PLSPM package. A path weighting scheme was used so weights can be interpreted as regression coefficients. Weights are calculated from the first-order on the two second-order constructs—participation and trust. These, in turn, contribute independently to the social capital index.

The model was used in the Survey on Social Cohesion and Wellbeing for the years 2012–2017. In Table 1, the first and second order weights, as well as the Goodness of Fit are displayed. The varies from 0.47 to 0.50, all higher than the threshold value of 0.36 for a good fit (Wetzels et al., 2009), indicating that the models represents the data appropriately.

Table 1 First and second order weights and goodness of fit social capital composite index. *Source:* Statistics Netherlands Survey Social Cohesion and Wellbeing, 2012–2017

	2012	2013	2014	2015	2016	2017
Participation	0.53	0.54	0.52	0.52	0.51	0.51
Social participation (micro)	0.48	0.47	0.26	0.2	0.21	0.32
Organizational participation (meso)	0.56	0.62	0.65	0.69	0.66	0.61
Political participation (macro)	0.45	0.39	0.52	0.53	0.54	0.55
Trust	0.71	0.72	0.72	0.73	0.72	0.73
Social trust (micro)	0.44	0.43	0.72	0.78	0.78	0.77
Organizational trust (meso)	0.61	0.62	0.39	0.23	0.15	0.21
Political trust (macro)	0.24	0.25	0.18	0.26	0.33	0.27
Goodness of fit	0.476	0.473	0.497	0.498	0.495	0.495

Table 2 Donor register (12+), 2014 and 2019 and linked to Survey social cohesion and wellbeing (15+), 2012–2017. *Source:* Statistics Netherlands

	2014		2019		2012–2017	
	N	%	N	%	N	%
Permission	2,796,300	19.2	2,917,400	19.3	10,940	23.9
Permission with restrictions	686,800	4.7	781,900	5.2	2826	6.2
No permission	1,582,200	10.8	1,949,600	12.9	5520	12.1
Relatives decide	600,800	4.1	624,400	4.1	2183	4.8
Given person decides	102,400	0.7	100,700	0.7	352	0.1
Not registered	8,822,400	60.5	8,760,800	57.9	23,875	52.2
Total	14,591,000	100.0	15,134,900	100.0	45,695	100.0

The weights from the second-order constructs (participation and trust) suggest that trust contributes more to social capital than participation. The weights are highly similar in the 2012–2017 time span, ranging from 0.51 to 0.54 for participation and 0.71 to 0.73 for trust. The table also reveals that all six subdimensions (first-order constructs) are relevant and contribute to the social capital index for the Netherlands. The three weights for the subdimensions on participation differ, indicating that organizational participation contributes most to overall (second order) participation, followed by political participation and social participation. For trust, the results demonstrate that organizational trust, followed by social trust, contributed most to the trust score in 2012 and 2013, though the picture for 2014–17 is a little different.

6 Results

Of individuals resident in a Dutch municipality aged 12 years or above, four in ten were registered with the Donor Register in 2014. This proportion slightly increased to 42% in 2019 due to more people choosing the ‘no permission’ option (Table 2). In the whole period, the proportion of registered organ donors remained 24%.⁴ When focusing on individuals who also participated in the Survey on Social Cohesion and Wellbeing between 2012 and 2017 (Table 2), the proportion of people in the Donor Register increases to 47.8% of the Dutch population aged 15 years and older. Of this population, 30.1% gave permission for organ donation, though 6.2% of these excluded certain organs from transplantation. Slightly more than 12% explicitly gave no permission for donation, and 5.6% left the decision to relatives or a specific individual.

The mean value of the social capital composite index score is 0.0 and the standard deviation is 1.0 (range from -3.9 to $+4.1$). Based on these scores, we constructed deciles. In Table 3, the results for ten social capital groups (in deciles) are displayed, showing that an individual’s social capital is clearly related to registration with the Donor Register: the higher the level of social capital, the greater the willingness to register. Furthermore, more social capital goes together with a greater willingness to donate organs, both without and with restrictions, and, to a lesser extent, with a greater willingness to let one’s partner, relatives or a given person decide. A negative relation exists between high social capital and registering a refusal to donate. Note that all these relationships are linear.

In Table 4, we look at donor registration for different groups, dichotomizing the categories of Table 2 by aggregating the two permission options into the category ‘donor’ and all other options (both registered and non-registered) into the category ‘not donor’. The results reveal that an individual’s social capital is clearly related to registered organ donation: more social capital implies a greater willingness to be a potential organ donor. This pattern is linear, from 17.6% for the lowest percentile to 48.1% for the highest percentile. Furthermore, the results also reveal clear discrepancies in the willingness to donate one’s organs between individuals who are religious and those who are not, as well as between those who practice their religion to varying degrees. Individuals who are not religious more often register as donors (37%) than those belonging to a religious group, and especially than those who attend religious services at least once a month. We also observe differences between the religious affiliations. The Roman Catholics and the Dutch Protestants show the highest proportions of donors. For Catholics, 31% of those who do not attend religious services are donors, while 25% of those who do go to church are willing to donate organs. For Dutch Protestants, the corresponding figures are 29 and 28%; for Calvinists, 25 and 23%; for the Reformed, 25 and 18%; and for those with an ‘other’ religious affiliation, 19 and 14%. Hardly any Muslims (3 and 1%) give permission to use their organs. We also observe interesting results based on the other control variables. Women are more willing to register as organ donors than men. One in three people in the age categories between 25 and 65 is a potential organ donor, while both the young and elderly show less willingness to donate organs. We observe lower numbers of registered organ donors among widowed people compared to married, divorced or single people. In addition, based on the descriptive statistics, education and migration background matter for organ donation. A higher level of education implies people are more likely to register as organ donors. And more potential

⁴ See: <http://opendata.cbs.nl/statline/#/CBS/nl/dataset/82814NED/table?ts=1564745699901>.

Table 3 Organ donor registration by social capital composite score (in deciles). *Source:* Statistics Netherlands

	Social capital (in deciles)	Permission (%)	Permission with restrictions (%)	No permission (%)	Relatives or given person decides (%)	Not registered (%)	Total (%)
1	– 3.900 to – 1.415	14.4	3.1	18.4	4.2	59.8	100
2	– 1.414 to – 0.950	15.5	3.6	16.3	4.2	60.5	100
3	– 0.950 to – 0.583	17.3	4.4	14.0	4.7	59.5	100
4	– 0.583 to – 0.259	18.0	5.4	13.7	5.2	57.7	100
5	– 0.259 to 0.055	21.6	5.3	13.1	5.7	54.3	100
6	0.055 to 0.340	24.0	6.3	12.3	5.6	51.9	100
7	0.340 to 0.615	27.0	6.9	9.6	5.5	51.0	100
8	0.615 to 0.895	30.8	7.3	9.3	6.2	46.4	100
9	0.895 to 1.222	33.6	9.5	8.0	6.8	42.1	100
10	0.122 to 4.100	38.3	9.8	6.7	7.7	37.5	100
	Total	24.0	6.2	12.1	5.6	52.1	100

Table 4 Personal characteristics by donor registration (permission) in percentages and N in sample survey social cohesion and wellbeing, 2012–2017. *Source:* Statistics Netherlands

		N	% donor	N donor
Social capital index score				
1 (lowest percentile)		4278	17.6	751
2.00		4277	19.1	815
3.00		4277	21.8	931
4.00		4277	23.4	1001
5.00		4277	26.9	1150
6.00		4277	30.3	1297
7.00		4277	33.8	1448
8.00		4278	38.1	1630
9.00		4277	43.0	1841
10 (highest percentile)		4276	48.1	2057
Religion * religious services (Yes/No)				
No religion		20,824	37.0	7703
Roman catholic	Yes	1741	24.7	430
Roman catholic	No	8881	31.1	2782
Reformed	Yes	829	17.7	146
Reformed	No	2147	24.5	526
Calvinist	Yes	950	22.5	214
Calvinist	No	469	25.0	117
Dutch protestants	Yes	1415	28.8	407
Dutch protestants	No	1026	29.6	304
Islam	Yes	814	0.7	6
Islam	No	1135	2.9	33
Other denomination	Yes	1234	14.2	176
Other denomination	No	1279	18.7	240
Gender				
Male		22,533	27.2	6121
Female		23,162	33.0	7645
Age				
15–24		6685	24.8	1661
25–34		6750	33.2	2244
35–44		7201	33.9	2438
45–54		8353	33.2	2770
55–64		7209	32.7	2356
65–74		5599	27.5	1538
75+		3898	19.5	759
Marital status				
Married		22,343	30.7	6851
Divorced		4068	32.1	1306
Widowed		2635	22.3	587
Single		16,632	30.2	5017
Education				
Elementary		4454	15.3	681
Low		9423	22.1	2086

Table 4 (continued)

	N	% donor	N donor
Middle	18,142	30.7	5563
High	8373	40.9	3424
Highest	4392	43.2	1899
Migration background			
Dutch native	36,045	33.8	12,179
Western migrant	4571	26.2	1199
Non-western migrant	5074	7.6	388
Total	45,695	30.1	13,766

organ donors are found among those with a Dutch background than migrants, in particular migrants with a non-western background.

However, on the basis of these statistics, no firm conclusions can be drawn regarding the impact of social capital, religious involvement and the other variables on donor registration given the interdependence of relevant characteristics. To analyze the data in greater detail, we perform logistic regression (Table 5). We gradually add variables to the model in order to illustrate how characteristics are interconnected, and to reveal their unique relevance to donor registration.

Model 1 in the table shows a pattern that is strongly reminiscent of the descriptive statistics. We observe a gradual increase in organ donation as individuals' social capital increases. This tells us that people who are more involved in society, i.e. have higher participation and trust rates, are also more willing to donate organs to an unknown person. In model 2, religious involvement is added as a control. We observe that the impact of an individual's social capital remains basically the same. Religious involvement does contribute separately to our understanding of why people become registered organ donors. People with no religious affiliation are more likely to be organ donors than people in all twelve religious categories. We find again that among all the religious denominations, attendance of religious services matters: those who attend services at least once a month are less willing to be organ donors. Moreover, there are clear differences between the religious affiliations. Roman Catholics are 41 and 17% less likely to be donors compared to the non-religious (odds ratio = 0.59 and 0.83), but this discrepancy is more pronounced for the Protestant denominations, the Reformed and Calvinist Protestants in particular. In line with the descriptive statistics, Muslims are highly unlikely to be organ donors.

In Model 3, gender, age, marital status, education and migration background are included. Although when controlling for these characteristics, the differences between the social capital categories decreases, there remains strong evidence that an individual's social capital increases the propensity to become a registered organ donor. The chance of a person who possesses very high social capital (highest percentile) being a registered organ donor is almost 3 times higher than a person with low social capital (lowest percentile), all else constant. Note that the impact remains linear: each added portion of social capital increases the chance of being a potential organ donor. The adjustments concerning the impact of religious involvement due to the controls are limited. The likelihood of Roman Catholics who regularly attend religious services as well as of Muslims becoming donors increases slightly. In general, however, the relevance of religion remains highly stable.

The other controls also have an independent effect on the probability of being an organ donor. Women are 47% more likely to be donors than men, all else constant. Age shows

Table 5 Regression organ donation by social capital (model 1) controlled for religious involvement (model 2) and background characteristics (model 3)

	Model 1				Model 2				Model 3			
	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)
Social capital index score												
1 (lowest percentile) (ref.)												
2.00	0.100	0.056		1.106	0.141	0.059	*	1.151	0.048	0.061		1.049
3.00	0.268	0.055	***	1.307	0.324	0.058	***	1.382	0.191	0.060	**	1.211
4.00	0.361	0.055	***	1.434	0.425	0.058	***	1.529	0.254	0.059	***	1.289
5.00	0.547	0.053	***	1.727	0.585	0.056	***	1.795	0.409	0.058	***	1.505
6.00	0.715	0.053	***	2.044	0.734	0.055	***	2.084	0.507	0.058	***	1.661
7.00	0.877	0.052	***	2.403	0.869	0.055	***	2.384	0.603	0.057	***	1.827
8.00	1.062	0.052	***	2.892	1.052	0.054	***	2.861	0.743	0.057	***	2.102
9.00	1.267	0.051	***	3.548	1.259	0.054	***	3.520	0.909	0.057	***	2.481
10 (highest percentile)	1.471	0.051	***	4.351	1.450	0.053	***	4.260	1.054	0.058	***	2.869
Religion*religious services (Yes/No)												
No religion (ref.)												
Roman catholic	Yes				-0.532	0.061	***	0.588	-0.332	0.064	***	0.718
Roman catholic	No				-0.192	0.029	***	0.826	-0.170	0.030	***	0.845
Reformed	Yes				-1.075	0.097	***	0.342	-1.048	0.100	***	0.351
Reformed	No				-0.505	0.056	***	0.604	-0.503	0.058	***	0.606
Calvinist	Yes				-0.794	0.082	***	0.453	-0.788	0.084	***	0.456
Calvinist	No				-0.510	0.115	***	0.601	-0.493	0.116	***	0.611
Dutch protestants	Yes				-0.563	0.064	***	0.570	-0.523	0.066	***	0.593
Dutch protestants	No				-0.413	0.075	***	0.662	-0.403	0.076	***	0.669
Islam	Yes				-4.210	0.426	***	0.015	-2.951	0.430	***	0.053
Islam	No				-2.745	0.181	***	0.065	-1.924	0.200	***	0.147
Other religion	Yes				-1.282	0.087	***	0.278	-1.151	0.089	***	0.317
Other religion	No				-0.842	0.077	***	0.432	-0.545	0.081	***	0.581

Table 5 (continued)

	Model 1			Model 2			Model 3					
	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)
Gender												
Male (ref.)												
Female									0.385	0.024	***	1.470
Age												
15–24 (ref.)												
25–34									0.207	0.046	***	1.230
35–44									0.211	0.049	***	1.235
45–54									0.156	0.050	**	1.169
55–64									0.187	0.053	***	1.205
65–74									0.086	0.057		1.090
75+									–0.246	0.068	***	0.783
Marital status												
Married (ref.)												
Divorced									0.126	0.043		1.134
Widowed									–0.083	0.061		0.922
Single									–0.066	0.034		0.938
Education												
Elementary (ref.)												
Low									0.268	0.054		1.307
Middle									0.544	0.052		1.723
High									0.761	0.056		2.139
Highest									0.789	0.061		2.200
Migration background												
Dutch native (ref.)												

Table 5 (continued)

	Model 1			Model 2			Model 3					
	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)
Western migrant									-0.316	0.041		0.730
Non-western migrant									-1.137	0.065		0.321
N	42,770				40,007				39,498			
Nagelkerke R square	6.4				11.7				15.4			

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

that the probability of being an organ donor increases after 25, remains relatively stable until age 55, and subsequently decreases. The higher the level of education, the more likely one is to be an organ donor. Compared to those with an elementary education, individuals with a middle level education are 72% more likely to be donors, and those with high levels of education are more than twice as likely to be donors, all else constant. Having a migration background also plays an important role. Foreign-born individuals are less often registered as donors than those with a Dutch background. Furthermore, the discrepancy is larger among those of non-western origin than for migrants from western countries. Finally, and not in line with the descriptive statistics, divorced people have a higher chance of becoming registered organ donors than married, widowed and single individuals. These findings are largely in line with our expectations based on the variations in social capital between sub-populations. A clear exception is that women are more willing to register as organ donors than men, while they do not have more social capital (Van Beuningen & Schmeets, 2015).

On the basis of these findings, we can conclude that social capital matters, even when holding relevant background characteristics constant. This supports our second hypothesis that social capital is an important prerequisite for donating one's organs because this gift is directed to society as a whole. We also found that religious involvement is relevant: religious views are detrimental to the propensity for organ donation. It is possible that objections related to notions of the sanctity of the body weigh more heavily than notions of solidarity and mutual support. Religious individuals may be endowed with more social capital than the non-religious, but this does not seem to translate into higher proportions of registered donors because the willingness to donate is blocked by (perceived) institutional objections inherent in these religions. Moreover, religious rules, practices and beliefs differ between denominations, which may help to explain the observed differences between religions.

6.1 Social Capital Indicators

The social capital index is composed of 17 indicators. This begs the question of which indicators are the main drivers of organ donation. To determine this, we employ additional models based on each indicator. In model 4, we include the nine participation indicators, and in model 5 the eight trust indicators. Finally, we include all 17 indicators in model 6. The results in model 4 show that participation in organizations and in politics are the main drivers of registered organ donation rather than social participation and providing informal help (Table 6). This implies that connectedness to society in formal settings is more important for organ donation than informal networks involving family members, friends, neighbors and others outside one's own household. When it comes to trust, the results suggest that generalized trust in others is the most important predictor of registered organ donation (odds ratio = 1.52), while the impact of trust in institutions on organ donation is lower (police, lawyers, army), absent (civil servants, media), or even negative (large companies). In addition, the impact of trust in politics is low, and it disappears in model 6 after including the nine participation indicators. The effects of all other participation and trust indicators in the full model are very similar to those we find in models 4 and 5. We also observe that the controls point in the same direction in comparison to model 3 in which the social capital composite index is included.

Table 6 Regression organ donation by participation (model 4), trust (model 5), participation and trust (model 6)

	Model 4				Model 5				Model 6			
	B	S.E	Sig	Exp(B)	B	S.E	Sig	Exp(B)	B	S.E	Sig	Exp(B)
Participation												
Weekly contact family	-0.021	0.038		0.980					-0.032	0.041		0.969
Weekly contact friends	-0.049	0.033		0.953					-0.092	0.036	**	0.913
Weekly contact neighbors	-0.053	0.028		0.949					-0.052	0.031		0.951
Providing informal help	-0.016	0.028		0.986					-0.030	0.031		0.972
Volunteering	0.308	0.029	***	1.360					0.282	0.032	***	1.326
Paid work	0.178	0.038	***	1.194					0.151	0.042	***	1.163
Activities in associations	0.132	0.028	***	1.141					0.120	0.031	***	1.128
Voting	0.489	0.040	***	1.630					0.450	0.045	***	1.567
Political actions	0.185	0.028	***	1.203					0.163	0.030	***	1.177
Trust												
In other people					0.419	0.029	***	1.520	0.349	0.033	***	1.417
Army					0.055	0.028	*	1.057	0.081	0.033	*	1.085
Police					0.173	0.032	***	1.189	0.182	0.037	***	1.199
Laywers					0.210	0.033	***	1.233	0.173	0.038	***	1.189
Civil servants					-0.032	0.029		0.970	-0.003	0.033		0.998
Press					0.027	0.028		1.027	-0.017	0.032		0.984
Large companies					-0.201	0.027	***	0.819	-0.152	0.032	***	0.860
Parlement					0.069	0.030	*	1.072	0.041	0.035		1.042
Religion*religious services (Yes/No)												
No religion (ref.)												
Roman catholic	Yes	-0.370	0.073	0.692	-0.274	0.071	***	0.761	-0.383	0.083	***	0.683
Roman catholic	No	-0.170	0.034	0.844	-0.135	0.032	***	0.875	-0.159	0.037	***	0.854
Reformed	Yes	-1.052	0.113	0.350	-0.903	0.105	***	0.406	-1.005	0.123	***	0.367
Reformed	No	-0.529	0.064	0.590	-0.481	0.061	***	0.619	-0.547	0.071	***	0.579

Table 6 (continued)

	Model 4				Model 5				Model 6				
	B	S.E	Sig	Exp(B)	B	S.E	Sig	Exp(B)	B	S.E	Sig	Exp(B)	
Calvinist	Yes	-0.819	0.098	***	0.442	-0.788	0.089	***	0.456	-0.924	0.106	***	0.398
Calvinist	No	-0.552	0.131	***	0.577	-0.435	0.122	***	0.648	-0.511	0.140	***	0.601
Dutch protestants	Yes	-0.528	0.074	***	0.591	-0.394	0.069	***	0.675	-0.553	0.080	***	0.576
Dutch protestants	No	-0.390	0.085	***	0.678	-0.329	0.079	***	0.720	-0.424	0.092	***	0.655
Islam	Yes	-2.831	0.488	***	0.059	-3.051	0.506	***	0.048	-2.940	0.607	***	0.053
Islam	No	-1.943	0.241	***	0.144	-1.859	0.222	***	0.156	-1.835	0.277	***	0.160
Other religion	Yes	-1.208	0.104	***	0.299	-1.024	0.094	***	0.360	-1.158	0.112	***	0.315
Other religion	No	-0.674	0.097	***	0.510	-0.561	0.086	***	0.572	-0.631	0.104	***	0.533
Gender													
Male (ref.)													
Female		0.362	0.027	***	1.435	0.397	0.025	***	1.487	0.378	0.030	***	1.460
Age													
15-24 (ref.)													
25-34		0.069	0.057		1.071	0.168	0.048	***	1.182	0.090	0.062		1.094
35-44		0.046	0.060		1.047	0.203	0.052	***	1.224	0.069	0.065		1.071
45-54		-0.026	0.061		0.975	0.152	0.053	**	1.164	0.005	0.067		1.005
55-64		0.006	0.065		1.007	0.146	0.056	**	1.157	0.053	0.071		1.055
65-74		-0.088	0.073		0.916	0.010	0.061		1.010	-0.041	0.080		0.961
75+		-0.380	0.085	***	0.685	-0.345	0.074	***	0.709	-0.357	0.095	***	0.701
Marital status													
Married (ref.)													
Divorced		0.131	0.047	**	1.139	0.079	0.045		1.082	0.130	0.051	*	1.139
Widowed		-0.061	0.066		0.942	-0.042	0.067		0.960	0.002	0.077		1.002
Single		-0.044	0.037		0.958	-0.095	0.035	**	0.910	-0.051	0.040		0.952

Table 6 (continued)

	Model 4				Model 5				Model 6			
	B	S.E	Sig	Exp(B)	B	S.E	Sig	Exp(B)	B	S.E	Sig	Exp(B)
Education												
Elementary (ref.)												
Low	0.184	0.064	**	1.202	0.284	0.061	***	1.328	0.191	0.075	*	1.211
Middle	0.368	0.061	***	1.445	0.589	0.058	***	1.802	0.295	0.071	***	1.343
High	0.662	0.065	***	1.938	0.863	0.061	***	2.370	0.505	0.075	***	1.657
Highest	0.756	0.070	***	2.129	0.929	0.067	***	2.531	0.572	0.081	***	1.771
Migration background												
Dutch native (ref.)												
Western migrant	-0.251	0.047	***	0.779	-0.328	0.043	***	0.721	-0.249	0.052	***	0.780
Non-western migrant	-1.131	0.076	***	0.324	-1.104	0.069	***	0.332	-1.049	0.083	***	0.351
Nagelkerke R square	14.2				14.0				14.8			

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 7 Regression registration in organ register (No / Yes) by social capital (model 1) controlled for religious involvement and background characteristics (model 2)

Social capital index score	Model 1				Model 2			
	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)
1 (lowest percentile) (ref.)								
2	−0.031	0.044		0.970	−0.073	0.048		0.929
3	0.012	0.044		1.012	−0.049	0.048		0.952
4	0.088	0.044	*	1.091	0.010	0.049		1.010
5	0.225	0.044	***	1.252	0.124	0.048	*	1.132
6	0.322	0.044	***	1.380	0.145	0.048	**	1.156
7	0.357	0.044	***	1.429	0.131	0.049	**	1.140
8	0.542	0.044	***	1.719	0.284	0.049	***	1.328
9	0.714	0.044	***	2.042	0.399	0.050	***	1.490
10 (highest percentile)	0.906	0.044	***	2.475	0.544	0.051	***	1.723
N	42,770				39,498			
Nagelkerke R square	3.0				10.9			

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

6.2 Registration in the Donor Register

As we are also interested in how people respond to the request to register their preferences regarding organ donation, we compare those who registered with the Donor Register (categories 1–5 in Table 2) with the non-registered. The results in Table 7 are rather similar to the findings on the importance of social capital in which potential organ donors (categories 1 and 2 in Table 2) were compared with the other categories 3–6 (see models 1 and 3 in Table 5). Note that the differences are slightly weaker, expressed by the lower R-square (3.0% and 10.1%) and the differences between the odds ratios. As shown, the lowest social capital percentiles do not differ in registration with the Donor Register. From percentile 4 (model 1) and 5 (model 2) on, more social capital indicates a higher chance of registration.

6.3 Multinomial Logistic Regressions

All our analyses are based on the binary distinction between being a potential organ donor or not, or being registered or not. Below, we compare the propensity to register with the Donor Register with the positions a person may choose when they register through the positions a person may register: (1) permission for organ donation without restrictions; (2) permission with restrictions; (3) no permission; (4) partner, relatives or given person decides which groups together options 4 and 5 in the Donor Register.

The multinomial regressions in Table 8 show that people who opt for being an organ donor without restriction are slightly more likely to register with the Donor Register (odds ratio: 1.42) than people who opt for organ donation with restrictions (odds ratio: 1.34). Both are more likely to register than those who want a partner or a given person to decide (odds ratio: 1.21). This means that an increase by one unit in social capital—e.g. from 1.5 to 2.5—will increase the chance of being registered as a potential organ donor by 42%, 34% and 21% respectively in comparison to the non-registered. Furthermore, higher levels of social capital reduce the chance that a person will give ‘no permission’ for organ donation compared to people who did not register at all (odds ratio: 0.84).

Table 8 Multinomial logistic regression organ donation (not registered = reference group) by social capital, religious involvement and background characteristics

	Permission						Permission with restrictions						No permission						Relatives or given person decides					
	B			Sig			Exp (B)			B			Sig			Exp (B)			B			Sig		
	S.E			S.E			S.E			S.E			S.E			S.E			S.E			S.E		
Social capital score	0.353	0.016	***			1.423	0.291	0.027	***	1.338	-0.173	0.018	***			0.842	0.193	0.027	***					1.212
Religion*religious services (Yes/No)																								
No religion (= ref.)																								
Roman catholic	Yes	-0.369	0.070	***		0.692	-0.315	0.145	*	0.730	-0.069	0.085				0.934	-0.027	0.122						0.974
Roman catholic	No	-0.194	0.034	***		0.824	-0.129	0.059	*	0.880	-0.153	0.046	***			0.859	0.122	0.057	*					1.129
Reformed	Yes	-1.085	0.111	***		0.338	-1.026	0.216	***	0.359	0.161	0.104				1.175	-0.523	0.175	**					0.593
Reformed	No	-0.619	0.065	***		0.539	-0.115	0.109		0.893	-0.031	0.074				0.970	-0.082	0.103						0.922
Calvinist	Yes	-0.924	0.099	***		0.398	-0.419	0.145	***	0.659	0.112	0.106				1.119	-0.310	0.148	*					0.734
Calvinist	No	-0.641	0.131	***		0.528	-0.390	0.227		0.678	-0.137	0.150				0.873	-0.790	0.274	**					0.455
Dutch protestants	Yes	-0.622	0.074	***		0.538	-0.412	0.126	***	0.663	-0.160	0.098				0.853	-0.357	0.130	**					0.701
Dutch protestants	No	-0.517	0.088	***		0.597	-0.084	0.133		0.921	0.079	0.104				1.082	-0.309	0.157	*					0.735
Islam	Yes	-2.928	0.509	***		0.054	-2.823	0.799	***	0.060	0.568	0.122	***			1.765	-1.359	0.431	**					0.258
Islam	No	-2.096	0.256	***		0.123	-1.636	0.314	***	0.195	0.352	0.107	***			1.421	-1.406	0.339	***					0.246
Other religion	Yes	-1.150	0.102	***		0.317	-0.873	0.172	***	0.418	0.459	0.083	***			1.583	-0.417	0.148	**					0.660
Other religion	No	-0.509	0.091	***		0.602	-0.653	0.169	***	0.521	0.216	0.092	*			1.241	-0.423	0.170	*					0.656
Gender																								
Male (= ref.)																								
Female	0.332	0.027	***			1.394	0.839	0.046	***	2.313	0.159	0.034	***			1.172	0.238	0.046	***					1.269
Age																								
15-24 (= ref.)																								
25-34	0.375	0.054	***			1.454	0.362	0.072	***	1.436	0.813	0.071	***			2.254	0.712	0.105	***					2.038
35-44	0.520	0.056	***			1.681	-0.001	0.082		1.000	0.843	0.075	***			2.322	0.609	0.110	***					1.839
45-54	0.545	0.057	***			1.724	-0.499	0.091	***	0.608	0.690	0.077	***			1.993	0.696	0.111	***					2.005

Table 8 (continued)

	Permission			Permission with restrictions			No permission			Relatives or given person decides		
	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)	B	S.E	Sig	Exp (B)
55–64	0.636	0.060	***	1.889	-0.674	0.102	***	0.511	0.965	0.080	***	2.624
65–74	0.473	0.064	***	1.604	-0.858	0.117	***	0.425	0.832	0.084	***	2.298
75+	0.104	0.076		1.109	-1.061	0.148	***	0.347	0.847	0.091	***	2.332
Marital status												
Married (= ref.)												
Divorced	0.128	0.048	***	1.136	0.227	0.089	*	1.255	0.173	0.058	**	1.189
Widowed	-0.081	0.065		0.923	-0.306	0.156	*	0.737	-0.019	0.072		0.982
Single	-0.151	0.038	***	0.861	0.004	0.062		1.004	0.055	0.049		1.056
Education												
Elementary (= ref.)												
Low	0.263	0.060	***	1.300	0.268	0.120	*	1.308	0.104	0.060		1.109
Middle	0.538	0.057	***	1.712	0.693	0.112	***	1.999	0.215	0.057	***	1.240
High	0.804	0.062	***	2.235	0.960	0.119	***	2.610	0.299	0.068	***	1.349
Highest	0.830	0.069	***	2.293	0.962	0.129	***	2.616	0.264	0.082	**	1.302
Migration background												
Dutch native (= ref.)												
Western migrant	-0.346	0.045	***	0.708	-0.536	0.085	***	0.586	-0.140	0.056	*	0.871
Non-western migrant	-1.355	0.076	***	0.259	-1.106	0.115	***	0.332	-0.494	0.069	***	0.611
Intercept	-1.122	0.075	***		-1.877	0.131	***		-2.312	0.090	***	
N	39,498											
Nagelkerke R square	17.6											

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Religion also matters. The likelihood that religious people donate without restrictions is higher compared to the non-religious. The results for the various religious categories are rather similar to the findings based on the bivariate logistic regressions in Table 4, model 3. This is also true for the people who gave permission for organ donation with restrictions, although the three Protestant denominations who do not regularly attend religious services no longer differ from the non-religious. For those who wanted the partner or a given person to decide, the differences in the odds ratio's between the religious groups are less clear. The likelihood that Catholics who do not regularly go to church want that the partner or a given person to decide is even slightly higher compared to the non-religious. For the 'no permission' group, we notice that only a few religious groups differ different position from the non-religious. Muslims, both those who regularly go to the mosque and those who do not, more often refuse to donate than the non-religious. This is also true for the 'other religious categories'. Our analysis further reveals that women are overrepresented in all registered groups compared to men. Apart from the category 'permission with restrictions', this is also the case for older age groups in comparison to the 15–24 age group. Likewise, the higher educated are more often registered than the lowest educated. Finally, migrants, and non-western migrants in particular, are less often registered than those born in the Netherlands.

7 Conclusions and Discussion

This paper has explored the relationship between social capital and organ donor registration using unique data from Statistics Netherlands. We argued that the willingness to donate one's organs can be understood as a particular form of charity. The main difference compared to other forms of prosocial behaviour, such as donating money and giving gifts, is that the beneficiary is unknown. As such, being an organ donor is an act of charity towards society and implies a sense of connectedness towards members of society. Hence, we assume that people with more social capital are also more likely to be organ donors.

The relevance of social capital for organ donation corresponds with the expectations expressed in our three hypotheses. Our analysis has confirmed each of these hypotheses. For the first, we found that if a person is endowed with more social capital, i.e. greater levels of participation and trust, the likelihood of them registering in the organ donor registration system is higher. Consistent with our second hypothesis, our findings confirm that social capital increases the probability of a person registering permission to use their organs. As this pattern is linear, this also implies that there is no 'dark side' of social capital, (for an overview, see Portes, 2014), which is in line with other studies on the relation between social capital and health (Gannon & Roberts, 2018; Wakefield & Poland, 2005). Lastly, we explored the differences between those who registered with the Donor Register and those who did not register at all (in the 'opt-in' system, those who don't register will in principle not be potential organ donors). We observe that higher levels of social capital increase the probability of a person registering their permission for organ donation, both without and with restrictions, or leaving this decision to their partner or a given person. However, social capital decreases the probability of registering a refusal to donate. These findings confirm hypothesis 3.

We discussed the social capital composite index, based on nine participation and eight trust indicators, and explored which indicators contribute most to organ donor registration. Our analysis revealed that certain components matter more than others. More specifically, we see that formal participation in organizations and political participation matter more than participating in informal activities with friends and neighbors and helping other people. And not all trust indicators are relevant. The most important predictor of organ

donation is trust in other people ('generalized trust'). People who generally trust other people are much more willing to donate their organs to unknown other people. In addition, trust in established institutions such as the police, lawyers and the army positively contributes to organ donation. All other trust indicators do not have an impact, including trust in politics, while trust in large companies even has a negative impact on organ donation. Our interpretation of these findings is that trust in others and in established institutions resembles the trust people have in the medical system, which may be an important facet of being a registered organ donor. Furthermore, the fact that social contacts do not appear relevant may indicate that organ donation is not a frequent topic of discussion between people. Instead, what fosters organ donations is a person's commitment to society as expressed through volunteering and being active in associations and politics.

From the social capital lens, we also expected that membership of a religious community would increase the probability of being an organ donor, given that social capital is more prevalent among religious groups. This expectation is not reflected in our results as most organ donors have no religious affiliation. Clearly, other underlying mechanisms play a role, such as institutional or philosophical objections inherent in certain religions (Alam, 2007; Tarhan et al., 2015). Notions of the sanctity of the body may be an important deterrent to becoming a donor. Possibly, such ideas weigh more heavily than notions of solidarity and mutual support. Perhaps the process of donor registration faces other objections. No doubt differences of practice and belief between denominations help to explain differences in organ donation. For instance, the Roman Catholic Church has historically held a positive view towards organ donation, whereas the Protestant Church places the responsibility for decisions about donation more explicitly with the individual (Oliver et al., 2011; Sanders, 2003). This may explain our findings that Roman-Catholics are more likely to donate than Protestants in general and Reformed and Calvinists in particular. We also found that Muslims have the lowest propensity to become organ donors. In Islam, it is, on the one hand, important to help those who are sick, but on the other hand, it is important that the body remains intact after death (Ghaly, 2012; Oliver et al., 2011). We further observed that among all six religious groups, regular attenders of religious services are less willing to register as organ donors than people who rarely or never attend a religious service, all else constant. This provides further evidence that practicing religious beliefs with other people is detrimental to donor registration. Finally, we note that in the 2014–2019 period, the proportion of permissions for organ donation increased by 0.6%, while the proportion of refusals increased by 2.1%. This seems to be at odds with the declining levels of religiosity in the Netherlands. Possibly the political debate on the amendment of the law from opt-in to opt-out caused the increase in the proportion of refusals.

The negative association between religion and organ donation, as well as the variation between religious groups, begs the question of how authorities can best inform believers about the available options. Studies show that education and dissemination of information about donation and transplantation are important if we wish to increase organ donation rates. Religious beliefs are often tied to distrust of the medical system and misconceptions about the donation process. Interventions focusing on improving community engagement, fostering trust and providing better information are seen as promising ways of promoting organ donation (Job & Antony, 2018). In this vein, other studies explicitly call for an increase in social capital by fostering norms of reciprocity and cooperation, and recommend tailoring strategies to specific communities instead of individuals (Ladin et al., 2015). The Dutch campaign by the Ministry of Health, Welfare and Sport (VWS) focuses, however, on the general public. It aims to inform the public about the new law which will come into effect in June 2020. The campaign explains the implications of the new law

and the available registration options, and makes clear that it will always be possible to alter a previously registered choice. This information is broadcasted on national radio and television, and as such it targets individuals, rather than specific communities. The results in this paper raise doubts as to whether the strategy by VWS will be successful. A more promising avenue would be to foster social capital, specifically generalized trust, trust in established institutions and participation in organizations. With strong differences between religious groups, we need an approach that is tailored to religious communities, and even one tailored to those who attend and do not attend religious services regularly.

Our findings suggest that campaigns targeting those groups with very low numbers of registered organ donors will be more effective than providing standard information to the whole population, especially when the size of those groups is substantial. One in ten of the total Dutch population is a non-western migrant, and one in twenty is Muslim. Given that many Muslim counsellors promote organ donation (Van den Branden & Broeckaert, 2011), the very low numbers of Muslims who are registered as donors stands out. Muliira and Muliira (2014) concluded that health care professionals, such as nurses, should be aware that organ donation is compatible with Islam, and suggest collaboration with religious leaders to ensure that Muslim organ donors receive correct information and culturally sensitive care. Further evidence from Turkey reveals that one of the obstacles to organ donation is the perceived ambiguity of religious officials and uncertainty about Islamic views on organ donation (Tarhan et al., 2015). The general feeling among Turkish people is that organ transplantation is not appropriate in religious terms, and, consequently, the vast majority avoids organ donation (Akiş et al., 2008; Özer et al., 2010). In the Netherlands, almost 400,000 inhabitants are Turkish migrants (first and second generation) and, together with migrants from Morocco and Surinam, they are the largest ethnic minority. A vast majority of the migrants from Turkey and Morocco is Muslim, which could in part explain why only a very small portion of Muslims gives permission for their organs to be used after they pass away in the Netherlands. Reformed Protestants and Calvinists are not very keen to become organ donors either. These two Protestant denominations count for almost one in ten of all Protestants. But considering the extremely low percentage of Muslims registering consent for organ donation, any campaign should focus on this group.

Our findings show that it is important to distinguish between (1) religious dogma's that tolerate or support organ donation or leave it to the individuals and (2) religious dogmas that do not tolerate or even prohibit such actions. However, based on the two questions on religious involvement in the survey Social cohesion and Wellbeing, we can only distinguish between the Catholics, Protestants (three denominations), and Muslims. While in principle all these religions tolerate organ donation, our findings suggest that there are at least some differences between them in the extent to which they promote or facilitate it, or leave room for individuals to make a decision themselves. In addition, individuals' decisions are affected by their (religious) community and as such religious dogmas may have an impact on their positions towards organ donation. Indeed, we expected that differences in the extent to which organ donation is facilitated and promoted between denominations matters for the propensity to register as a donor through that mechanism. We included in our analyses church attendance as a proxy for participating in the specified religious groups in order to (imperfectly) measure a sense of attachment to the religious community (beyond membership). We, however, do acknowledge that it would be important to include more specific information on the ties between the individuals and the religious community, but unfortunately such information was not available. In a similar vein, such mechanisms will also provide further insights on the impact of social capital on organ donation.

We demonstrated that it is important to realize that not only individual characteristics, including social capital, will guide a person in the decision towards organ donation,

but also her/his religious affiliation. A person with a very high level of social capital can still be hindered to become organ donor by a religious affiliation. For instance, if a person is a Muslim, the likelihood that she/he will be a potential organ donor is very low controlled for individual social capital. If a person wants to be a potential organ donor (for various reasons), it is still possible that the stated opinion of a religion (e.g. by an imam in the mosque) ultimately will change this position. This might also be true for other religions: if a pastor or priest has a strong negative opinion on organ donation, the people attending the protestant or catholic religious services might change their initial position on organ donation. Unfortunately, based on our quantitative survey and register data, we are not able to exactly identify by which mechanism the final decision on organ donation came to be. It is plausible that the observed differences in organ donation between denominations are driven at least in part by membership of religious communities and the views that these denominations hold on organ donation. While future research may be able to delve deeper into the underlying mechanism, we do believe that our analysis provides a useful starting point. Furthermore, we also think it would be a fruitful avenue, in line with Sanders (2003), for further research by analyzing the more recent religious beliefs within specific (religious) communities in the Netherlands.

Our paper examined other variables that affect organ donor registrations. Women, people who are highly educated, those aged 25–64, and those born in the Netherlands are more willing to register as potential organ donors than men, the less educated, those in the 15–24 and 65+ age groups, and migrants (non-western, in particular). Education is a particularly important driver for organ donation. Descriptive statistics and regressions show that the proportion of organ donors more than doubles when comparing the two highest and the two lowest educated groups. And as one in three has relatively low levels of education, this is an important target group for a tailored campaign. As the level of individual social capital of the lower educated is much lower than that of the higher educated, such a campaign might possibly reduce the inequality in social capital in Dutch society.

Our paper has made use of unique and high-quality data from the Dutch Donor Register, which we linked to the Dutch Survey on Social Cohesion and Wellbeing for the period 2012–2017. But our research has several limitations. First, although the response rates for the survey are rather high—65 to 70% in the various years—and weighting models were applied to reduce possible non-response bias, registered organ donors are still overrepresented in the sample. Such a correlation reflects a pro-sociality bias among survey respondents, which reduces our ability to make inferences about the total population (Abraham et al., 2009). This provides a further avenue for research on non-response bias in surveys. It would also be interesting to consider including organ donation in the weighting models.

Second, our use of cross-sectional data limits our ability to address causality. The social capital index calculates the joint contribution of the 17 indicators to the first order and second order constructs, and ultimately to the overall social capital score. It does not account for causal relationships between indicators. We therefore do not cover possible causal relationships between, for example, generalized and institutional trust as assumed by Uslaner (2002) or empirically test the causality from generalized trust to participation in associations and volunteering (Bekkers, 2012; Van Ingen & Bekkers, 2015). We do, however, acknowledge the existence of positive correlations between participation and trust indicators, but, in line with Putnam, we assume that it is all ‘well-tossed spaghetti’.

The final limitation is that we do not have an indicator for trust in medical institutions. That would provide a further angle from which to explore the relationship between organ donor registration and other aspects of prosocial behavior. In these times of corona crisis, such research is needed more than ever.

Appendix 1: Measures for the 17 Indicators in the Social Capital Composite Index

Social participation.

1. Family contacts [Rarely or never (1)—at least once a day (5)]
How often do you have contact with family members outside the home?
2. Contacts with friends [Rarely or never (1)—at least once a day (5)]
How often do you have contact with friends or close acquaintances?
3. Contacts with neighbors [Rarely or never (1)—at least once a day (5)]
How often do you have contact with neighbors?
4. Informal help (0 = No, 1 = Yes)
Have you provided any informal help in the last 4 weeks?

Organizational participation

5. Organizational activities (0 = No, 1 = Yes)
Do you participate in organizational activities at least once a month?
6. Work (0 = Less than 12 h, 1 = 12 h or more)
How many hours per week do you spend on a paid job?
7. Volunteering (0 = No, 1 = Yes)
Have you done any volunteer work in the last 12 months for any of the following types of organizations:
  - Youth work
  - School
  - Health care organization
  - Sports organization
  - Hobby organization
  - Cultural organization
  - Church or mosque
  - Union or employee organization
  - Political party or protest organization
  - Social care organization
  - Housing association
  - Neighborhood organization
  - Other

Political participation

1. Political action (0 = No, 1 = Yes)
In the last 5 years, have you participated in political actions or influenced politicians/civil servants via:
  - radio, TV, newspaper
  - political parties or organizations

- government organized meeting
- personal contact with politician or civil servant
- protest group
- public protest or demonstration
- internet, e-mail, SMS
- otherwise
- none of these

9. Voting (0 = No, 1 = Yes)

Have you voted in the most recent national elections?

Social trust

10. Social trust (0 = One can't be too careful, 1 = Most people can be trusted)

Indicate which statement you agree with most: most people can be trusted; one can't be too careful.

Organizational trust

11. Trust in army (1 = Not at all, 4 = A lot)

Indicate to which extent you trust the army

12. Trust in judges (1 = Not at all, 4 = A lot)

Indicate to which extent you trust judges

13. Trust in civil servants (1 = Not at all, 4 = A lot)

Indicate to which extent you trust civil servants

14. Trust in press (1 = Not at all, 4 = A lot)

Indicate to which extent you trust the press

15. Trust in police (1 = Not at all, 4 = A lot)

Indicate to which extent you trust the police

16. Trust in large companies (1 = Not at all, 4 = A lot)

Indicate to which extent you trust the large companies

Political trust

17. Trust in parliament (1 = Not at all, 4 = A lot)

Indicate to which extent you trust the Dutch parliament

Appendix 2

See Table 9.

Table 9 Descriptive statistics indicators social capital composite index

	N	Mean	S.E	S.D	Range	Minimum	Maximum
Family contacts	45,090	4.06	0.0040	0.85	4	1	5
Contacts with friends	45,147	3.96	0.0044	0.94	4	1	5
Contacts with neighbors	45,060	3.47	0.0056	1.20	4	1	5
Informal help	42,985	0.34	0.0023	0.47	1	0	1
Organizational activities	43,165	0.44	0.0024	0.50	1	0	1
Paid work	45,694	0.63	0.0023	0.48	1	0	1
Volunteering	45,695	0.49	0.0023	0.50	1	0	1
Political action	41,539	0.45	0.0024	0.50	1	0	1
Voting	36,986	0.81	0.0020	0.39	1	0	1
Social trust	43,247	0.59	0.0024	0.49	1	0	1
Trust in army	40,580	2.64	0.0038	0.76	3	1	4
Trust in judges	41,468	2.78	0.0038	0.77	3	1	4
Trust in civil servants	41,323	2.34	0.0035	0.72	3	1	4
Trust in press	41,965	2.17	0.0034	0.71	3	1	4
Trust in police	42,861	2.74	0.0035	0.72	3	1	4
Trust in large companies	40,469	2.29	0.0037	0.74	3	1	4
Trust in parliament	41,648	2.20	0.0037	0.76	3	1	4

Appendix 3

See Table 10.

Table 10 Descriptives control variables

	N	Mean	S.E	S.D	Range	Minimum	Maximum
Gender							
Female	45,695	1.51	0.0023	0.50	1	1	2
Age							
15–24	45,695	0.15	0.0017	0.35	1	0	1
25–34	45,695	0.15	0.0017	0.35	1	0	1
35–44	45,695	0.16	0.0017	0.36	1	0	1
45–54	45,695	0.18	0.0018	0.39	1	0	1
55–64	45,695	0.16	0.0017	0.36	1	0	1
65–74	45,695	0.12	0.0015	0.33	1	0	1
75+	45,695	0.09	0.0013	0.28	1	0	1
Marital status							
Married	45,677	0.49	0.0023	0.50	1	0	1
Divorced	45,677	0.09	0.0013	0.28	1	0	1
Widowed	45,677	0.06	0.0011	0.23	1	0	1
Single	45,677	0.36	0.0023	0.48	1	0	1
Education							
Elementary	44,784	0.10	0.0014	0.30	1	0	1
Low	44,784	0.21	0.0019	0.41	1	0	1
Middle	44,784	0.41	0.0023	0.49	1	0	1
High	44,784	0.19	0.0018	0.39	1	0	1
Highest	44,784	0.10	0.0014	0.30	1	0	1
Miggration background							
Dutch native	45,690	0.79	0.0019	0.41	1	0	1
Western migrant	45,690	0.10	0.0014	0.30	1	0	1
Non-western migrant	45,690	0.11	0.0015	0.31	1	0	1
Religion * religious services (Y/N)							
No religion	42,746	0.49	0.0024	0.50	1	0	1
Roman catholic (Y)	42,746	0.04	0.0010	0.20	1	0	1
Roman catholic (N)	42,746	0.21	0.0020	0.41	1	0	1
Reformed (Y)	42,746	0.02	0.0007	0.14	1	0	1
Reformed (N)	42,746	0.05	0.0011	0.22	1	0	1
Calvinist (Y)	42,746	0.02	0.0007	0.15	1	0	1
Calvinist (N)	42,746	0.01	0.0005	0.10	1	0	1
Dutch protestants (Y)	42,746	0.03	0.0009	0.18	1	0	1
Dutch protestants (N)	42,746	0.02	0.0007	0.15	1	0	1
Islam (Y)	42,746	0.02	0.0007	0.14	1	0	1
Islam (N)	42,746	0.03	0.0008	0.16	1	0	1
Other religion (Y)	42,746	0.03	0.0008	0.17	1	0	1
Other religion (N)	42,746	0.03	0.0008	0.17	1	0	1

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