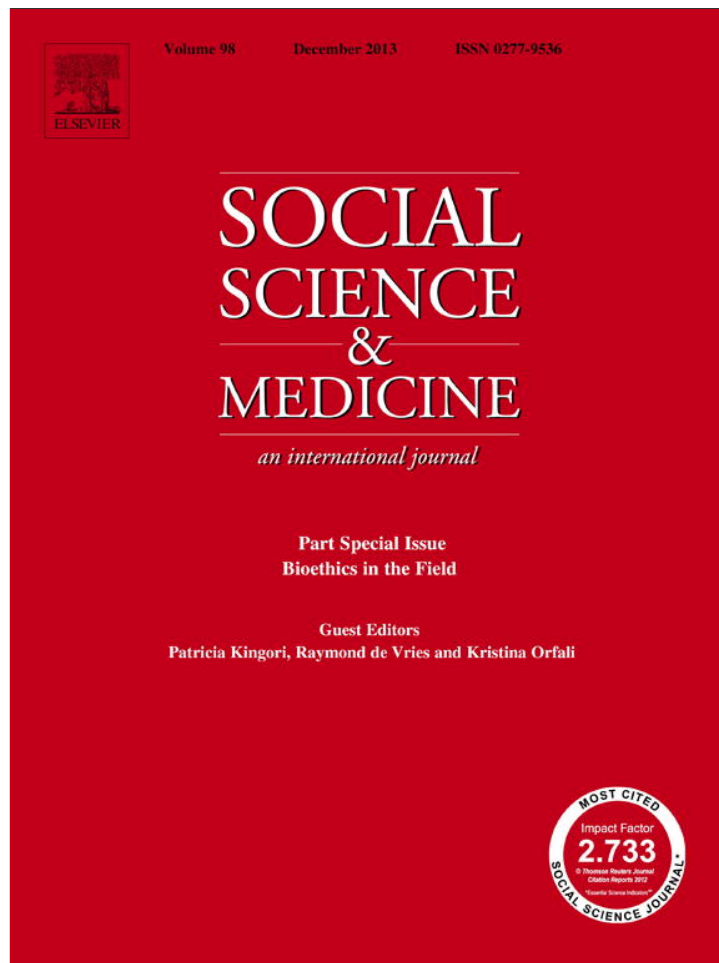


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# Does corruption undermine trust in health care? Results from public opinion polls in Croatia



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## ABSTRACT

Health and health care provision are one of the most important topics in public policy, and often a highly debated topic in the political arena. The importance of considering trust in the health care sector is highlighted by studies showing that trust is associated, among others, with poor self-related health, and poorer health outcomes. Similarly, corruption has shown to create economic costs and inefficiencies in the health care sector. This is particularly important for a newly democratized country such as Croatia, where a policy responsive government indicates a high level of quality of democracy (Roberts, 2009) and where a legacy of corruption in the health care sector has been carried over from the previous regime. In this study, I assess the relationship between health care corruption and trust in public health care and hypothesize that experience with health care corruption as well as perception of corruption has a negative effect on trust in public care facilities. Data were collected in two surveys, administered in 2007 and 2009 in Croatia. Experience with corruption and salience with corruption has a negative effect on trust in public health care in the 2007 survey, but not in the 2009 survey. While the results are mixed, they point to the importance of further studying this relationship.

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## Introduction

More than two decades after the transition to democracy and a market economy, most of the crucial reforms in Central and Eastern Europe have been implemented, especially those related to pre-conditions for entering the European Union. While economic and political reforms were the main focus of study for political scientists during the first post-transition decade, studies of corruption, political culture, civil society, and other long standing issues are now emerging. In part, this new focus of investigation arises from the recognition that such issues tend to develop over generations, and are slower to change, than are other economic and institutional reforms. In addition to being more difficult to change, issues of trust and corruption tend to have long term implications for the economic wellbeing and survival of the new democratic regimes.

While the concepts of trust and corruption have been extensively explored, how the dynamics plays out in the health care sector has not been fully elaborated, and is almost non-existent in the context of Central and Eastern Europe and new democracies in general. It is, however, a very important issue: low trust in the health care system is associated with poor self-related health

(Mohseni & Lindstrom, 2007), poorer health outcomes, and underutilization of health services. Corruption, as a separate issue plaguing the former communist countries, has been pervasive in many of the countries in the region, including their health care sectors. In the health care sector, bribes to providers inhibit any possibilities of successful reforms because physicians, and other agents involved in the health care sector who benefit from corruption, do not have an incentive to reform it. This causes a false positive picture of health system performance, given that the funds are expected to produce the desired outcome while in effect mis-allocated funds cannot produce the outcomes for which they were intended. Studies have shown the economic costs and inefficiencies that corruption creates in the health care sector, but very little research has linked corruption more generally to trust in the health care sector specifically.

This study seeks to fill the gap in the existing literature by establishing a link between corruption and trust in the health care services provided by the public sector, looking at data from public opinion polls in Croatia. This topic is important because it addresses another mechanism through which corruption harms the health care sector and its users. It also provides policymakers an additional rationale for addressing health care system corruption. The rest of the paper is as follows: the next section outlines the relationship between trust and corruption, and then links health care corruption

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to trust in general with references to Central and Eastern Europe. The article then presents research methods for the opinion polls, followed by the presentation and analysis of results.

### Trust and corruption

The study of trust in various disciplines has often included its relationship to concepts like social capital, economic development, and political development, among other community-building resources. Trust, although a “contested term,” is generally thought to be relational, in that an individual makes her/himself vulnerable to others or to institutions; it is not unconditional, in that it is given to individuals and/or institutions in specific domains and under specific circumstances, and it is a judgment that might be given dichotomously (one trusts or not), or ordinally (one trusts to a certain degree); “trustworthiness” is also relational, although in a more limited degree (Levy & Stoker, 2000). As such, it involves an element of risk contained within the uncertainty about the motives, intentions and actions of others in relationship to us (Coulson, 1998; Lewicki & Bunker, 1996). In her meta-analysis of the trust literature, Gilson (2003) explains that there are two types of trust: *inter-personal*, the calculation that others will act in your interest and based on the assessment that the other's interests are best served by cooperation with you, and; *impersonal trust*, based on information collected, reputation, shared norms and institutions, shared identity, or altruism; this latter is closer to Levy's and Stoker's “trustworthiness”.

Trust has been found to facilitate the use of health care services by patients (Booth et al., 2004; Cooper-Patrick et al., 1997). In the health care context, patients find themselves in an inferior position when it comes to the notion of trust because of asymmetry of information whereby physicians have superior knowledge of health and treatments, rendering patients more dependent and vulnerable. In the health care sector, trust is constructed from a set of interpersonal behaviors or from a shared identity, underpinned by sets of rules, laws and customs (Calnan & Rowe, 2011). Patients who trust their health care sector are also more likely to use its services when needed, believing that health care decisions will be made with their best interest in mind. Trust further facilitates a better, more continuous relationship between patient and provider which promotes successful medical treatment and behavioral change (Mechanic, 1998). This may be why trust is associated with higher quality of care, as measured by a ten item unidimensional measuring satisfaction, desire to remain with a physician, willingness to recommend to friends, and not seeking second opinions (Caterinicchio, 1979) and narrative interviews where confidence and trust were determined based on observations of the care given to other people, as the care the participants themselves had received (Walker et al., 1998).

Trust has an indirect effect on health outcomes by minimizing the effects of asymmetry of information from the patient perspective and by increasing patient satisfaction, thus encouraging better diagnosis and treatment (Hall et al., 2001; Safran et al., 1998; Thom et al., 1999). This is because, even with asymmetry of information, higher levels of trust allow patients to believe that the decision made by their health care provider is in their best interest.

While quality of care may not be an outcome of trust between patients and providers, studies show that trust acts as an indicator for quality of care and patient's experience of health care services, and that is strongly correlated with patient satisfaction, where levels of satisfaction were highest among patients who had high levels of trust in their provider (Anderson & Dedrick, 1990; Baker et al., 2003; Hall et al., 2002; Walker et al., 1998). Evidence of the impact of trust on patient satisfaction is supported both across provider specialization areas, where trust was one of the most

significant predictors of satisfaction (Hall et al., 2002). The nature of this relationship, then, involves both inter-personal and impersonal trust, where patients may rely on collected information and reputation, but where the personal experience with providers is more pertinent: for example, health care providers are expected to show unbiased concern for the well-being of a patient (Davies, 1999; Mechanic, 1996). In this study, I argue that trust has a positive effect on patient satisfaction with and preference of providers and thus justify the use of the latter as a proxy measure of trust.

Corruption has been defined in a number of ways. In this study, I define corruption as “misuse of public office for private gain” (Sandholtz & Koetzle, 2000: 32). Corruption can be found in virtually all countries, even though the degree of corruption varies greatly. Because of its occult nature, it has been difficult to assess the true extent and effect of corruption, but some data exist, the most widely used being the Transparency International Corruption Perception Index (CPI) and the World Bank Governance Indicators. Numerous authors have theorized on the causes of corruption (Johnston, 2005; Karklins, 2002; Rose-Ackerman, 1999; Tanzi & Davoodi, 1998; Treisman, 2000).

The link between corruption and trust has also been extensively explored, and this exploration has shown that the causal mechanism between perception of corruption and trust in political institutions can go in both directions, where lack of trust is the causal component underlying corruption, where low levels of trust feed the corruption that in turn erodes trust in government and its legitimacy (Anderson & Tverdova, 2003; Della Porta, 2000; Morris & Klesner, 2010; Rothstein & Uslaner, 2005; Seligson, 2002; Wallace & Latcheva, 2006). A culture of mistrust in a society has often been argued to be the cause of engagement in corruption and makes it difficult to address corruption in an effective manner (Bardhan, 1997; Xin & Ruden, 2004). Studies, of which some include Central and East European countries, have found that in countries where perceived quality of government (including efficiency and fairness in the health care sector, and an impartial, trustworthy and uncorrupted government) is high, there is greater support for social policies and spending (Rothstein et al., 2011; Svallfors, 2012). In fact, the Rothstein et al. (2011) study predicts that a country with the best possible level of quality of governance will spend around five percentage units more of its GDP on the welfare state compared to that of the lowest.

Although some have argued that corruption is a necessary evil that alleviates some inefficiency in the bureaucratic system (Bayley, 1967; Huntington, 1968), most agree that corruption undermines long term political stability (Rose-Ackerman, 1999). How does corruption undermine trust? Corruption undermines trust in the political system, particularly in democracies, because it presents to the people a view of the government that does not serve them; rather, it serves those who can pay the most for it. Even citizen's perception of high levels of corruption in their society has a significant negative impact on their generalized trust (Rothstein & Uslaner, 2005; Uslaner, 2003). Della Porta (2000) argues that corruption reduces the public's trust that the government will be able to address the demands of citizens, thus favoring corruption because it transforms citizens into clients and bribers. In a study of four Latin American countries, using a large national sample survey data of over 9000, Seligson (2002) finds that exposure to corruption erodes trust in the political system and reduces interpersonal trust, independent of the effects of other variables such as socioeconomic, demographic and partisan identification. Studies from other countries have found similar links: in a study of corruption and trust in Mexico, Morris and Klesner (2010) found that “the lack of trust fed by corruption is considered critical in that it undermines government efforts to mobilize society to help fight corruption and leads the public to routinely dismiss government promises to fight

corruption” (p.1258), thus finding mutual causality between perceptions of corruption and trust in political institutions. [Park and Blenkinsopp \(2011\)](#) found that the effect of public service corruption on citizen satisfaction is mediated by transparency: corruption significantly lowers trust, and trust significantly increases satisfaction, but transparency reduced somewhat (although not completely) the harm done by corruption. Researchers who conducted parallel experiments in Romania and Sweden exposed participants to different scenarios of solicitation of bribes and public officials (doctors and police), and found that observing a public official accept, or offer, a bribe lowered trust in authority both in a high trust society like Sweden and a mistrustful society like Romania ([Rothstein & Eek, 2009](#)).

While the literature on the mutual relationship of corruption and trust in the health care sector is silent, existing studies analyze the relationship between health care corruption and health care delivery, effectiveness, quality and operations; some literature has also alluded to corruption's dampening effects on trust. Corruption presents itself in different forms in the health care system, including informal payments from patients to providers, bribes and kickbacks in contracts, theft and diversion of drugs and supplies, bribes to get or speed the process of drug approval, bribes to gain admission to medical school, and many others ([Vian, 2008](#), pp. 26–32). Corruption harms patient care because it diverts resources away from health care, and robs the funding that otherwise would pay health care salaries and fund the maintenance of health care facilities ([Vian, 2008](#), pp. 26–32). In fact, corruption, as part of a larger measure of quality of government, also has a negative effect on health indicators of life expectancy, and child and maternal mortality, among others ([Holmberg & Rothstein, 2010](#)). People notice: patients see informal payment for services as corruption, and will avoid the use of public health care services when they see bribery. The perception of corruption lowers patient trust in the health care sector, and this mistrustfulness is transferred to government ([Paredes-Solis et al., 2011](#)). While there are no studies on the effect of low trust on corruption (for ex. bribes of physicians), it is conceivable to expect that patients would offer bribes to providers in order to ensure proper care, given low trust levels. My hypothesis is that corruption reduces trust in health care providers, which harms patients by increasing the likelihood that they will not seek care or may not complete medical treatment. Simultaneously, patients' distrust of providers is likely to increase corruption in the health sector by increasing their willingness to exchange bribes in an effort to assure adequate treatment in an environment that lacks other means to assure accountability.

### Other variables

It is important to control for possible confounding factors in order to isolate the relationship between corruption, trust, and outcomes like patient satisfaction in the health sector. Age, sex, level of education, income, and social class are associated with perceptions of the health care sector, although some studies have found that sex and socio-economic status are only mildly predictive of patient satisfaction ([Fitzpatrick, 1990](#); [Fox & Storms, 1981](#); [Hall & Dornan, 1990](#)). Age is more consistently a determinant of satisfaction across multiple studies ([Al-Windi, 2005](#); [Blanchard et al., 1990](#); [Cleary & McNeil, 1988](#); [Hays & Ware, 1986](#); [Houts et al., 1986](#); [Rahmqvist, 2001](#); [Thi et al., 2002](#)). Some of these studies have suggested that older patients, who have in their life time experienced worse health care system than the current one (for example, in the UK, the pre NHS care), are more content with the comparatively better care they now receive ([Salvage et al., 1988](#)). Others have suggested that older people have lower expectations, and higher deference than do younger people, although the

relationship may be curvilinear, as much older people may become less satisfied ([Jaipaul & Rosenthal, 2003](#); [Khayat & Salter, 1994](#); [Williams & Calnan, 1991](#)).

The significance of the relationship between sex and health care perception is mixed. Women have been found to be less satisfied with care than men in a number of studies. One of the explanations has been that women not only tend to be more frequent users of care, but that they also tend to be more involved in their own personal health status and that thereby have higher expectations ([Nutting et al., 2003](#); [Thi et al., 2002](#); [Weisman et al., 2000](#)). Some studies such as Hall and Dornand's meta-analysis (1990) find no support for sex as a significant determinant of satisfaction (see also [Delgado et al., 1993](#); [Doering, 1983](#); [Rahmqvist, 2001](#)). Educational attainment and income are also significant predictors of health care satisfaction, at least in US studies. Education's relationship to satisfaction is inverted, with less educated people evincing greater satisfaction; more educated patients are also more demanding and less satisfied ([Anderson & Zimmerman, 1993](#); [Hall & Dornan, 1990](#); [Schutz et al., 1994](#); [Sitzia & Wood, 1997](#)). The relationship between social class and health care satisfaction is even murkier. Studies from the U.S. have found that those belonging to higher social classes were also more satisfied with the care they received, but that could be related to the fact that in the US more affluent patients can afford better care than can the less privileged; studies in the UK, though, have also found that patients in the higher social class strata are more informed and better satisfied with care ([Hall & Dornan, 1990](#); [Khayat & Salter, 1994](#); [Salvage et al., 1988](#)), and [Anspach \(1993\)](#) argues that the poor have more difficulty communicating with providers, who in turn don't place as high a value on these patients' perceptions ([Wiggers & Sanson-Fisher, 1997](#)). These data suggest that in order to measure the relationship between corruption and trust, we have to control for age, income, and possibly also sex and social class. The data permitted me to make these adjustments.

### Research design

#### Source of data

The present study is an analysis of surveys conducted between November 21 and 24, 2007 and during the first three weeks of December 2009 through a Computer Assisted Telephone Surveying method (CATI) on representative samples of the Croatian population. Samples are statistically weighted according to sex, age, level of education, and political party affiliation. The election forms were the parliamentary election in 2007, and the presidential election in 2009. The research in 2007 involved an *N* of 1500, and in 2009 it involved 800 respondents. We estimated the sampling error using population size and the standard deviation of our sample and the maximum sample error was  $\pm 2.5\%$ – $3.2\%$ . Both of the surveys were administered as election surveys with health-related questions appended.

We stratified the probabilistic sample in two stages with the following characteristics: six traditional regions – City of Zagreb region, Northern, Southern, Central, Western, and Eastern region, defined through existing counties (to achieve sorting of election units based on principle of exclusiveness and exhaustiveness), and according to settlement size. Unit allocations over strata were performed proportionally to strata size (number of 18+ examinees in stratum). The urbanization level was distributed in 4 population size categories (up to 2000 residents, 2001–10,000, 10,001–100,000, and more than 100,000 residents). Randomization of the sample was computer-based according to stratum definition, but the sample was additionally weighted to obtain a fully representative sample of the Croatian voting body.

**Table 1**  
Variables.

Variable	Measure	Survey question
DV: Health care preference	0: private care choice; 1: public care choice	When using health care services, if given a choice, you prefer: 1) Private practice 2) Public facilities
IV: Experience with corruption	0: no experience 1: experienced corruption  ( <i>recoded from a nominal level variable that had 6 possible responses</i> )	Which problem in the health care system have you experienced the most in the past year? 1) Poor organization 2) Insufficient funding 3) Inadequate work of the health staff 4) Poor equipment and facilities 5) Corruption 6) Other: specify _____ 7) None of the above 8) DK/NA
IV: salience of corruption	0: not most important issue 1: most important issue  ( <i>recoded from a nominal level variable that had 7 possible responses</i> )	What is the biggest problem in health care today? 1) Poor organization 2) Insufficient funding 3) Inadequate work of the health staff 4) Poor equipment and facilities 5) Corruption 6) Other: specify _____ 7) None of the above 8) DK/NA
IV: Education	1: no primary school, 2: primary school completed, 3: secondary school completed, 4: community college or university completed	What level of formal education have you achieved?
IV: Age	Real number as self-reported	How old are you?
IV: Household income	1000 kn, 1001–2005 kn, 2501–4000 kn, 4001–5500 kn, 5501–7000 kn, 7001–8500 kn, and over 8500 kn	What is your total household income?

We did a random sampling of persons within households using the table of random numbers. Other studies have shown that this type of statistical adjusting of data obtained through CATI ameliorates the effects of a survey conducted over a short period (Blendon et al., 2003; Curtin et al., 2000; Keeter et al., 2000, 2006).

The ethical approval for the 2007 research project was granted by the Mississippi State University Institutional Review Board for the Protection of Human Subjects under reference number 07-352. The 2009 research did not require ethical approval because I was not directly involved in its collection, and the data already existed and excluded all possibility of individual respondent identification when I accessed it.

### Variables

With regard to the dependent variable, one caveat in need of mentioning here is that, while the paper sets out to study trust, the way the question was phrased in the study alludes to “preference” as outlined in the Table 1. The argument for using preference as a proxy measure of trust is that patients prefer providers whom they trust. Studies have shown that trust and preference are highly correlated in the health care sector and that preference and satisfaction with health care are a good indicator of trust, though the former one is backward looking, based on past experiences, while the latter one is forward oriented, based on expected behavior (Anderson & Dedrick, 1990; Baker et al., 2003; Hall et al., 2002; Walker et al., 1998). Descriptive statistics on the variable is included in the Table 1.

In addition to the variable measuring experience with corruption, another variable is included, salience of corruption, that is, the perception that corruption is the biggest problem in health care today. While someone may not have had a direct experience with health care corruption, they may know someone who did, or may have observed it elsewhere. This would make the issue salient to

them and, possibly, affect feelings of trust independent of direct experience. The level of correlation of the two variables is low (0.19 for 2009 and 0.15 for 2007). Other control variables include sex, age, level of education and income/economic situation in the household. All of the descriptive characteristics are included in the Appendix A. Although the dataset has some limitations listed above, it tackles an important issue that has not been explored extensively yielding important implications.

It is also worthy briefly to explore here some of the descriptive statistics presented in the Appendix A that shed light on the political setting of the 2007 and 2009 elections. Looking at the 2007 and 2009 responses, the responses to both salience and experience with corruption are comparable, where 59.63 percent of the respondents view health care corruption as the most important issue in 2007 compared to 60.63 percent in 2009. Similarly, experience with corruption in health care is slightly higher in 2007 (12.39 percent) as compared to the 7.87 percent in 2009. This small difference may be attributed to the fact that in 2008 and 2009 there was an increased exposure and prosecution of corrupt practices by some notable public health sector physicians involving bribes, which may have had a dampening effect on the corrupt practice. However, political discussions surrounding the two elections are unlikely to have had influence on either experience or salience of corruption: the issue of corruption was not addressed in either of the two political campaigns, even though there has been increased public awareness of corruption in general as Croatia advanced in the accession negotiations to the European Union. It is only recently, in the 2011 parliamentary election that the problem of corruption was discussed in the context of the electoral campaign.

### Results and discussion

I performed a logistic regression for survey data to analyze the effect of corruption on trust in health care of the public sector.



**Table 2**  
Logistic regression results: 2007 election year.

Variable name	Model 1		Model 2	
	2007 coefficient estimate	2007 odds ratio	2007 coefficient estimate	2007 odds ratio
Saliency of corruption	<b>−0.3157</b> <b>(0.1462)</b>	<b>0.7292</b> <b>(0.1066)</b>		
Experience with corruption			−0.3271 (0.2176)	0.7209 (0.1569)
Education	−0.1105 (0.1148)	0.8953 (0.1028)	−0.1139 (0.1145)	0.8923 (0.1022)
Household income	0.0439 (0.0405)	1.0449 (0.0423)	0.0444 (0.0403)	1.0454 (0.0421)
Age	<b>0.0235</b> <b>(0.0048)</b>	<b>1.0238</b> <b>(0.0049)</b>	<b>0.0236</b> <b>(0.0048)</b>	<b>1.0239</b> <b>(0.0049)</b>
Sex	−0.2486 (0.1487)	0.7798 (0.1160)	−0.2062 (0.1499)	0.8136 (0.1219)
Settlement size	<b>0.1336</b> <b>(0.0614)</b>	<b>1.1430</b> <b>(0.0702)</b>	<b>0.1333</b> <b>(0.0616)</b>	<b>1.1426</b> <b>(0.0704)</b>
Constant	<b>0.1446</b> <b>(0.5998)</b>		(−0.0051) (0.6024)	
N	1500		1500	

Results in bold are significant at  $p > .001$ .

Standard errors in parentheses.

Source: 2007 Parliamentary Election survey.

Results are presented in Table 2 (2007 election) and Table 3 (2009 election). I included two different models in each analysis where Model 1 uses saliency of corruption as the determinant independent variable, while Model 2 includes experience with corruption as the determinant variable. A third model not included here used both corruption variables and did not yield significant changes in the results.

*2007 parliamentary elections results*

For 2007, only three independent variables are significant: *saliency of corruption*, *age*, and *settlement size*. In Model 1, those who considered health care corruption to be the biggest problem have 0.7292 lower odds of preferring public health facilities. Furthermore, an increase in one year of age of a respondent increased the odds of preferring public health care facilities by a factor of 1.0238. Finally, an increase in settlement size of the respondent increased the odds of preferring public health care facilities by 1.1430.

In the Model 2 for 2007, only two variables were significant: *age* and *settlement size*. As in the previous model, both had a positive effect on the dependent variable where an increase in age by one year increased the odds that the respondent will prefer public facilities by 1.0239. Similarly to the first model, the odds of preferring public health facilities increased by 1.1426 with an increase in settlement size.

The results for 2007 are as expected. While actual experience with corruption in the health care sector is not significantly related to preference in care, even though the relationship is negative, perception of corruption lowers the odds of preferring public health facilities. This result supports the hypothesis that corruption lowers the trust patients have in the public sector health care they receive.

As in most other studies where older generations were more likely to trust their health care providers, here, an increase in age increased the odds of trusting public health facilities. In addition to their more deferent attitude towards the health care providers,

**Table 3**  
Logistic regression results: 2009 election year.

Variable name	Model 1		Model 2	
	2009 coefficient estimate	2009 odds ratio	2009 coefficient estimate	2009 odds ratio
Saliency of corruption	<b>0.5853</b> <b>(0.2443)</b>	<b>1.7955</b> <b>(0.4387)</b>		
Experience with corruption			<b>2.2322</b> <b>(1.0461)</b>	<b>9.3208</b> <b>(9.7506)</b>
Education	<b>−0.9830</b> <b>(0.2061)</b>	<b>0.3741</b> <b>(0.0771)</b>	<b>−0.9597</b> <b>(0.2068)</b>	<b>0.3829</b> <b>(0.0792)</b>
Economic situation	<b>−0.3181</b> <b>0.1490</b>	<b>0.7274</b> <b>0.1084</b>	<b>−0.3246</b> <b>0.1540</b>	<b>0.7227</b> <b>(0.1113)</b>
Sex	0.0959 0.2236	1.1006 0.2461	0.0730 0.2260	1.0757 0.2431
Age	0.1566 (0.1434)	1.1696 (0.1678)	0.1559 (0.1443)	1.1687 (0.1687)
Settlement size	<b>−0.9718</b> <b>0.3381</b>	<b>0.3783</b> <b>0.1279</b>	<b>−0.9510</b> <b>0.3357</b>	<b>(0.3863)</b> <b>0.1297</b>
Constant	<b>6.5730</b> <b>(1.1377)</b>		<b>6.6526</b> <b>(1.1349)</b>	
N	800		800	

Results in bold are significant at  $p > .001$ .

Standard errors in parentheses.

Source: 2009 Presidential Election survey.

older, retired people are less likely to have additional disposable income to afford care in private facilities and are more likely to rely on the system they have used most of their lives. Hence, the effect of corruption may not affect their trust as much as it would younger patients. Finally, an increase in settlement size increases the odds of selecting public facilities. This result most likely reflects the fact that in larger urban areas there is greater availability, and therefore choice of public care facilities patients can choose from, thereby lowering the need to pay out of pocket for private care when faced with corrupt practices at a public health facility. The results for 2009 are, however, different.

#### 2009 presidential election results

In Model 1, four independent variables are significant: *salience of corruption*, *education*, *economic situation*, and *settlement size*. However, the effects are the opposite of the ones found for 2007. Those who considered health care corruption to be the biggest health care problem had increased odds of preferring public care by 1.7955 than those who did not see health care corruption as the biggest problem. This result is contradictory and does not support the hypothesis about corruption and trust.

Greater degree of education decreased the odds of preferring public care by a factor of 0.3741. An increase (improvement) in respondents' economic situation decreased the odds of preferring public care by 0.7274. Finally, an increase in settlement size also decreased the odds of selecting public health care as preferred by a factor of 0.3783.

In Model 2, experience with corruption increased odds of preferring public health care by a factor of 9.3208. As in the previous model, an increase in the level of education decreased the odds of preferring public health care by 0.3829, and an increase (improvement) in the economic situation also decreased the odds of preferring public health care (0.7227). Lastly, an increase in settlement size lowered the odds of preferring public health care by a factor of 0.3863.

The results for 2009 are counter to those for 2007, and do not support the main hypothesis that health care corruption lowers trust in health care of the public sector. In fact, the effect of experiencing health care corruption has a very large positive effect on trust in public sector health care. It is important to note that the majority of Croatian patients largely use the public health sector services for several reasons: all hospital care and the majority of inpatient care is still under the auspices of the state, and the majority of the population is covered by the social insurance system, which covers most medical care with exception of a small percentage of fees, while private care is largely uncompensated by the social insurance system and requires patients to pay directly out of pocket. This may affect the choice of public vs. private care because the cost of out of pocket private care may be prohibitive to most Croatian patients, even when faced with experiences with corruption.

Looking at the opposite effect of settlement size from the 2007 survey, it may be that this reflects the fact that in larger urban areas there is greater availability, and therefore choice (at potentially lower cost due to greater competitions) of private care facilities that can replace or supplement the choices of public health facilities. In fact, there is inequality in the availability of care in Croatia where large urban areas tend to have more and better quality health facilities, while residents of other smaller urban or rural areas often have to travel distances to receive care. While Croatia does not also have an adequate supply of physicians (215 per 100,000 in the mandatory public health sector), there tend to be also disparities between counties, where the counties housing large urban centers, such as the capital of Zagreb, have more than the average number of physicians (more than 250/100,000) while more rural areas have

disproportionately low number of physicians (less than 150/100,000) (Drakulić et al., 2009).

The negative effect of education may be affecting choice through income, where those who are better educated and able to earn a higher income also prefer to use private health care facilities given the choice. This finding is supportive of other studies that found more educated patients to be also more demanding and less satisfied (Anderson & Zimmerman, 1993; Hall & Dornan, 1990; Schutz et al., 1994; Sitzia & Wood, 1997).

Part of the difference in the results from the two years could be caused also by the difference in the sample. In 2007, the population sampled was less educated, and more rural, where about 39 percent of the sample respondents lived in settlements of 10,000 or more, while in 2009, a greater proportion of respondents were college educated and 83 percent of them lived in settlements of over 10,000. This difference in the samples, which affect knowledge, information and alternatives is what may be responsible for some of the differences in the results.

Although the findings in this study are mixed, they indicate that perception of and experience with corruption is negatively correlated with choice of public health care facilities, suggesting that patients who experienced corruption in the public sector also have lower trust in the care provided by them. This finding also follows similar findings in Svallfors (2012) in particular and Holmberg and Rothstein (2010) where perception of lower quality of government (including the perception of corruption) yields lower support for social policies, including provisions of public health care, thus pointing out to the need to curb corruption from a social policy provision stand point. Results from the 2007 survey show that those who perceived health care corruption as the most important issue also lost trust in the public health facilities. This finding did not hold for older patients, possibly because older patients simply did not have knowledge of and/or possibilities of gaining access to alternative private care. It is thus important for policymakers not only to understand the overall influence of corruption on trust in health care but also to assess the distribution of its effects across different groups in society.

#### Limitations

There is a limitation with regard to the dichotomous measure of the dependent variable. This measure does not capture a range of opinions about the importance of corruption or degree/type of experience with corruption, and I believe this is something to be taken into consideration in future studies.

Another possible limitation is that trust is measured by the proxy measure of "preference". As mentioned, the argument for using preference as a proxy measure of trust is that studies have shown that trust and preference are highly correlated in the health care sector and that preference and satisfaction with health care is a good indicator of trust (Anderson & Dedrick, 1990; Baker et al., 2003; Hall et al., 2002; Walker et al., 1998). Patients prefer providers whom they trust.

Finally, a limitation of this study is the relative lack of probing and detail in the survey. A survey that probes more deeply the relationship between corruption and trust might have provided for more interesting findings. This initial attempt to measure the relationship between corruption and trust in the health care system has proved to be a learning experience for future studies.

#### Conclusion

Literature on the specific relationship between health care corruption and trust is scarce, but the broader setting of this research questions within the corruption and trust literature

suggests that perceptions of corruption should lower trust in the highly sensitive relationship between patients and providers. The present study offers mixed results. I found that there is a link between corruption and public vs. private sector preferences in one sample of respondents in 2007, but not in another in 2009. Taken together, the results suggest that citizens' context and experience with corruption may transfer to their perceptions about the integrity of the health care they are afforded. Older citizens seem to be inclined to use the existing health care infrastructure, most likely partly due to more limited income, and because it is a system they helped create during the previous political system. Wealthier, better educated citizens, as in other countries, are free to move their acquisition of health services across domains, and are then more likely to use alternative private care, when available. Thus, this study concludes that there is a significant link between corruption, whether direct experience with it or perception of its salience, and preference of public health facilities in countries where a new private sector has developed alongside the existing public one that is often unreformed, or poorly managed.

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### Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2013.08.033>.

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