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Incentives for Blood Donation in the Czech Republic: Case Study of Prague

Bachelor's thesis

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Declaration of Authorship

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Abstract

Blood shortages prompt policymakers to find ways to increase the supply of blood to meet the health sector's demand. The aim of this thesis was to examine the effects of selected incentives on blood donation. Using a questionnaire for blood donors, the data was collected at a transfusion station in Prague. The questionnaire focused on hypothetical choices of donors when offered a certain type of incentive. The probit model and linear probability model were chosen for analysing the hypothetical effects of incentives and determining the donors' significant characteristics. The results showed that the vast majority of respondents would donate as often as they currently do with any of the selected incentives. A small proportion of donors would, however, respond to the incentives. The financial incentive or small gifts would discourage a certain proportion of donors; on the other hand, offering a voucher to pharmacy would motivate a small proportion of donors. Both probit and linear probability model revealed several important donor characteristics that affect attitudes towards incentives. One of the most significant characteristics was gender; the financial incentive would discourage women significantly more than men.

Abstrakt

Nedostatek krve podněcuje tvůrce politik k hledání způsobů, jak zvýšit její nabídku, aby byla pokryta potřeba zdravotnického sektoru. Cílem této práce bylo prozkoumat účinky vybraných pobídek na darování krve. Prostřednictvím dotazníku byla sesbírána data od dárců na jedné z pražských transfuzních stanic. Dotazník byl zaměřen na hypotetické volby dárců při nabídce určitého typu pobídky. K analýze hypotetických účinků pobídek a určení významných charakteristik dárců byl zvolen probitový a lineární pravděpodobnostní model. Výsledky ukázaly, že naprostá většina respondentů by darovala stejně často jako doposud při jakékoliv ze zvolených pobídek. Malá část dárců by ovšem na pobídky reagovala. Finanční pobídka nebo drobné dárky by určitou část dárců odradily, na druhou stranu nabídka poukazu do lékárny by malou část dárců motivovala. Probitový i lineární pravděpodobnostní model odhalily několik důležitých charakteristik dárců, které ovlivňují jejich postoj k pobídkám. Jednou z významných charakteristik bylo pohlaví; finanční pobídka by odrazovala ženy od darování krve výrazně více než muže.

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Acronyms

AIDS Acquired Immunodeficiency Syndrome

AME Average Marginal Effect

CRC Czech Red Cross

CZSO Czech Statistical Office

EC European Council

EP European Parliament

HBV Hepatitis B Virus

HCV Hepatitis C Virus

HIV Human Immunodeficiency Virus

LPM Linear Probability Model

MLE Maximum Likelikood Estimation

OLS Ordinary Least Squares

TS Transfusion Station

TTI Transfusion Transmissible Infections

ÚHKT Ústav hematologie a krevní transfuze

US United States

WHO World Health Organization

Chapter 1

Introduction

The topic of blood supply is being discussed worldwide and is very important for the smooth running of our healthcare system. Human blood is a rare and still irreplaceable resource that usually needs to be available to the patient immediately or in a very short time. It cannot be stored for too long, therefore striking a balance between supply and demand is crucial. This balance is not often achieved naturally. However, research conducted in the past showed that it could be stimulated by using specific instruments for strengthening the supply - incentives (Chell et al., 2018; Niza et al., 2013).

Blood donation incentives are a part of many blood collection systems in countries all around the world (Abolghasemi, 2010). Every policy has its drawbacks, and incentives are no exception. Problems with incentivised blood donation include blood safety, quality and the effect known as "crowding out" (Irving et al., 2020; Mellström and Johannesson, 2008).

This thesis aims to examine donors' attitudes towards selected incentives for blood donation and analyses the effects of incentives. Specifically, financial incentive, pharmacy voucher and small gifts are considered. Through a self-administered questionnaire and hypothetical choices, donors' attitudes towards introducing chosen incentives are examined. The probit and linear probability regressions are used to determine the key characteristics of donors who would either be discouraged or motivated by the corresponding incentive. It is also tested whether men and women generally respond differently to the financial incentive.

Regarding the structure of the thesis, in Chapter 2 the literature on the blood market, incentives and their various drawbacks is reviewed. Chapter 3 presents the Czech blood donation environment and current regulations. More-

over, the hypotheses are presented at the end of this chapter. The survey design, collection and preparation of data are described in Chapter 4, as well as the econometric methods used on the data. Chapter 5 then reveals the results of the hypotheses and individual models on the anticipated effect of the corresponding incentives. Chapter 6 discusses the results and possible explanations for why some results differed from the ones expected. The limitations of this thesis are also included. Finally, Chapter 7 summarizes the conclusions and outlines possible policy solutions to regulate blood donation.

Chapter 2

Literature Review

2.1 Incentives and altruism

Traditional economic theory assumes that people behave rationally and maximize their utility. Behavioral economics complements traditional theory and says that agents can sometimes behave irrationally. It drops the assumption of rationality and uses insights from psychology, sociology, and other sciences to examine the economic decision making of individuals and groups (Ogaki and Tanaka, 2017).

In the context of individuals' decision making, economists agree that people respond to incentives (Bénabou and Tirole, 2003). In traditional economic theory, incentives are perceived as a tool to increase agents' effort, encouraging them to take a desired action, often of a prosocial character. This positive effect has been confirmed in many cases. However, psychologists and behavioral economists do not see the role of incentives in an unambiguously positive way, as rewards may easily backfire (Bénabou and Tirole, 2003).

Economic incentives are of two types - monetary and non-monetary. Monetary incentives include cash, vouchers, tax reductions, travel reimbursements, and discounts. Non-monetary ones can be in the form of gifts, tickets (for a prize draw or event), donor appreciation, and a day off work (Chell et al., 2018). The classification of some incentives is arguable, for example, a day off work may be perceived as a monetary incentive as well as a non-monetary one.

A person considering how to respond to an incentive is driven by personal beliefs and motives. Motivation is an important factor for prosocial behavior. Behavioral economists distinguish two types of motivation - intrinsic and extrinsic. The original role of incentives is to act as extrinsic motivation, prompting

people to take the desired action, whether it is donating blood, giving to charity, or simply performing a task to get the reward (Gneezy and Rustichini, 2000; Bénabou and Tirole, 2003). Intrinsic motivation, on the other hand, is a pure desire to complete the action for the personal satisfaction. Sometimes extrinsic motivation in the form of incentives can conflict with intrinsic motivation and lead to undesirable effects (Bénabou and Tirole, 2003).

With the use of incentives in practice, the observed consequences are called crowding effects. In blood donation, crowding in effect occurs when incentives have a positive impact on either retention of donors, units of blood collected, or they cause an inflow of new donors. The crowding out effect consists in the incentives having a negative effect on the mentioned factors, for example, they reduce the number of blood units collected, discourage existing donors, and do not attract new ones. The crowding in effect is the one that policymakers aim at, i.e., motivating people to donate blood.

Lacetera et al. (2012) reported a positive effect of some type of incentives on repeat donor participation. Specifically, donor retention was shown to increase significantly when coupons and gifts were introduced. Chell et al. (2018) summarized the effects of incentives in their systematic review. According to the authors, several other researchers have reported positive effects of incentives on the number of blood units withdrawn or on repeat participation in donating (Jason et al., 1986; Goette and Stutzer, 2008; Danielson et al., 2001). The crowding out effect acts in the opposite direction. For more on this topic, see Subsection 2.3.1.

Blood donation is often associated with altruistic behavior of individuals - a desire to help others, even if it does not bring any benefit to the altruistic person. Altruism is one of the phenomena that links the fields of economics and psychology. Carpenter and Myers (2010) found in their study that altruism was closely linked to volunteer behavior. They focused on the motives of volunteer firefighters to provide free public service. From records of attendance at callouts and the researchers' version of dictator game, the authors found that altruism was a key factor in joining this volunteer force. Similarly, the blood donation sector, in most developed countries, relies heavily on altruistic unpaid donors.

2.2   The blood market

Blood donation is greatly based on the altruism and prosocial behavior of every individual in our society. Despite this, the sector is considered a market because it is influenced by economic factors such as "...supply and demand, economies of scale, and moral hazard" (Slonim et al., 2014, p. 177). It is relevant to review the historical development of the market to fully understand its present form and learn how economists can help with smooth market functioning.

2.2.1   From history to the present

The blood market was very small in the early days, as scientists were only discovering the critical factors affecting the survival of patients treated with blood transfusions. These included the discovery of blood groups, the sterilization of equipment, and the invention of transfusion devices. Blood storage was extremely limited, so a system was introduced whereby each patient had a specific donor (usually a family member). This prevented the unnecessary disposal of donated blood. Over time, with innovations in technology, we came to the current state where the market is mass and anonymous (Slonim et al., 2014).

With the establishment of the first blood banks during the 1930s, economies of scale developed, and the blood market grew considerably (Giangrande, 2010). Blood storage options improved, which made the market more efficient than in its initial form. This was primarily due to the reduction in costs associated with moving donated blood rather than the donors themselves, the ability to store blood over a longer period of time and to maintain a certain level of reserves (Slonim et al., 2014).

From the beginning, blood donations were both paid and unpaid, plus doctors who could perform transfusions were paid a substantial commission that could easily exceed their monthly income. Doctors were therefore highly motivated to perform transfusions and often personally sought out donors, for example, on the street, and offered them money. This indicates that economic motivations (in addition to altruistic ones) were part of blood donation from the beginning (Slonim et al., 2014).

World War II contributed to great progress, as wounded soldiers and civilians often needed transfusions. Increased demand required improvements in the handling of donated tissue as well as innovations in donor motivation. Since

blood was, and still is, irreplaceable and has no market price, the importance of donation was emphasized to people by associating it with patriotism, therefore increasing its shadow value. The war overshadowed the consideration of blood safety, which medical professionals and scientists began to address mainly in the 1970s, also in the context of Titmuss's groundbreaking book (Titmuss, 1970). Following the spread of AIDS in the 1980s, the process of rigorously testing every sample collected for Transfusion Transmissible Infections (TTI) began. Testing is still carried out today to minimize the risk to patients receiving transfusions (Slonim et al., 2014).

2.2.2   Economists' approach

The blood market is unique, and that is why it needs exceptional management. The treatment of volunteers who provide blood as a raw material to produce an essential medical product is different from managing an ordinary consumer goods market. Regulating a "commodity" (assuming that blood is one) that does not have a market price is possible by means of "non-price signals" (Slonim et al., 2014). But these signals do not address the overall supply and demand balance, which is why some economists came up with innovative ideas to improve efficiency and coordination within this market. These ideas include a donor registry, forecasting the demand, and predicting donors' intentions using an artificial intelligence-based system.

Spikes in blood supply and demand tend to be both regular and irregular. Seasonal supply shortages occur in winter, mainly due to increased incidences of infectious diseases, and also in summer when people go on holiday. Summer shortages are caused both by people being away from the collection site and by the fact that donations are restricted for a period of time after the arrival from abroad, especially from tropical areas. A shock to the market caused by a disaster (e.g., earthquake, flood, tornado) that involves a high surge of patients in a short period of time is another reason for the imbalance in the blood market. In such a critical situation, demand increases, and additional donors are needed immediately available. People often notice increased demand in the media, which can result in an oversupply. Good intentions can thus overflow transfusion centres. The excess blood supply is either discarded after the expiration date, or this situation can be prevented by limiting the number of incoming donors. However, this strategy is usually not applied in practice

because there are concerns that donors would not return and thus deepen the deficit in a normal state (without disaster) (Slonim et al., 2014).

Although the blood donation environment is a large market, blood does not have its market price. Without a market price, people are allowed to donate blood at any time, regardless of the state of demand - whether there is a surplus or deficit (Slonim et al., 2014). That makes the regulation of collections challenging. Slonim et al. (2014) suggested that implementing a registry for blood donors could help during a time of imbalance. Quick and effective communication with donors about the need for additional blood collection is crucial in a state of emergency. In times of shortage or excess supply, a centralized system can signal the current needs to donors and better organize the whole process. Such practice proved to be successful, for example, in the case of organ or bone marrow donations (Garbarino et al., 2017).

Garbarino et al. (2017) eventually came up with the same concept in mind, and they implemented such a registry for blood donors within their field experiment. They approached the so-called "long-lapsed" donors who already donated blood in the past but not during the last two years. The authors were interested in whether the registry would select the more motivated donors from those approached, and whether it is an effective tool to coordinate the supply better. The results favoured their hypotheses; registered lapsed donors were more likely to donate in times of shortage than those not registered.

Another approach to deal with the unbalance of the market is to forecast the demand. Fortsch and Khapalova (2016) examined demand uncertainty and tried to figure out the best way to predict its course in their study. They obtained data on daily demand over several years and applied multiple prediction methods. Autoregressive moving average, known as the Box-Jenkins method, proved to be the best fit for this data. Salazar-Concha and Ramírez-Correa (2021), on the other hand, focused on supply prediction, specifically observing the intentions of existing donors to return for further donations. The design of the experiment was subordinated to the pandemic situation, which has been very relevant in the past two years. Therefore, the authors focused on supply prediction under a social interaction constraint regime, i.e., prediction from a limited amount of information. Using seven variables, a decision tree method, and a questionnaire framed by the theory of planned behavior, the authors successfully managed to predict donors' intentions for further donations, with an accuracy of about 87%.

One of the practical contributions of economists working on problems in the

blood donation industry is to invent user-friendly and straightforward systems for predicting supply and demand. These systems can be then used by medical professionals who do not have the econometric education or the time to learn sophisticated data science methods. The implementation and use of uncomplicated forecasting methods by health professionals can improve efficiency and internal market coordination (Fortsch and Khapalova 2016).

2.3 Problems of incentives in blood donation

The problem of incentives in blood donation first became known when Richard Titmuss discussed it in his book "The Gift Relationship: From Human Blood to Social Policy" in the early 1970s (Titmuss, 1970). This book compares two systems established in practice, namely the US commercial system (paid donors) and the British voluntary system (nonpaid donors). The author himself was an advocate for the British system, pointing out the benefits of voluntariness and, on the contrary emphasizing the fundamental problems of the commercial system in the US. These problems are still relevant today, and many authors have followed up on Titmuss with their studies and experiments (Mellström and Johannesson, 2008; Sadler et al., 2018; Lacetera and Macis, 2010).

2.3.1 Crowding out effect

The intrinsic motivation of donors is an important part of a system based on voluntariness. Standard theory in economics suggests that offering incentives as a form of extrinsic motivation should most likely induce the willingness to donate, therefore resulting in increased blood supply. Sometimes the intrinsic motivation of donors can be compromised when a new policy involving incentives is introduced, creating a crowding out effect. This effect consists in some of the donors being discouraged by the incentive. As Sadler et al. (2018) state, this discouragement happens mostly because, suddenly, a monetary value is assigned to the initial intrinsic motivation. People are denied the opportunity to show their kindness and good intentions without getting a reward. As the authors mention in their study "Extrinsic incentives such as money rewards are said to be negatively correlated with intrinsic motives such as the desire to help." (Sadler et al., 2018, p. 117). Other authors also discussed the crowding out effect and described its various causes.

Mellström and Johannesson (2008) noted a significant crowding out effect

in their study. They conducted a field experiment with three different treatment groups and looked at the circumstances under which people are willing to become blood donors. The first group received no incentive, the second group received an amount of about $7, and the third group could choose to keep the amount or donate it to charity. Only a slight crowding out effect, not statistically significant, emerged from the entire sample. However, after dividing the participants by gender, the authors observed a significant crowding out effect for women, while there was no significant difference between the treatment groups for men. Lacetera and Macis (2010) came up with the same result two years later from their experiment in an Italian city. One major difference between these two studies was that the participants in the Italian experiment were all already blood donors. Since the volunteer system is in place in Italy, the intrinsic motivation for altruistic acts that donors showed before may have resulted in the observation of a greater crowding out effect than that found by Mellström and Johannesson (2008).

Gender-specific responses to incentives have been mapped in the literature, and not exclusively in the field of blood donation. For example, Benndorf et al. (2019) looked at the different responses of men and women to a change in how they were paid for their work. Initially, participants in the experiment were paid for the number of correct answers to a puzzle. In the second part, they received a fixed payment regardless of the number of correct answers. The aim was to observe the vanishing of intrinsic motivation when offering a fixed amount. The results spoke clearly in favor of their hypothesis, namely that once the piece rate changes to a fixed rate, people experience a decrease in the effort. In addition, the authors observed that "This result is entirely driven by men who reduce their effort substantially while women's performance remains practically unaffected." (Benndorf et al., 2019, p. 212). It is assumed then, that a gender-specific crowding out effect occurs primarily among women, and it is likely because they care more about social esteem (Bénabou and Tirole, 2006). Accepting a monetary reward or reducing effort when a reward is withdrawn can make them look greedy in front of others. This also corresponds with the findings of Ariely et al. (2009) who investigated the role of image motivation in behaving prosocially. Their results affirm that prosocial behavior is strongly impacted by image motivation, which is to some extent crowded out by financial incentives. Together with Mellström and Johannesson (2008), Ariely et al. (2009) agree that there are different effects of monetary incentives in public and private blood donations. In a private setting (e.g., more anonymous, the

subject decides in privacy if he/she will accept the reward), monetary incentives increase the donation rate as the donors are not frightened to be seen as materialistic by their social environment. In contrast, in a public environment (e.g., where others can see your behavior), donation rates remain unchanged or even decrease. According to the literature, these phenomena were also confirmed for different types of prosocial behavior that are in the public setting (Goette et al., 2010).

Goette et al. (2010) found a connection between the tendency to donate and the treatment effect. Experiment participants who had a relatively low intrinsic tendency to donate (around 30%) were significantly more influenced by a lottery ticket incentive than donors with a high intrinsic tendency to donate (around 75%). For the first-mentioned group, there was an increase of 9%, while for the second one no effect of the incentive was noticeable. A similar effect was also observed with a voucher incentive. However, the full sample provided no evidence of a crowding out effect. The authors tracked participants for an additional 18 months and found no long-term effect of the incentives (Goette et al., 2010). In addition to this study, Niza et al. (2013) collected in a meta-analysis several other studies (Ferrari et al., 1985; Goette et al., 2009; Lacetera et al., 2012; Mellström and Johannesson, 2008; Reich et al., 2006) that also addressed the problem of crowding out. The result of this analysis was that treatments with and without financial incentives resulted in a similar likelihood of blood donation. In other two studies by Goette and Stutzer (2008), and Goette et al. (2009) the use of a free cholesterol test as an incentive also yielded no impact on the likelihood of giving blood.

Many authors agree that further research is needed in this area, as the evidence is limited, and the effects of incentives are still mixed (Goette et al., 2010; Irving et al., 2020; Lacetera and Macis 2010; Niza et al., 2013). Some recommend caution with the introduction of incentives for blood donation in public settings. It is evident that more field research is needed as they may point to different results than surveys.

2.3.2   Safety and quality of donated blood

In the context of incentives, the safety and quality of the blood collected is historically a frequently discussed topic. There are reasonable concerns that incentives for extrinsic motivation of donors may cause adverse effects on blood quality and safety. It is crucial that donors provide truthful information about

their health status to minimize the risk of infection or disease transmission through transfusion. Donors strongly motivated by financial or non-financial incentives may withhold facts about their health status (Irving et al., 2020; Chell et al., 2018; Abolghasemi et al., 2010).

According to the existing evidence assembled by Chell et al. (2018) in a systematic review, direct cash incentives and health checks were mainly responsible for the decline in blood safety; however, mixed evidence exists for these as well. A similar finding was made by Strauss (2002), who found that cash and paid days off were the largest contributors to worsened blood safety. The incentive of cash is believed to attract at-risk donors who are more likely to cause TTI. Such donors do not necessarily have to lie about their health status in the first place. They may not be aware that they suffer from an infection or disease. The problem is the very fact that they are from an at-risk population group, so they are more likely to donate unsafe blood (Chell et al., 2018).

Of lesser concern are non-monetary incentives, such as vouchers, discounts, gifts, and tickets which apparently have no negative effects on blood safety, from both remunerated and voluntary systems (Chell et al., 2018; Abolghasemi et al., 2010). A good example of an incentive for the retention of safe donors is the awards for unpaid blood donors of the Czech Red Cross (CRC). In terms of security, they do not attract donors from at-risk groups and at the same time give the donor a certain sense of gratification that their regular contribution is not being overlooked. Once reliable and safe donors are recruited for blood donation, it is important to retain them to maintain blood quality. Anyone who finds themselves in need of a transfusion prefers blood from a regular, screened donor rather than a first-time donor (Strauss, 2002).

Due to the lack of evidence on the adverse effects of incentives on blood safety and quality, we cannot clearly conclude whether incentives have such consequences. In some cases, negative effects of incentives were confirmed, hence doubts about paid donation remain (Chell et al., 2018).

2.3.3 Barriers to blood donation

Identification of barriers to donation is another important factor for blood supply. Understanding the donor's obstacles helps to adjust blood donation policy and maximize its efficiency. Sojka and Sojka (2008) reported that laziness and fear of needles belong to the most frequently stated obstacles of donors. The vast majority of active donors in their study answered that they did not have

any special difficulties connected to the donation. However, the authors did not collect answers from non-donors, so even the infrequently mentioned obstacles should be considered. These were, for example, fear of fainting (dizziness) or fear of disease detection. Interestingly, observations of answers for men and women did not differ significantly.

A study by Ibrahim et al. (2021) run at the Qatar University campus revealed that the two most common barriers of non-donors were "failing to meet the requirements" and "no one ever asked me to give blood". All participants in this study were students, therefore this could affect the magnitude of choosing specific responses. For example, the frequent indication of the answer "no one ever asked me to give blood" may be caused by the young age of the participants, who are eligible to donate blood for only a few years. Other common barriers, similar to Sojka and Sojka (2008), included fear of needles or dizziness, as well as lack of information about where to donate blood.

Not answering the question of whether to donate blood is also a certain type of obstacle. Many people are not donors because they simply postpone the decision and are reluctant to act. Stutzer et al. (2011) explored the role of active decisions in prosocial behavior. They discovered that participants who had not yet thought about donating blood were significantly more likely to donate when facing a treatment question that required a clear answer - yes or no - about becoming a blood donor. This is linked to the aforementioned issue that many people have simply not been asked to donate blood, so including reflection on this issue within a policy setting could help increase blood supply.

Effective and purposeful incentive policies and enhanced information to the public can help overcome fear and other difficulties with blood donation.

2.3.4   Possible outflow to private centres

After the introduction of private plasmapheresis centres in the Czech Republic in 2008, there might have been an outflow of non-remunerated donors from transfusion stations (TS) in hospitals. The numbers of donors in the past few years follow a declining trend, indicating the likelihood of this scenario. However, other factors also influence the situation, such as the ageing of existing regular donors and the relative decline of first-time donors. An argument against the hypothesis of donor transition to private centres is mainly a different motivation of donors. Non-remunerated donors are intrinsically motivated by the desire to help others and possibly also to save lives. Paid donors are

mainly motivated by financial rewards. Considering these different motivations, private centres probably appealed to a different group of society. However, it is possible that a certain proportion of paid donors would be willing to donate without reward. It is important to mention that the donated whole blood is mainly used to help actual patients in hospitals, while "donated" plasma is a pharmaceutical commodity often intended for export. The Czech Republic is currently a plasma export superpower. Public awareness of the further use of donated tissue and emphasis on the possibility of saving human health or life is therefore crucial (CRC, 2018).

2.3.5 Italian study - Do all material incentives for pro-social behavior backfire?

Lacetera and Macis (2010) focused on whether the crowding out effect was related to any reward for altruistic activity per se, or whether it was primarily cash that could be for some people problematic in this context. They compared donors' attitudes towards a cash incentive and towards a voucher for food and books, both worth 10 EUR.

Their experiment took place at a blood transfusion station in a northern Italian "Town" (anonymous). In collaboration with one of the Italian voluntary associations for blood collection "Associazione Volontari Italiani del Sangue" (AVIS), they used the association's questionnaire to ask about donors' attitudes towards two types of incentives, i.e., cash and voucher. Each questionnaire contained only one "treatment question" (i.e., there were two versions of the questionnaire). The authors did not publish the whole questionnaire in the article, they only included the two treatment questions; "*If each donor were to be given 10 Euros at each donation, you would donate...*" was answered by 210 respondents and "*If each donor were to be given a 10-Euro voucher to purchase books or food, at each donation, you would donate...*" by 257 respondents (Lacetera and Macis, 2010, p. 741). A set of responses capturing the possible attitudes of donors was presented: "*1. I would donate less often than I currently do; 2. I would donate as often as I currently do; 3. I would donate more often than I currently do; 4. I would no longer be a blood donor*" (Lacetera and Macis, 2010, p. 741). This set of responses was adopted for the purposes of the research carried out for this thesis.

Their results revealed that the majority of donors declared they would donate the same as before. However, the authors found a significant difference in

response to the two selected types of incentives. A voucher would discourage 3.5% of donors, while a cash incentive would discourage almost 13% of donors. The difference between the response to cash and a voucher of the same value was statistically significant.

The authors used a linear probability and probit model, with a binary dependent variable equal to 1, if the donor responded that he/she would donate less, or no longer donate, to one of the two versions of treatment questions. Thus, they focused on whether cash- and voucher-treatment donors shared some characteristics, and if, on the other hand, there were characteristics that distinguished the two treatment groups.

Chapter 3

Situation in the Czech Republic and Hypotheses

3.1 Institutional framework

The laws regulating blood donation in the Czech Republic are subject to the European Union directive. Issued by the European Parliament (EP) and the European Council (EC), Directive 2002/98/EC (2002) regulates quality and safety standards of collected blood, together with "...testing, processing, storage and distribution of human blood and blood components" (Directive 2002/98/EC). It promotes the self-sufficiency of member states' blood supply. However, not only the European Union is advocating for self-sufficiency, the World Health Organization (WHO) recommends all member states to have a stable base of voluntary and regular donors to strive for self-sufficiency (WHO, 2020).

Czech legislation incorporates the European Directive in Act no. 373/2011 Sb., on specific health services. It specifies that the donor is not entitled to financial remuneration for the donation, except for directly incurred expenses related to the blood donation. In addition, the conditions for blood collection and processing are regulated by Act no. 378/2007 Sb., on pharmaceuticals, and Decree no. 143/2008 Sb., on human blood. Although donors in the Czech Republic are not entitled to financial remuneration, they are legally eligible for a paid day off on the day of donation (Act no. 181/2018 Sb.) and also to a deduction of CZK 3,000 from the tax base for each donation (Act no. 586/92 Sb.).

Interestingly, there is no blood donor register in the Czech Republic uni-

fied at the national level. There is only the National Register of Discarded Blood Donors and Rare Erythrocyte Registry (ÚHKT, undated), as well as the Hematopoietic Cell Donor Register (formerly known as the Bone Marrow Donor Register). The Register of Discarded Blood Donors records data on persons with TTIs, which are either temporarily or permanently banned from donating.

3.2   Public and private sector

In the Czech Republic, there exist two sectors for blood donation - public and private. The public sector is represented by the Czech Red Cross (CRC) and hospital transfusion stations, which collect blood from voluntary unpaid donors. The private sector consists of companies mainly specialized in collecting blood plasma. Such companies reward the donors with cash or other monetary and non-monetary compensation. The plasma is mainly used for the production of pharmaceuticals (Europlasma, 2021). Private sector has significantly evolved after the year 2008 when it was authorised to manufacture transfusion products and raw materials for further production (Decree no. 143/2008 Sb.).

3.3   Requirements to donate

To be able to donate blood or its components, the donor must meet certain requirements. The mandatory requirements include age between 18 and 65 years, weight above 50 kilograms, and no severe allergies. A first-time donor should not be above 60 years. Exclusion criteria include a recent history of infectious diseases, recent travel to exotic countries with frequent malaria incidence, and other infectious diseases (University Hospital Olomouc, 2019). The donor must not be HIV, HBV, or HCV positive and must not belong to the risk groups of society that are prone to promiscuity or drug use (CRC, undated a).

3.4   Types of blood collection and its further use

There are several types of blood donations. The most fundamental one is whole blood collection, but it is also important to obtain individual components such as plasma, platelets, and white blood cells. These components can be obtained using two methods. The first method is simply to collect the whole blood and

separate individual components afterwards. The second method is carried out by the process of apheresis using a special device that separates the wanted blood component and sends the rest of the blood back to the circulation of the donor (CRC, undated c).

The collected blood and its particles offer a whole range of utilization. Whole blood is used for transfusion or for obtaining plasma, platelets, and blood cells. Transfusions are especially needed during surgery or for the treatment of serious injuries. The mentioned particles are used to produce substrates for patients suffering from, for example, a blood clotting disorder, platelet, or blood cell deficiencies, and for treatment of cancer patients (CRC, undated b).

3.5   Development of blood donor numbers in recent years

Table 3.1 gives an overview of the registered donors and the number of donations in the specified years. The number of registered donors reached a peak in 2010 and then declined until 2017. Overall, supply has shown a stagnating trend in recent years. The second column shows the number of active donors who attended at least one blood donation in a particular year. The fourth column shows the average number of donations per active donor per year. This indicator has a slightly decreasing trend line, which suggests that active donors have been donating less often over the year. With values between 1.5 and 1.6, there is a substantial reserve in the number of donations per year, as women can donate four times and men up to five times per year. However, the participation rate, which is the percentage of registered donors active in a given year, illustrates a significantly increasing trend line.

Table 3.1: Development of donor numbers in recent years

Year	Registered donors	Active donors	Units collected	Donations per donor	Participation rate
2007	292,034	214,674	396,732	1.85	73.51
2008	313,553	239,701	410,594	1.71	76.45
2009	349,604	264,664	425,350	1.61	75.70
2010	376,176	271,870	425,234	1.56	72.27
2011	370,562	267,248	416,822	1.56	72.12
2012	357,931	267,340	418,954	1.57	74.69
2013	356,793	267,366	402,091	1.50	74.94
2014	344,098	262,146	402,099	1.53	76.18
2015	346,341	291,309	406,814	1.40	84.11
2016	332,017	274,757	411,663	1.50	82.75
2017	315,083	260,942	409,319	1.57	82.82
2018	325,597	268,745	420,730	1.57	82.54
2019	342,129	277,432	422,740	1.52	81.09
2020	341,731	272,924	410,101	1.50	79.87

Note: Donations per donor stands for the average number of donations per active donor per year.
Source: ÚZIS (2021) - data was kindly provided by ÚZIS for the purposes of this thesis.
Calculations of *Donations per donor* and *Participation rate* made by the author.

3.6 Hypotheses

After summarizing the findings from the literature, the hypotheses are presented in this section.

The first hypothesis that is to be tested is that offering a monetary incentive to donors discourages some of them from further donation:

Hypothesis 1 (H1): *The offer of a financial remuneration discourages the donor to come back and donate again.*

The second hypothesis is that a voucher to pharmacy motivates donors to donate again:

Hypothesis 2 (H2): *The offer of a voucher to pharmacy motivates the donor to come back and donate again.*

The third hypothesis that will be tested proposes that offering a small gift motivates the donors for further donations:

Hypothesis 3 (H3): *The offer of a small gift motivates the donor to come back and donate again.*

The last hypothesis examines the effect of the financial incentive on men and women and says that the effect of discouragement is higher among women:

Hypothesis 4 (H4): *The offer of a financial remuneration discourages women significantly more than men, from donating blood again.*

Chapter 4

Data and Methods

4.1 Survey design

A self-administered questionnaire method was chosen for the data collection.
Based on the literature review, the key phenomena to be investigated were
identified to correspond with the set-out hypotheses. A pilot questionnaire was
consulted with several current blood donors and tested on a small sample of
respondents. After fixing a few minor points, it was modified to its final form
(see Appendix A and Appendix B) and launched at the data collection point.[1]

The questionnaire included several types of questions - sociodemographic
characteristics of donors, questions on motivation to donate blood, the im-
portance of chosen factors (including incentives in practice), and hypothetical
choices for introducing or removing selected incentives. Specifically, donors
were to express an attitude towards being offered a financial amount, voucher
to a pharmacy and small gifts as incentives, and removing the CRC awards.[2]
There was a question regarding the net monthly income of the respondent. It
was considered too personal, according to one of the approached blood trans-
fusion stations. However, it is an important economic indicator, so it was

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[1]There are six blood transfusion stations in Prague where it is possible to donate whole
blood. Four of them were contacted by mail, phone, or a combination of both. One station
actively refused to place the questionnaire with them; other station did not reply after
repeated requests. Two stations preliminarily agreed to place the questionnaire. Of these
two stations, only one of them, the transfusion station at the Thomayer Hospital in Prague,
carried out the survey. At the Institute of Haematology and Blood Transfusion, an obstacle
arose due to moving the department at the scheduled time of data collection.

[2]The amount of financial incentive was set to CZK 500. The time spent on blood collection
at transfusion station (approx. 10 min) and plasma collection in private plasmapheresis
centres (approx. 60 min) was taken into account, where the amount for one plasma draw is
CZK 700. The potential burden on the state budget (of paying for each donation) was also
considered.

preferable to keep this question in the survey. The questions on motivation and hypothetical choices were inspired by the theory of planned behavior by Ajzen (1991), focusing on subjective norms, perceived behavioral control, and attitudes. The method of distributing a questionnaire for blood donors at the transfusion station was commonly used in other research (Lacetera and Macis, 2010; Michalák, 2000).

4.2   Data collection

The quantitative survey in the form of a voluntary questionnaire was conducted directly at the blood transfusion station, specifically at the Thomayer Hospital in Prague. The scope of data collection covered the capital city of Prague.

The questionnaire was distributed in paper form at the transfusion station at the Thomayer Hospital in Prague, as mentioned above. Data collection took place over a three-week period from February 28 to March 18, 2022, on the working days. In total, 300 questionnaires were distributed of which 288 were returned filled in. The medical personnel asked each donor to fill in the questionnaire, which was completely voluntary and anonymous. They handed them out to donors at registration together with a health form to be filled in before each donation. Thus, filling in the questionnaire, which took about three to five minutes, did not cause any time loss for the respondents, as they needed to wait for a few minutes for the blood draw after the registration anyway. Filled questionnaires were collected back by the personnel together with the health forms, so it did not take them a lot of extra time either. None of the donors could complete the questionnaire more than once because the minimum time between collections is longer than the three weeks over which the data were collected.

4.3   Processing methods

4.3.1   Data preparation

The data were converted from the paper-based questionnaire into electronic form. There were a few observations with missing values, which were filled in using the following method of data interpolation. The frequencies of completed responses for each question were calculated and then used to fill in the missing values in the same proportion. Nine of the fourteen questions were completed

by all respondents; for the other questions (except for the income one), around 1% to 3% of the total sample had to be filled in using the method specified above. The question on income had the highest frequency of missing values (7%).

Most of the variables were categorical variables, which were then converted into dummy variables representing each response option for the corresponding question. It was examined which responses for each question had a similar impact on the dependent variable. Those categories that showed similar behavior, while being ordinal in nature, were combined into one corresponding variable. Specifically, this was the merging of age groups (*AgeAbove40*), respondents according to the time they first donated blood (*MoreThan2Years*) or merging by the number of undertaken donations (*MoreThan20Don*). The 40-year threshold for the division of donors into under 40 years (inclusive) and over 40 years, was determined by the age of the median donor. Income groups were merged into three categories - below average, average (*AvgInc*) and above average (*AboveAvgInc*). Finally, for a more convenient way of analysing the predicted effects of incentives, the responses (3 and 4 for question 9) that "donor would donate less often than now" and "would no longer want to be a blood donor" were combined.

4.3.2 Econometric methods

The probit model was chosen to analyse the data as it is an optimal method for dealing with a given dependent variable. The dependent variable is binary, taking the value of 1 if a hypothesized event occurred when a certain type of incentive was offered. The explanatory variables are mostly dummy variables that were created from categorical ones. The nonlinear probit model uses the Maximum Likelikood Estimation (MLE). Interpretation of the estimated coefficients is quite complicated, so individual explanatory variables' Average Marginal Effects (AME) are addressed. In addition, the estimation using a Linear Probability Model (LPM) was carried out as well. LPM uses Ordinary Least Squares (OLS) estimation and in most cases, it showed very similar results to the probit models. The frequencies of occurrence of the observed phenomenon were compared using the chi-square test with the results from the literature. The reference values are from a survey that also aimed to question blood donors at the blood collection station.

Chapter 5

Results

5.1 Summary statistics

Men predominated in the sample with 59%, while women represented 41%. Figure 5.1 shows that men donated most often between the ages of 36 and 50, while women between the ages of 26 and 45, with a slight drop of donors in the age category 36-40. The age groups of female donors are generally more equally distributed than those of male donors.

Figure 5.1: Age distribution among men and women
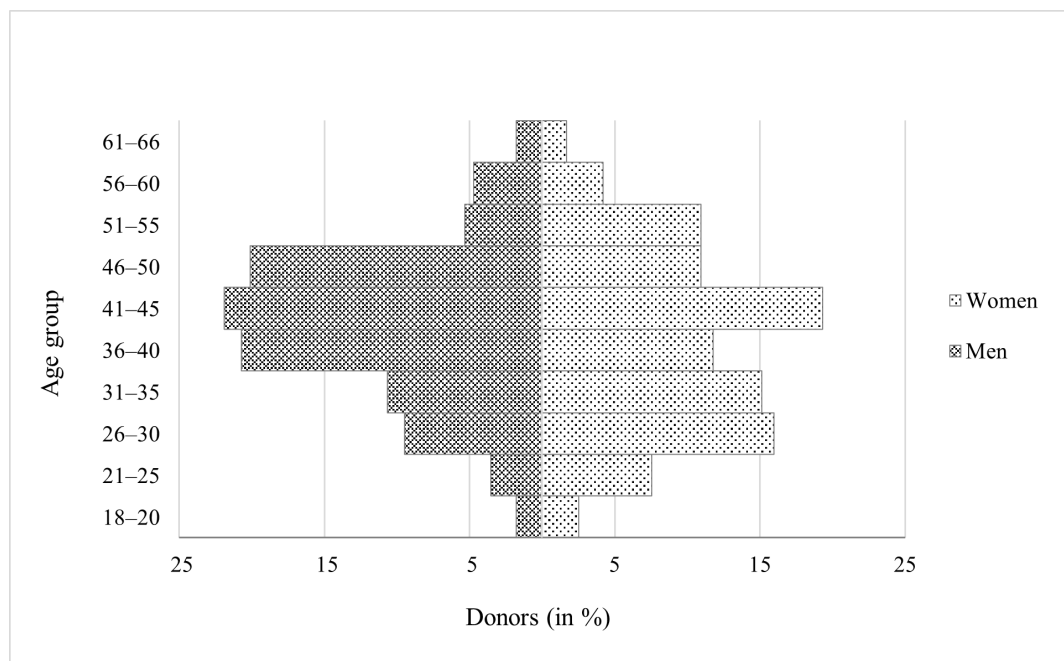
Source: data from own research, calculations by the author

Donors most often reported Prague as their current place of residence (63%), followed by the Central Bohemia Region (30%), and 8% of respondents listed another region. Students accounted for only 5.6% of the sample. Most respondents achieved a university degree or higher level of education (55%), followed by a high school education with a diploma (34%), a high school education without a diploma (9%), and a primary education (2%).

It can be observed from Figure 5.2 that donors most often fell into the 30,000-39,000 CZK income group, which roughly corresponds to the average monthly wage in the Czech Republic (CZSO, 2021a).[1] The second most frequent category was 60,000 CZK and more, which is broad in magnitude, and that is probably why the group is so numerous. It is also possible that some donors did not want to admit their real income, hence they made it up and chose this option.

Figure 5.2: Proportions of net monthly income groups
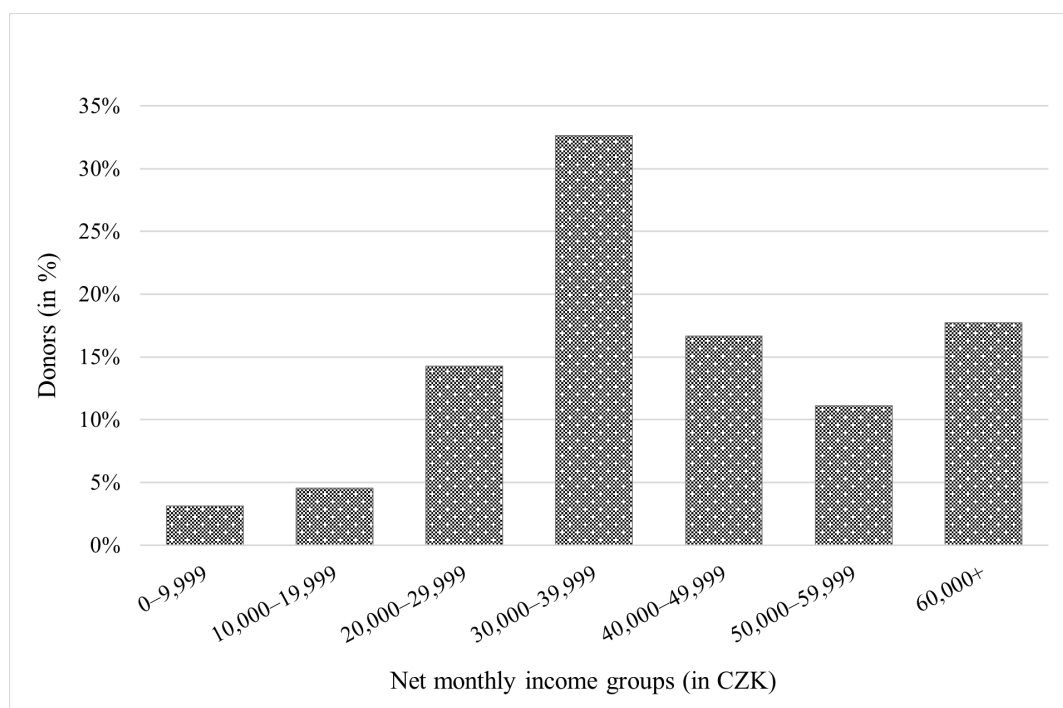
Source: data from own research, calculations by the author

Most of the donors from the sample were employees (84%), followed by self-employed (10%), not working (3%), and others (2%). The "Other" category was intended to include, for example, pensioners, but given the maximum pos-

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[1]Respondents were asked about their net monthly income, however, CZSO states only data on gross monthly wage, which amounted to 37 499 CZK.

sible age of donors, it did not make sense to introduce a separate category for them. However, judging by the age of the respondents who ticked this option, they were not pensioners; respondents were probably both students and working/self-employed.

The modes of questions "How long ago did you donate for the first time?", "Do you donate blood regularly?" and "Do you intend to come back next time?" were "More than 10 years", "Yes" and "Definitely yes", respectively. This indicates a high number of long-term dedicated donors in the sample. The two largest categories of the number of carried-out donations were 30-39 times and 10-19 times, corresponding to the fact that most donors first donated more than ten years ago.

When asked about the first impulse to donate blood, donors most frequently answered that someone in their family/circle of friends is a blood donor (52%). The second most common response was "Other" (28%), where donors repeatedly wrote that their first impulse to donate was a personal belief or desire to help, followed by military service and overcoming fear of blood draws. Only 8% of donors stated that they noticed the demand in media (TV, internet, newspaper), and 7% learned about organised blood collection at work or school.

In a question regarding the importance of certain factors on the decision to donate blood, the strongest factor was "the feeling of helping someone", for which the most common answer was 10, on a scale of 1 (no importance) to 10 (strong importance). Such a finding points to the fact that the donors were mostly altruists with the primary intention of helping others. Other evaluated factors were eligibility for a tax deduction, paid time off work on the day of donation, distance to the donation point, refreshments at the transfusion station, preventive health check-up before donation, and demand for your blood type. These were most frequently evaluated by the number 1 on the mentioned scale, which highlights the pure altruistic intentions of the donors and the relative irrelevance of other factors than a desire to help (see Appendix C). For further summary statistics, see Appendix D.

In the questionnaire section devoted to hypothetical choices, many respondents chose the option "I would donate as often as I currently do" for all four situations outlined (financial incentive, voucher, small gifts, cancellation of CRC awards). This indicates a low propensity to respond to incentives among primarily altruistic donors.

5.1.1   Median donor profile

A median donor in the sample was a man who was 41 years old, first donated five to ten years ago, and underwent 20 to 29 blood draws. He considered himself a regular donor, intended to come back next time, and the most important thing for him in deciding whether to donate blood was the feeling that he was helping someone. The median donor had a university degree or higher and had a net monthly income between CZK 30,000 and CZK 39,999.

5.2   Models and hypothesis

5.2.1   Specification of variables

Based on the description of the method of working with data in the section "Processing methods", the following variables were created and used in the models. An overview of all the used variables is given in Table 5.1.

5.2.2   Hypotheses results

The results of the survey are shown in Table 5.2. In the initial state, with no incentive offered, 99.3% of the respondents intended to come back next time. With the introduction of a financial incentive in the amount of 500 CZK, 88.9% stated that they would donate the same number of times as they do now, 2.8% were motivated by the incentive and checked that they would donate more often. For the purpose of the hypotheses set in this thesis, the answers "donate less" and "stop donating" are analysed together as the *discouragement effect.* In total, 2.1% of donors would donate less when offered a financial incentive and 6.3% would stop donating, so altogether 8.3% would be discouraged by the financial incentive.

Table 5.1: Variables used in regressions

y	Explained variables
CashDiscrg	Equal to 1 if donor checked that he or she would donate less or not at all after being offered a financial incentive of 500 CZK.
VoucherMotiv	Equal to 1 if donor checked that he or she would donate more after being offered a voucher to pharmacy worth 500 CZK.
GiftsMotiv	Equal to 1 if donor checked that he or she would donate more after being offered small gifts as an incentive.
GiftsDiscrg	Equal to 1 if donor checked that he or she would donate less or not at all after being offered small gifts as an incentive.
x	**Explanatory variables**
Gender	Equal to 1 if the donor is a man.
AgeAbove40	Equal to 1 if the donor is above 40 years old.
Prague	Equal to 1 if the donor lives in Prague.
Central	Equal to 1 if the donor lives in the Central Bohemian region.
Other	Equal to 1 if the donor lives in another region than Prague or Central Bohemian.
MoreThan2Years	Equal to 1 if the donor first donated more than 2 years ago.
Regular	Equal to 1 if the donor is a regular donor.
NextTime	Equal to 1 if the donor intends to come back next time.
ImpulseDon	Equal to 1 if the donor checked that the first impulse to donate blood was that someone from their family or circle of friends was a donor.
ImpulseNeed	Equal to 1 if the donor checked that the first impulse to donate blood was that someone from their family or circle of friends needed a blood transfusion.
TaxDeduc	Takes values 1 to 10 on a scale and indicates the importance the donor gave to the right to a tax deduction when deciding whether to donate blood, with 1 being "no importance" and 10 "high importance".
DayOff	Takes values 1 to 10 on a scale and indicates the importance the donor gave to the right of paid time off on the day of collection when deciding whether to donate blood, with 1 being "no importance" and 10 "high importance".
MoreThan20Don	Equal to 1 if the donor has undertaken more than 20 donations.
CollegePlus	Equal to 1 if the donor a has college, university degree, or higher.
AvgInc	Equal to 1 if the donor belongs to the net monthly income group of 30,000-39,999 CZK, corresponding to the average monthly wage in the Czech Republic.
AboveAvgInc	Equal to 1 if the donor belongs to one of the three consecutive net monthly income groups of 40,000-49,999, 50,000-59,999 or 60,000+ CZK.

Table 5.2: Survey results - hypothetical choices

	All respondents	Men	Women
Initial state (no incentive)			
Intends to come back next time			
Yes	99.3%	58.3%	41.0%
No	0.7%	0.3%	0.3%
Incentive offered			
Cash 500 CZK			
Donate more	2.8%	0.7%	2.1%
Donate same	88.9%	55.6%	33.3%
Donate less	2.1%	0.0%	2.1%
Stop donating	6.3%	2.4%	3.8%
Pharmacy voucher 500 CZK			
Donate more	5.2%	1.4%	3.8%
Donate same	91.3%	56.6%	34.7%
Donate less	0.7%	0.0%	0.7%
Stop donating	2.8%	0.7%	2.1%
Small gifts			
Donate more	2.4%	0.7%	1.7%
Donate same	88.2%	54.2%	34.0%
Donate less	4.5%	2.4%	2.1%
Stop donating	4.9%	1.4%	3.5%

Source: data from own research, calculations by the author

A chi-square test was used to compare the results with those of Lacetera and Macis (2010) and to test the hypothesis that the results were the same as those in the literature. In their cash incentive treatment there were 210 donors and 12.9% of them checked that they would stop donating if offered an amount of 10 EUR. In Table 5.3 below, the first row shows the frequencies from the survey (own data), and the second row shows the expected frequencies recalculated according to the percentage from Lacetera and Macis (2010).

Table 5.3: Chi-square test - frequencies

	Discouraged	Not discouraged	Total
Observed (empirical)	24	264	288
Expected (from literature)	37.152	250.848	288

The formula from equation (5.1) was used to obtain the value of chi statistic.

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}, \tag{5.1}$$

where O_i is the observed value, and E_i is the expected value.

Then, this chi statistic value was compared with the critical value for one degree of freedom and 5% significance level from the chi-square table, as seen in (5.2).

$$\chi^2 = 5.345 > 3.841 = \chi^2_{0.95,(1)} \tag{5.2}$$

The hypothesis that the empirical and literature results are equal was rejected at the 5% significance level. Thus, it can be concluded that blood donors in the Czech Republic are significantly less discouraged by the financial incentive than donors in Italy.

The pharmacy voucher worth 500 CZK would encourage 5.2% of donors, 91.3% stated that they would donate with a same frequency and 3.5% would be discouraged by the voucher. The proportion of discouraged donors was exactly the same as in the Italian experiment (Lacetera and Macis, 2010).

Offering small gifts as an incentive to donate motivated only 2.4% of donors, 88.2% would donate the same. Surprisingly, 9.4% of donors were discouraged by this type of incentive. This effect is the opposite of what was predicted in the third hypothesis, and it is quite large.

The financial incentive did discourage women significantly more than men from further donation. Out of 169 men in total, only seven were discouraged by the incentive, which corresponds to 4.1% of men. However, out of 119 women, 17 stated that they would donate less or stop donating, which corresponds to 14.3% of women.

5.2.3   Donor characteristics - Financial incentive (H1)

Table 5.4 presents the results of two models, LPM and probit model. The dependent variable here is *CashDiscrg* and it is explained by 13 variables. The estimated coefficients are Average Marginal Effect (AME)s, representing marginal probability change in the dependent variable caused by the corresponding factor, keeping other factors fixed.

The coefficient of the variable *Gender* is negative and significant at the 1% level in both LPM (1) and probit model (2). The negative sign and magnitude of the coefficient indicate that men are 11.1% less likely to be discouraged by the financial incentive than women, according to the LPM. The estimated marginal effect in probit model is 1 percentage point lower. Coefficient of the Prague variable is significant at the 5% level in the LPM but is not significant in probit. The estimated effect is an increase in the probability by 6.8%, on average, if the donor is from Prague. For a donor, who's first impulse for donating blood was that a family member or a friend needed a blood transfusion, is on average a 19.5% higher probability that he or she will be discouraged by the cash reward. This effect is significant at the 1% level. In the probit model, the marginal effect of the same variable is lower (11.6%) and significant only at 5% level. The effect of being a donor from an income group corresponding to the average monthly income is similar for both models, with the LPM giving a 15.4% increase and the probit model giving a 14.4% increase in the probability examined. This effect is significant at the 1% level in both models. A donor from higher than average income group is also more likely to be discouraged by the incentive than donor from a below average income group, specifically by 8.6% and 9.4% in LPM and probit, respectively.

Table 5.4: Regression results - discouragement by financial incentive

CashDiscrg	LPM (1)		Probit (2)	
Gender	-0.11093	***	-0.1009	***
	(-3.145)		(-3.027)	
AgeAbove40	-0.0217		-0.0317	
	(-0.609)		(-0.888)	
Prague	0.0684	**	0.0561	
	(2.043)		(1.597)	
MoreThan2Years	0.0041		0.0033	
	(0.086)		(0.074)	
Regular	-0.05614		-0.0445	
	(-1.075)		(-0.940)	
ImpulseDon	0.0008		-0.0019	
	(0.024)		(-0.059)	
ImpulseNeed	0.1947	***	0.1157	**
	(2.618)		(2.094)	
TaxDeduc	0.0034		0.0010	
	(0.447)		(0.126)	
DayOff	-0.00365		-0.0035	
	(-0.540)		(-0.515)	
MoreThan20Don	0.0127		0.0234	
	(0.316)		(0.589)	
CollegePlus	0.0148		0.0099	
	(0.435)		(0.293)	
AvgInc	0.1542	***	0.1441	***
	(3.308)		(2.812)	
AboveAvgInc	0.0863	*	0.0939	*
	(1.781)		(1.680)	
Const	0.0500		-0.23266	***
	(0.764)		(-3.351)	
Observations	288		288	
(Pseudo) R^2	0.0667		0.1719	

Note: The table shows the coefficients of the linear probability model (1) and the average marginal effects of the probit model (2). The t statistics and z statistics of initial coefficients are shown in parentheses, respectively. Significance codes: *** $p < 0.01$, ** $0.01 < p < 0.05$, * $0.05 < p < 0.1$
Source: data from own research, calculations by the author

5.2.4   Donor characteristics - Voucher (H2)

Table 5.5 summarizes the results of the LPM and probit model. The dependent variable is *VoucherMotiv*. There are 14 explanatory variables, the variable *NextTime* was added because it contributes significantly to this model. The coefficients of the probit model are average marginal effects which indicate an average change in the probability, while keeping other factors fixed.

The coefficient of *Gender* variable is negative and significant at the 1% level in both probit (4) and LPM (3). The probit model indicates that for men the probability of donating more often in the future thanks to the voucher incentive is on average 7.8% lower than for women. In the LMP this effect is very similar (7.97%). Donors who first donated more than two years ago have on average 6.4% and 6.8% lower probability of being motivated by the voucher incentive to donate more often than donors who first donated less than two years ago, according to LPM (3) and probit (4), respectively. This may be due to the possibility that donors who first donated more than two years ago might be more consistent and stable in their prosocial activity than those who first donated relatively recently. Newer donors may thus be more influenced and motivated by the voucher incentive. This effect is significant at 10% significance level. Regular donors are, on average, 7.3% less likely to be motivated by the voucher than irregular donors, based on results from LPM (3). In probit, the estimated effect is lower by roughly 1% and is significant at 10% level. The coefficient of *NextTime* is significant in both probit and LPM at the 1% level but it differs substantially. In probit it is -0.2323 and in LPM it is -0.4961, which is more than double in magnitude than in probit. LPM can give inconsistent estimates, since the dependent variable takes values of 0 or 1. Therefore probit is a better fit in this case. Donors who stated that they do not intend to come back next time are 23.2% more likely to be motivated by the voucher. The result is significant at the 5% level. However, this particular estimate might have been affected by outliers, since there was very few observations of donors who did not intend to come next time.

The R-squared of the LPM (3) and probit (4) are 0.0426 and 0.1895, respectively. The probit model reports a good fit for the data, given that the value of 0.1895 is quite satisfactory for research with qualitative variables (Falk and Miller, 1992).

Table 5.5: Regression results - motivation by voucher incentive

VoucherMotiv	LPM (3)		Probit (4)	
Gender	-0.0797	***	-0.0781	***
	(-2.775)		(-2.71)	
AgeAbove40	0.0230		0.0166	
	(0.791)		(0.576)	
Prague	-0.0167		-0.0259	
	(-0.612)		(-1.005)	
MoreThan2Years	-0.0641	*	-0.0677	*
	(-1.653)		(-1.764)	
Regular	-0.0725	*	-0.0591	*
	(-1.705)		(-1.761)	
NextTime	-0.4961	***	-0.2323	**
	(-3.085)		(-2.446)	
ImpulseDon	-0.0079		-0.0093	
	(-0.294)		(-0.362)	
ImpulseNeed	-0.0372		-0.0536	
	(-0.603)		(-0.82)	
TaxDeduc	0.0004		-0.0002	
	(0.057)		(-0.021)	
DayOff	-0.0029		-0.0043	
	(-0.521)		(-0.683)	
MoreThan20Don	0.0301		0.0484	
	(0.919)		(1.274)	
CollegePlus	0.0122		0.0132	
	(0.44)		(0.482)	
AvgInc	0.0100		0.0059	
	(0.264)		(0.151)	
AboveAvgInc	0.0504		0.0553	
	(1.275)		(1.388)	
Const	0.6733	***	0.1858	*
	(3.915)		(1.704)	
Observations	288		288	
(Pseudo) R^2	0.0426		0.1895	

Note: The table shows the coefficients of the linear probability model (3) and the average marginal effects of the probit model (4). The t statistics and z statistics of initial coefficients are shown in parentheses, respectively. Significance codes: *** $p < 0.01$, ** $0.01 < p < 0.05$, * $0.05 < p < 0.1$
Source: data from own research, calculations by the author

5.2.5 Donor characteristics - Small gifts (H3)

Table 5.6 presents the results of two regressions with the dependent variable *GiftsMotiv*, which records if the respondent would donate more often with the offer of small gifts as an incentive. It is important to say that this effect was most likely not observed, as only 2.43% of respondents ticked the option that they would donate more often in the context of offering small gifts. Thus, a very small sample is analysed.

Explanatory variable with the highest significance is *Regular* in the LPM (5) model. Negative coefficient suggests that regular donors are less likely to be motivated by the offer of small gifts, compared to irregular donors. The coefficient is significant at the 1% level, while in the probit model (6) it is significant at the 5% level. Other significant variables are *Gender*, *MoreThan2Years* and *AboveAvgInc*, all being significant at the 5% level in both models. The LPM has an adjusted R-squared of 0.0299, indicating that the model is not a good fit for the data. However, the probit model's R-squared is higher, specifically 0.3546.

5.2.6 Small gifts - crowding out

The effect of discouragement by the small gift incentive was observed for 9.4% of respondents. Therefore, it was decided to also include a model for this observed effect. The result of running the LPM (7) and probit model (8) are in Table 5.7. The average marginal effect of *Gender* variable is negative and significant at the 10% significance level, in both models. This indicates that for men, the probability of being discouraged by the incentive of small gifts decreases by 7.3% and by 6.5%, in LPM and probit, respectively. For donors from the Central Bohemian region there is a lower probability of discouragement to donate again by 10% compared to donors from Prague, according to the probit model. Coefficients of the *Central* variable are significant at the 5% level in both models. Donors who donated 20 times and less are more likely to be discouraged by small gifts, specifically by 6.8%, than donors with more than 20 donations. This variable's coefficient is only significant in the probit model, at the 10% level. Belonging to an average income group increases the probability that small gifts will discourage the donor by 11.1% with a 5% significance.

Table 5.6: Regression results - motivation by small gifts

GiftsMotiv	LPM (5)		Probit (6)	
Gender	-0.0437	**	-0.0403	**
	(-2.183)		(-2.125)	
AgeAbove40	0.0120		0.0185	
	(0.593)		(0.846)	
Prague	-0.0127		-0.0180	
	(-0.669)		(-1.025)	
MoreThan2Years	-0.0571	**	-0.0814	**
	(-2.115)		(-2.044)	
Regular	-0.0776	***	-0.0594	**
	(-2.617)		(-2.523)	
ImpulseDon	0.0049		0.0099	
	(0.259)		(0.544)	
ImpulseNeed	-0.0320		-0.2099	
	(-0.757)		(-0.011)	
TaxDeduc	0.0020		0.0014	
	(0.466)		(0.281)	
DayOff	0.0000		0.0002	
	(-0.009)		(0.05)	
MoreThan20Don	0.0173		0.0442	
	(0.757)		(1.088)	
CollegePlus	-0.0012		0.0026	
	(-0.059)		(0.136)	
AvgInc	0.0251		0.0143	
	(0.949)		(0.418)	
AboveAvgInc	0.0640	**	0.0714	**
	(2.322)		(2.186)	
Const	0.1114	***	-0.0462	*
	(2.997)		(-1.739)	
Observations	288		288	
(Pseudo) R^2	0.0299		0.3546	

Note: The table shows the coefficients of the linear probability model (5) and the average marginal effects of the probit model (6). The t statistics and z statistics of initial coefficients are shown in parentheses, respectively. Significance codes: *** $p < 0.01$, ** $0.01 < p < 0.05$, * $0.05 < p < 0.1$
Source: data from own research, calculations by the author

Table 5.7: Regression results - discouragement by small gifts

GiftsDiscrg	LPM (7)		Probit (8)	
Gender	-0.0733	*	-0.0646	*
	(-1.915)		(-1.759)	
AgeAbove40	0.0052		0.0025	
	(0.134)		(0.069)	
Central	-0.0911	**	-0.1062	**
	(-2.323)		(-2.278)	
Other	0.0285		0.0356	
	(0.426)		(0.614)	
MoreThan2Years	0.0084		0.0056	
	(0.165)		(0.121)	
Regular	0.0480		0.0591	
	(0.85)		(0.986)	
ImpulseDon	0.0362		0.0407	
	(1.011)		(1.142)	
ImpulseNeed	0.0718		0.0806	
	(0.892)		(1.144)	
TaxDeduc	0.0073		0.0059	
	(0.875)		(0.738)	
DayOff	0.0004		-0.0007	
	(0.059)		(-0.093)	
MoreThan20Don	-0.0694		-0.0684	*
	(-1.6)		(-1.649)	
CollegePlus	0.0208		0.0117	
	(0.564)		(0.321)	
AvgInc	0.1109	**	0.0947	*
	(2.184)		(1.931)	
AboveAvgInc	0.0595		0.0529	
	(1.124)		(0.992)	
Const	0.0171		-0.2857	***
	(0.257)		(-3.893)	
Observations	288		288	
(Pseudo) R^2	0.0244		0.1174	

Note: The table shows the coefficients of the linear probability model (7) and the average marginal effects of the probit model (8). The t statistics and z statistics of initial coefficients are shown in parentheses, respectively. Significance codes: *** $p < 0.01$, ** $0.01 < p < 0.05$, * $0.05 < p < 0.1$
Source: data from own research, calculations by the author

Chapter 6

Discussion and Limitations

The aim of this thesis was to investigate donors' attitudes towards certain types of incentives and to analyse the effects of incentives.

The results indicate that the incentive of a financial reward discouraged a certain proportion of donors (8.3%). This effect is consistent with the first hypothesis of this thesis. However, compared to the results obtained in Italy (Lacetera and Macis, 2010), the crowding out effect is significantly lower for Czech donors. This result may be due to the private setting of the data collection method. The Czech respondents filled in the questionnaire anonymously and thus did not face social pressure. They expressed their attitude towards hypothetical situations and their answers were not binding. Perhaps they would have been more inclined to take a socially desirable stance if they had not expressed themselves anonymously. Responding in terms of social expectation is a phenomenon that is described not only in the field of blood donation (Ariely et al., 2009), but also, for example, in organic food purchase (Wheeler et al., 2019) and in other contexts.

The differences between men and women in attitudes towards financial incentives proved to be substantial. The discouragement effect was 10 percentage points higher for women than for men. Such a phenomenon is possibly explained by the fact that women are more concerned about their social esteem (Bénabou and Tirole, 2006), making them more likely to dismiss financial compensation.

The pharmacy voucher incentive did motivate a small proportion of donors. However, the results do not suggest a strong opposite effect; rather, donors were generally not interested in the incentive and therefore mostly ticked the option that they would donate the same as before. The percentages of donors

who were motivated or discouraged by the voucher incentive were quite similar. Crowding in and out effects can occur simultaneously. In this case, a hypothetical introduction of the incentive could lead to a situation where the number of donors would probably remain (almost) the same, but the groups of donors would change. The incentive would entice more incentive driven donors and discourage the pure altruistic ones.

The incentive with small gifts had the opposite effect than expected. Instead of motivating the donors, the crowding out effect outweighed the crowding in effect and, if set in practice, the incentive would not have fulfilled its intended purpose. One of the donors expressed that she was a proponent of a zero-waste mindset and would therefore either refuse the gifts or stop donating. More respondents may have had a similar reason to get discouraged by the gifts or they simply considered the gifts of no use.

Only the attitudes of donors, not non-donors, were examined via the survey. Blood donors who came to the blood collection station showed signs of altruism, which is consistent with the voluntary (unpaid) blood donation system in the Czech Republic. It is possible that if non-donors had been included in the survey, the results would have looked different. The attitudes of less altruistic subjects towards incentives might be more positive or, on the contrary, people might start to think about donating in terms of whether it is worthwhile the amount of money that is offered, in contrast with the costs and inconvenience on their side.

If faced with a shortage of supply, the solution of economists could be introducing financial rewards for each donation. After observing the effect of such policy in the long run, even when no crowding out effect occurred, it does not mean that the policy was set up effectively. Increased blood supply also brings certain pitfalls with it. If the introduction of a financial reward results in one extra donation per donor per year, the benefit of this additional donation should exceed the cost of all donations made by the donor in the year. It is quite challenging to achieve such a favourable situation, and it may be that financial incentives are not economically worthwhile. The subsequent abolition of incentives may lead to another wave of crowding out effect, resulting in an even worse situation than before the incentives were introduced (Lacetera and Macis, 2012).

Although the author of the thesis did her best to collect the data in the most rigorous way, there were certain factors that she was not able to completely control for and therefore the present reader should bear in mind several

limitations when interpreting the results. First, the data was collected in the weeks when the society was shaken by the beginning of the military confrontation in Ukraine. Thus, this timing might have attracted more pure altruistic donors for whom the chosen incentives were not important, and this may have biased the data. Moreover, due to the logistical factors, only Prague respondents were selected for the purposes of the research. Results in other regions could differ, for example due to lower average wages outside the region of the capital (CZSO, 2021b) and therefore, monetary and non-monetary incentives could see higher potential in these regions.

Chapter 7

Conclusion

Insufficient blood supply is an ongoing concern. Therefore it is important to encourage blood donation and through well-designed policies aim at having a stable and self-sufficient supply.

The aim of the study was to examine the effects of selected incentives for blood donation on donors, and therefore on the blood supply itself. Respondents' attitudes towards incentives for blood donation showed that effects of incentives would be twofold. Financial incentives and small gifts would have discouraged some donors, while pharmacy vouchers would have had a slightly more favourable effect. This confirmed the hypothesis of the possible crowding out effect of financial incentives. While small gifts were expected to motivate donors, this hypothesis was rejected and the opposite was found to be true, namely that they tended to discourage donors. The hypothesis about pharmacy vouchers motivating the donors was also confirmed, although the effect was rather negligible. In general, however, most donors responded that incentives would not affect their donation. The adverse effect of certain types of economic incentives confirmed to some extent the concerns raised in the literature. Financial incentives and small gifts had a discouraging effect on mostly altruistic donors. Their intrinsic motivation was crowded out by the offer of a monetary incentive and by the offer of gifts that might have been perceived as not useful or even wasteful. Thus, also in the context of the safety of blood collected from paid donors, which in many cases in the past showed to be less safe, the WHO's, EP's and EC's move towards unpaid voluntary donation was proved to be the right direction for Czech blood transfusion centres as well.

However, this does not mean that there is no room for incentives in this sector. From policymakers perspective, one possible way to increase the blood

supply is to connect blood donation with the opportunity to financially contribute to a selected sector. People would not be able to receive the cash themselves, but through their blood donation, they could choose which organization they want to support. For instance, they could support sectors of medical research, treatment of serious illnesses or even charitable organizations outside the healthcare sector. This policy could help increase the average number of donations per year, which is not reaching its potential at the moment. Despite the increased demands on the government budget, such a policy could boost stagnating supply.

The contribution of this thesis is focus on the Czech Republic which is missing in many international studies, and no analysis of incentives of this sort has been recently carried out in the Czech environment. The data collected from the blood transfusion station can provide feedback to the medical personnel and can be used to identify issues with room for improvement. Another contribution of this thesis includes suggestions for setting up various policies. Improving current policies or effectively setting new ones can help to stabilize supply and prevent critical shortage situations.

Public awareness of the importance of blood donation should be a priority. Information on donor requirements, the location of transfusion stations and the process of blood collection should be actively and effectively communicated to the public. Some people may have never been asked if they would like to become a blood donor or at least try to donate. The potential of donated blood should be emphasised. Its use in surgery, treatment of serious illnesses or injuries can save a person's life. This message could be used to appeal to prospective altruistic donors and to their recruitment.

Importantly, this research only captured data from Prague; data from different regions of the Czech Republic could better clarify the attitudes of existing donors towards economic incentives. Further research, especially in the form of field experiments, on the attitudes of non-donors towards economic incentives could shed light on potential reserves in this population group and therefore point to solutions on how to encourage more people to donate blood.

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Zákon č. 586/92 Sb. o daních z příjmu (Act no. 586/92 Sb., on income taxes).

Appendix A

Survey in Czech

Dárcovství krve

Vážený dárce/Vážená dárkyně,

prosím Vás o vyplnění tohoto dotazníku, který jsem sestavila pro účely mé bakalářské práce. Jmenuji se Aneta Bošková a studuji poslední ročník bakalářského studia na Institutu ekonomických studií Univerzity Karlovy. Momentálně připravuji bakalářskou práci na téma *darování krve v České republice*. Dotazník je čistě anonymní a zabere přibližně 3–5 minut. Výsledky výzkumu budou poskytnuty odběrné stanici a budou použity v mé bakalářské práci.

Děkuji za Váš čas a ochotu při vyplňování.

U každé otázky zaškrtněte **jen jednu** odpověď.

1) Jsem:
   - □ Žena
   - □ Muž

2) Je mi _____ let.

3) Současné bydliště:
   - □ Hlavní město Praha
   - □ Středočeský kraj
   - □ Jiné: _____

4) Vzpomeňte si, kdy jste **poprvé** daroval/a krev. Kolik času od té doby uplynulo?
   - □ Dnes daruji poprvé.
   - □ 2 měsíce až půl roku
   - □ Více než půl roku až 1 rok
   - □ Více než 1 rok až 2 roky
   - □ Více než 2 roky až 5 let
   - □ Více než 5 let až 10 let
   - □ Více než 10 let

5) Darujete krev **pravidelně**?
   - □ Ano
   - □ Ne

6) Zamýšlíte přijít příště?
   - ☐ Určitě ano
   - ☐ Spíše ano
   - ☐ Spíše ne
   - ☐ Určitě ne

7) Co bylo **prvním impulzem** k tomu, abyste začal/a zvažovat darování krve?
   - ☐ Někdo z rodiny/okruhu přátel je dárcem krve.
   - ☐ Někdo z rodiny/okruhu přátel potřeboval krevní transfúzi.
   - ☐ Zaregistroval/a jsem poptávku v televizi/na internetu/v novinách nebo jiném médiu.
   - ☐ Dozvěděl/a jsem se o organizovaném odběru v zaměstnání/ve škole.
   - ☐ Jiné: _____ _____

8) Jaký **význam** při rozhodování, zda darovat krev, pro Vás mají následující faktory?
   Zaškrtněte, prosím, **jedno číslo** na škále od 1 do 10.

   - ☐ Pocit, že někomu pomohu

žádný   velký

1	2	3	4	5	6	7	8	9	10

   - ☐ Nárok na odpočet ze základu daně

žádný   velký

1	2	3	4	5	6	7	8	9	10

   - ☐ Nárok na placené volno v den odběru

žádný   velký

1	2	3	4	5	6	7	8	9	10

   - ☐ Vzdálenost odběrného místa

žádný   velký

1	2	3	4	5	6	7	8	9	10

   - ☐ Občerstvení na transfúzní stanici

žádný   velký

1	2	3	4	5	6	7	8	9	10

   - ☐ Preventivní zdravotní prohlídka před odběrem

žádný   velký

1	2	3	4	5	6	7	8	9	10

   - ☐ Poptávka po krvi vaší krevní skupiny (obdržení pozvánky)

žádný   velký

1	2	3	4	5	6	7	8	9	10

9) Zaškrtněte, prosím, jak byste dokončili následující větu:

☐ Kdyby byla za odběr krve nabízena **částka 500 Kč**, …

i)   daroval/a bych častěji než v současné době.
ii) daroval/a bych stejně často jako v současné době.
iii) daroval/a bych méně často než v současné době.
iv) už bych nechtěl/a být dárcem krve.

☐ Kdyby byl za odběr nabízen **poukaz do lékárny v hodnotě 500 Kč**, …

i)   daroval/a bych častěji než v současné době.
ii) daroval/a bych stejně často jako v současné době.
iii) daroval/a bych méně často než v současné době.
iv) už bych nechtěl/a být dárcem krve.

☐ Kdyby byly za odběr poskytnuty **drobné dárky** (např. hrnek, taška, tričko, klíčenka), …

i)   daroval/a bych častěji než v současné době.
ii) daroval/a bych stejně často jako v současné době.
iii) daroval/a bych méně často než v současné době.
iv) už bych nechtěl/a být dárcem krve.

☐ Kdyby se přestala udělovat **ocenění Českého červeného kříže** za odběry krve, …

i)   daroval/a bych častěji než v současné době.
ii) daroval/a bych stejně často jako v současné době.
iii) daroval/a bych méně často než v současné době.
iv) už bych nechtěl/a být dárcem krve.

10) Kolikrát jste již daroval/a krev?
☐ Méně než 5krát
☐ Asi 5 – 9krát
☐ Asi 10 – 19krát
☐ Asi 20 – 29krát
☐ Asi 30 – 39krát
☐ Asi 40krát a více

11) Jste **student**?
☐ Ano
☐ Ne

12) Jaké je Vaše nejvyšší dosažené **vzdělání**?
☐ Základní
☐ Středoškolské bez maturity
☐ Středoškolské s maturitou
☐ Vysokoškolské a výše

13) V současnosti jste:
☐ Pracující – zaměstnanec
☐ Pracující – osoba samostatně výdělečně činná (OSVČ)
☐ Nepracující
☐ Jiné: _____

14) Váš měsíční čistý **příjem** se pohybuje mezi:
- □ 0 – 9 999 Kč
- □ 10 000 – 19 999 Kč
- □ 20 000 – 29 999 Kč
- □ 30 000 – 39 999 Kč
- □ 40 000 – 49 999 Kč
- □ 50 000 – 59 999 Kč
- □ 60 000 Kč a více

15) Pokud máte nějaké připomínky, zde je pro ně místo:

Appendix B

Survey - English translation

Blood donation

Dear Donor,

I would like to ask you to fill in this questionnaire, which I have compiled for the purpose of my bachelor thesis. My name is Aneta Bošková and I am studying the last year of my undergraduate studies at the Institute of Economic Studies at Charles University. I am currently preparing my bachelor thesis on *blood donation in the Czech Republic*. The questionnaire is completely anonymous and will take approximately 3-5 minutes. The results of the survey will be provided to the blood collection station and will be used in my bachelor thesis.

Thank you for your time and willingness in filling it out.

Please tick **only one** answer for each question.

1) I am:
   - ☐ Woman
   - ☐ Man

2) I'm _____ years old.

3) Current residence:
   - ☐ Capital City of Prague
   - ☐ Central Bohemia Region
   - ☐ Other: _____

4) Remember the **first time you** donated blood. How much time has passed since then?
   - ☐ I'm donating for the first time today.
   - ☐ 2 months to half a year
   - ☐ More than half a year to 1 year
   - ☐ More than 1 year to 2 years
   - ☐ More than 2 years to 5 years
   - ☐ More than 5 years to 10 years
   - ☐ More than 10 years

5) Do you donate blood **regularly**?
   - ☐ Yes
   - ☐ No

6) Are you thinking of coming next time?
   □ Definitely yes
   □ Rather yes
   □ Rather not
   □ Definitely not

7) What was your **first impulse** to consider donating blood?
   □ Someone in the family/circle of friends is a blood donor.
   □ Someone in the family/circle of friends needed a blood transfusion.
   □ I have noticed an increased demand on TV/the internet/in newspaper or other media.
   □ I learned about organised collection at work/school.
   □ Other: _____

8) What **importance** do the following factors have for you, when deciding whether to donate blood?
   Please tick **one number** on a scale of 1 to 10.

   □ The feeling of helping someone

   none   strong

1	2	3	4	5	6	7	8	9	10

   □ Entitlement to tax deductions

   none   strong

1	2	3	4	5	6	7	8	9	10

   □ Entitlement to paid time off on the day of collection

   none   strong

1	2	3	4	5	6	7	8	9	10

   □ Distance to the collection point

   none   strong

1	2	3	4	5	6	7	8	9	10

   □ Refreshments at the transfusion station

   none   strong

1	2	3	4	5	6	7	8	9	10

   □ Preventive health check-up before collection

   none   strong

1	2	3	4	5	6	7	8	9	10

   □ Demand for your blood type (receiving an invitation)

   none   strong

1	2	3	4	5	6	7	8	9	10

9) Please tick how you would complete the following sentence:

☐ If a financial **amount of 500 CZK** was offered for a blood draw, …

   i)   I would donate more often than I currently do.
   ii) I would donate as often as I currently do.
   iii) I would donate less often than I currently do.
   iv) I wouldn't want to be a blood donor anymore.

☐ If a **voucher to pharmacy worth 500 CZK** was offered for a blood draw, …

   i)   I would donate more often than I currently do.
   ii) I would donate as often as I currently do.
   iii) I would donate less often than I currently do.
   iv) I wouldn't want to be a blood donor anymore.

☐ If **small gifts** (e.g. a mug, bag, t-shirt, key ring) were offered for a blood draw, …

   i)   I would donate more often than I currently do.
   ii) I would donate as often as I currently do.
   iii) I would donate less often than I currently do.
   iv) I wouldn't want to be a blood donor anymore.

☐ If the Czech Red Cross **stopped giving awards** for blood donation, …

   i)   I would donate more often than I currently do.
   ii) I would donate as often as I currently do.
   iii) I would donate less often than I currently do.
   iv) I wouldn't want to be a blood donor anymore.

10) How many times have you donated blood?
   ☐ Less than 5 times
   ☐ About 5 to 9 times
   ☐ About 10 to 19 times
   ☐ About 20 to 29 times
   ☐ About 30 to 39 times
   ☐ About 40 times or more

11) Are you a **student**?
   ☐ Yes
   ☐ No

12) What is your highest level **of education**?
   ☐ Primary
   ☐ High school education without a diploma
   ☐ High school education with a diploma
   ☐ College education and above

13) You are currently:
   ☐ Worker - employee
   ☐ Worker - self-employed
   ☐ Not working
   ☐ Other: _____
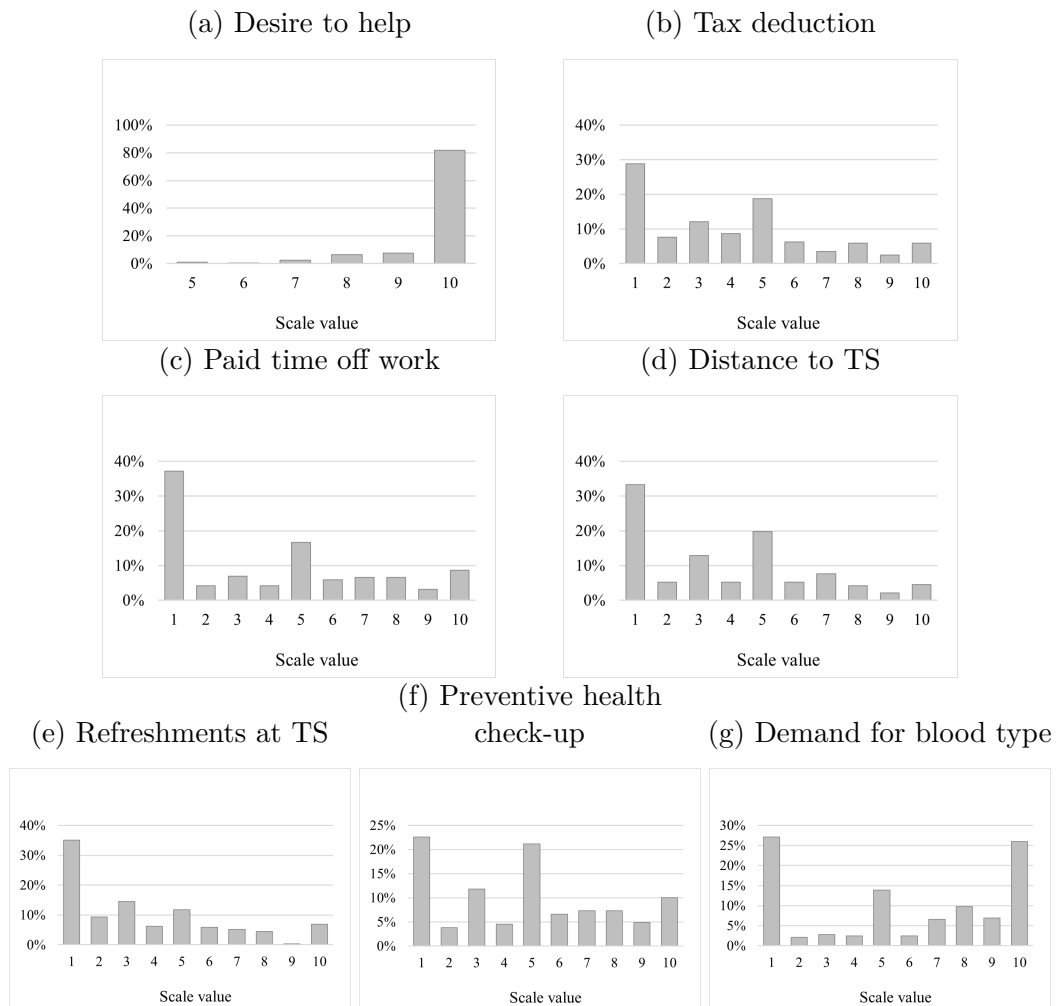
14) Your monthly net **income** is between:
   □   0 - 9 999 CZK
   □   10 000 - 19 999 CZK
   □   20 000 - 29 999 CZK
   □   30 000 - 39 999 CZK
   □   40 000 - 49 999 CZK
   □   50 000 - 59 999 CZK
   □   60 000 CZK and more

15) If you have any comments, this is the place for them:

Appendix C

Importance of factors to donate

Figure C.1: Importance of factors to donate

(a) Desire to help

(b) Tax deduction

(c) Paid time off work

(d) Distance to TS

(e) Refreshments at TS

(f) Preventive health check-up

(g) Demand for blood type

Note: Selected factors affecting blood donation and their importance for the donor to make a decision about whether to donate. On the **y** axis is the percentage of donors, on the **x** axis is a scale from 1 (no importance) to 10 (strong importance). **TS** = transfusion station. **Source:** data from own research, calculations by the author

Appendix D

# Other descriptive statistics

Figure D.1: Time since first donation
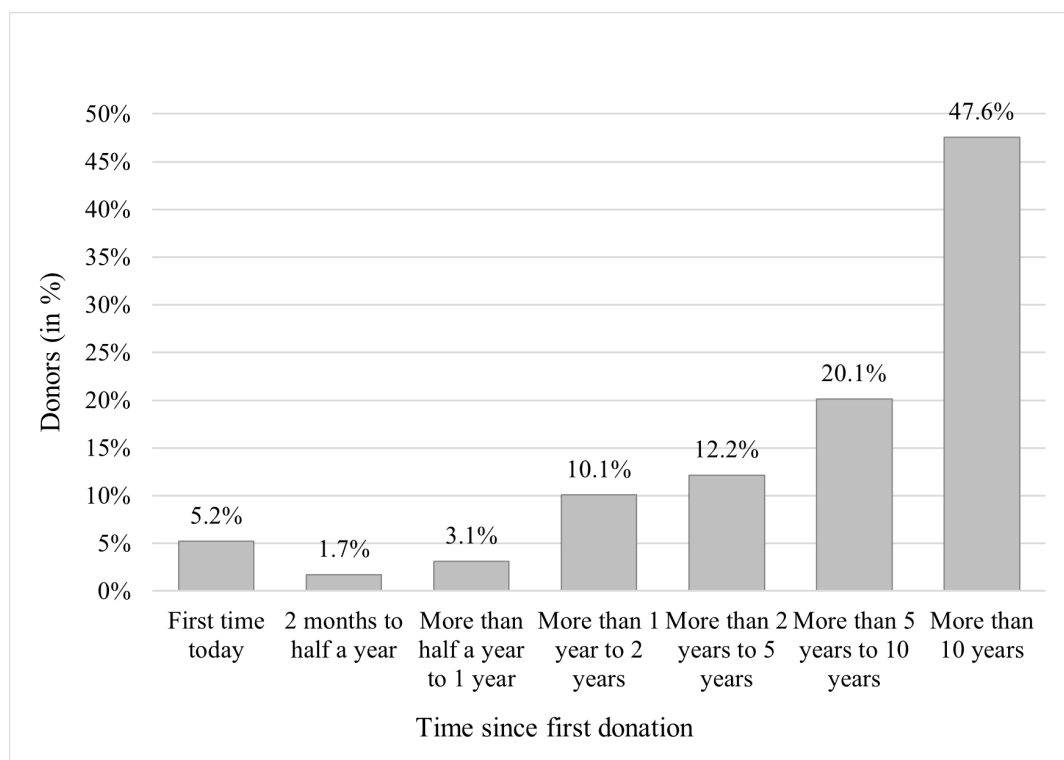
Note: This figure shows the distribution of answers to the question regarding how much time passed since the first donation of the donor. On the **x** axis, there are the time intervals; on the **y** axis, there is the percentage of donors. *Source:* data from own research, calculations by the author

Figure D.2: First impulse to consider blood donation
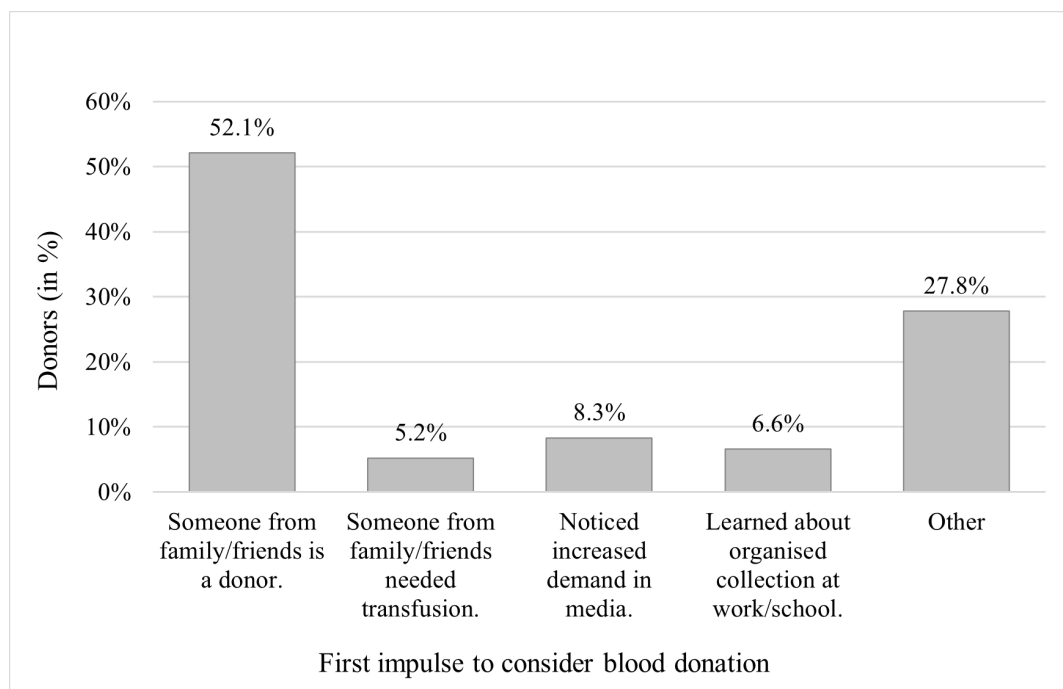
Note: Figure D.2 depicts distribution of answers to the question on what was the first donor's impulse to consider donating blood. On axis **x**, the possible answers are displayed; on axis **y** is the percentage of donors. *Source:* data from own research, calculations by the author

Figure D.3: Cancelling CRC awards for blood donors
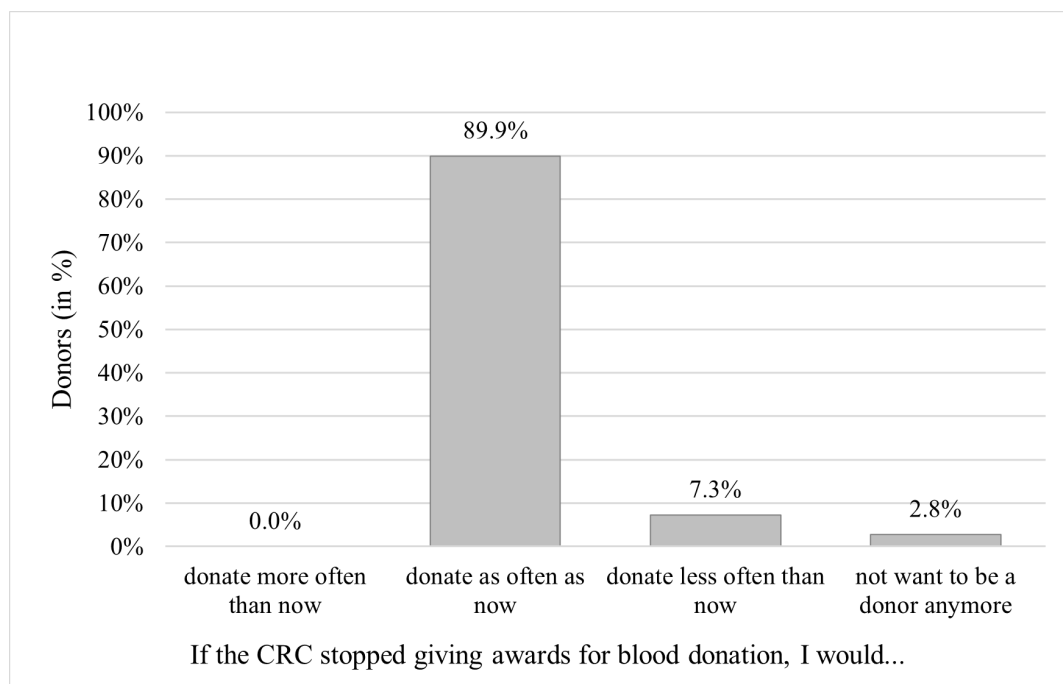
Note: This figure shows the percentage representation of answers to the question asking about what would the donor do, if the CRC stopped giving awards for blood donation. The possible answers are on axis **x**; percentage of donors is on axis **y**. *Source:* data from own research, calculations by the author

Figure D.4: Number of donations underwent by the donor
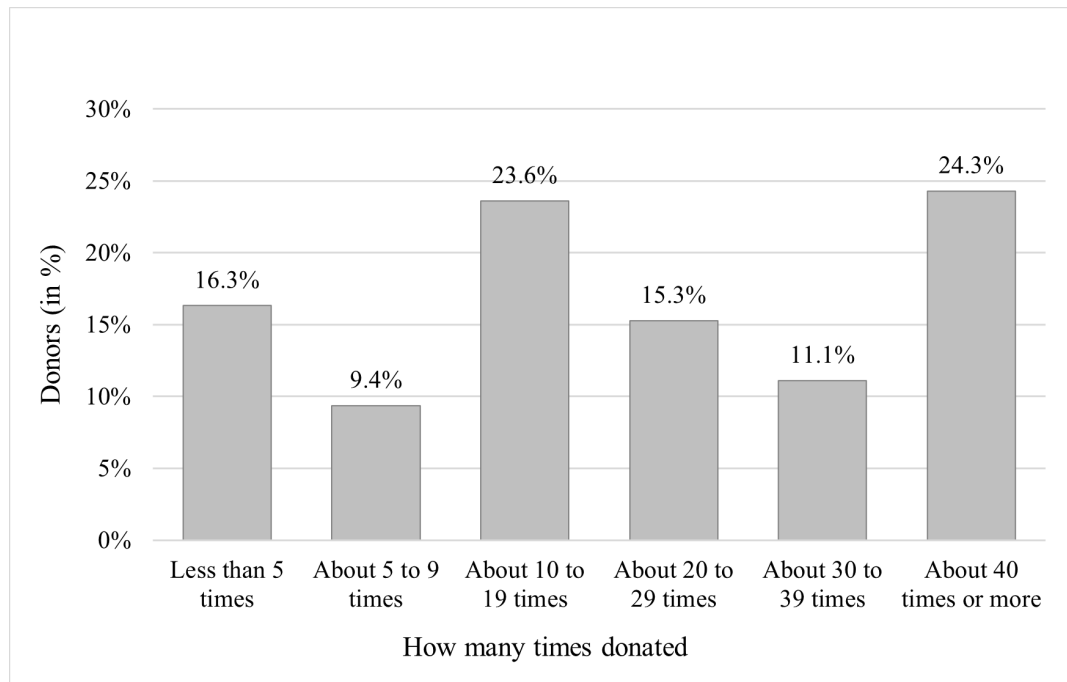
Note: This figure depicts distribution of answers to the question regarding number of donations underwent by the donor. On axis **x**, there is number of donations; on axis **y**, there is the percentage of donors classified in the corresponding category. **Source:** data from own research, calculations by the author