Monetary Compensation and Blood Donor Return: Results of a Donor Survey in Southwest Germany

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Keywords

Donors · Donor return · Donor retention · Compensation · Germany

Summary

Background/Aims: The aim of this study was to compare donor return patterns of non-compensated and compensated German first-time donors to assess the effect of monetary reward on donor return. **Methods:** We conducted a retrospective analysis of a donor survey of 3,077 non-compensated and 738 compensated German first-time donors. Survey data were pooled and linked with blood donor return rates within the 1st, 2nd, and 3rd year. Logistic regression models were used to estimate differences in the probability of donor return between non-compensated and compensated donors. **Results:** In the first 2 years following the initial donation, compensated donors were more likely to return with the odds of giving at least one further donation 1.86 (1st year) and 1.32 (2nd year) times higher for compensated donors than for non-compensated donors. In the 3rd year, there were no significant differences in donor return. **Conclusion:** This report, which was based on two non-randomized donor samples, suggests that monetary compensation may increase the likelihood of donors returning in the first months after the initial donation. Monetary reward may therefore be used as a short-term strategy to recruit new donors. The long-term commitment, however, seems not to be affected by monetary reward, and complementary donor retention strategies are needed.

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Introduction

Payments as an incentive for blood donors have been discussed extensively in the last decades [1, 2]. Critics have argued that payments may attract donors who may conceal a possible risk for infectious diseases in order to obtain payments and therefore threaten the blood safety [3]. Furthermore, it has been argued that offering a payment may force less privileged people to sell their blood that leads to an exploitative relationship [4]. Finally, payments may destroy the intrinsic motivation and crowd out altruistic donors [4, 5]. Several studies showed that the majority of blood donors in developed countries are motivated by altruistic motives [6, 7]. If payments are a possible backfire and deter donors for altruistic motives, i.e. donors who do not expect any compensation, the blood supply may decrease rather than increase. In line with these arguments, most of the developed countries rely on voluntary blood donors and do not permit any payments to blood donors [2].

Recently, the crowding-out effect and the assumption that payments may reduce blood supply was challenged by some authors [8–10]. In times of increasing blood demand, economic rewards may help Blood Services to ensure a sufficient blood supply by attracting new donors. Empirical studies that examine the relevance of economic rewards for donor motivation, however, are scarce and contradictory in their results. A recently published meta-analysis based on seven studies led to the assumption that the crowding-out effect is correct and incentives do not significantly increase blood donation [11]. However, no studies were included in the meta-analysis that assessed the short- and long-term effects of monetary incentives on donor return. Whether payments can help to recruit

Table 1. Study design and response rates of the non-compensated and compensated donor samples

	Non-compensated donor sample (sample 1)	Compensated donor sample (sample 2)
Field period	July 2009 to November 2009	September 2010 to December 2010
Population	non-compensated whole blood donors of the Red Cross Blood Service of Baden-Württemberg – Hessen who first donated in the year 2005.	compensated whole blood donors of a university-based blood establishment who first donated in the year 2006 in a single donation site.
Sample size	8,000	2,740
Sampling	random sampling	all donors were selected
Survey mode	self-administered questionnaire	self-administered questionnaire
Reminder letter	one after 6 weeks	one after 5 weeks
Participation rate	38.5	26.9
Participants	3,077	738
Proportion of men among participants	38.9	46.4
Proportion of donors < 30 years among participants	45.9	70.4
Proportion of highly educated donors among participants	48.5	66.8

donors who then return for further donations and donate on a routine basis remains unclear.

Studies that examine differences in long-term donor return of paid and unpaid blood donors are difficult to realize as most countries solely rely on voluntary blood donors and do not permit payments. The German transfusion act also lays down that blood donation has to be voluntary and non-remunerated. A reimbursement for whole blood donors to cover their expenses, however, is permitted, and some blood establishments offer such compensation up to EUR 25.00 [2, 12]. The German Red Cross Blood Services, which are responsible for approximately 80% of all blood donations in Germany, do not offer any monetary compensation. Therefore, both non-compensated and compensated donors can be observed in Germany.

The aim of this study was to describe donor return of non-compensated and compensated German first time-donors and to clarify whether donors that receive a monetary compensation are more likely to come back for further donations. We were particularly interested in assessing possible differences in short- and long-term donor return of non-compensated and compensated donors.

Material and Methods

To describe the differences in donor return between non-compensated and compensated donors, we conducted a donor survey with two samples in southwest Germany. The first sample consisted of non-compensated donors that were interviewed with a printed, self-administered questionnaire. The second sample was selected from compensated donors. The survey data were linked with return data that were extracted from the donor database of the German Red Cross Blood Service. In a retrospective analysis of both samples we compared donor return rates of non-compensated and compensated donors within 36 months after the initial donation.

Sample 1 – Non-Compensated Donors

The first sample consisted of 8,000 non-compensated whole blood donors who were randomly selected from the database of the Red Cross Blood Service of Baden-Wuerttemberg – Hesse located in southwest Germany [13]. All selected donors started giving whole blood in 2005 at a mobile or fixed collection site of the Red Cross Blood Service in southwest Germany without receiving any monetary compensation. The random sampling was performed by extracting donor information from our database, including name, address, age, sex, and the number of all previous donations using a random number. Donors who are permanently deferred were excluded from the database before drawing the sample. In 2009, a printed, self-administered questionnaire with questions about donor motivation, donation experience, and sociodemographic characteristics was mailed to the selected donors with a personal cover letter. Along with the questionnaire, a data security statement and a stamped, pre-addressed return envelope was sent to the pertinent donors. After 6 weeks, non-respondents received a second mailing with a reminder letter and a copy of the questionnaire (table 1). The self-administered questionnaire contained 18 questions, including sections on sociodemographic characteristics (7 questions), donation history (1 question), experiences and satisfaction with the first and last donation (5 questions), social ties (3 questions), and motivation for and deterrents from blood donation (2 questions).

Sample 2 – Compensated Donors:

The second donor sample consisted of 2,740 whole blood donors who started donating at a university-based blood establishment (University Hospital Tübingen) in southwest Germany. All donors started donating in 2006 and received a monetary compensation of EUR 25.00 for the first donation. Due to the limited annual number of first-time donors in the university-based blood establishment, all donors of the year 2006 who were not permanently deferred were asked to participate. In 2010, a self-administered questionnaire was sent to these donors. The study materials (data security statement, return envelope) and the questionnaire were identical to those of sample 1 except for an additional question on the relevance of the monetary compensation ('how important was the monetary compensation for your first donation?'). In both samples, no compensation was offered for filling in the questionnaire.

Data on Donor Return

Survey data of both donor samples were linked with blood donor return rates within 36 months following the initial donation. Donor data

were extracted from the database of the German Red Cross Blood Service. In both samples three variables were created reporting at least one further donation within the first year (1–12 months after the initial donation), at least one further donation within the second year (13–24 months after the initial donation), and at least one further donation within the third year (25–36 months after the initial donation). Donors who returned to donate at the university-based blood establishment received EUR 25.00 for every further donation. Donors who returned to a mobile or fixed donation site of the German Red Cross Blood Service in the federal states Baden-Wuerttemberg and Hesse did not receive any monetary compensation. Donors returning to the university blood center in sample 1 (initially non-compensated donors) as well as donors returning to a mobile or fixed collection site of the German Red Cross Blood Service in sample 2 (initially compensated donors) were recorded and included into the analysis. However, donations collected in other federal states or by other organizations could not be considered for this study [13, 14].

Statistical Analysis

First, we calculated the proportion of donors who returned at least one time in the pertinent year and compared the proportion between non-compensated (sample 1) and compensated donors (sample 2). In a pooled analysis of both donor samples, chi-square statistics was used to test for differences between both studies, considering p values less than 0.05 as statistically significant. Second, differences in donor return rate between men and women, between four age groups (18–21 years, 22–29 years, 30–39 years and 40+ years), and between groups of three education levels (low, medium, and high) were calculated and compared between both samples. Third, multivariate logistic regression modelling was used to estimate the probability of donor return for compensated donors compared to non-compensated donors within the pertinent year. The regression models were adjusted for sex, age, and education of the donors. Donors with missing values in any of the variables were excluded from the analysis. The statistical package IBM SPSS Statistics 21 (SPSS, Inc., 2012, Chicago, IL, USA) was used for the calculations.

Results

In sample 1, a total of 8,000 questionnaires were sent to non-compensated first-time donors. 3,077 (38.5%) were sent back. In sample 2, 738 out of 2,740 questionnaires were returned, corresponding to a response rate of 26.9% according to AAPOR-standards [15]. Due to missing values in any of the characteristics (sex, age, education) 166 questionnaires were excluded from the data analysis. The analytic sample consisted of 3,649 donors (sample 1 = 2,935 and sample 2 = 714). In both samples, donors who did not participate in the survey tended to be younger, male, and donated less frequently after the initial donation than participating donors [13].

Among participating donors, significant differences in sociodemographic characteristics between non-compensated (sample 1) and compensated donors (sample 2) appeared. The proportion of men among compensated donors was 7.5% points higher (46.4 vs. 38.9%) and the proportion of young donors (<30 years) was even 24.5% higher (70.4 vs. 45.9%). Furthermore, compensated and non-compensated donors differed according to education level. The proportion of highly educated donors was 18.3% points higher (66.8 vs. 48.5%) among compensated donors than among non-compensated donors (table 1).

Table 2. Proportion of donors that returned at least once in the 1st, 2nd, and 3rd year among non-compensated and compensated donors

	Donor return within 1st year in %			Donor return within 2nd year in %			Donor return within 3rd year in %		
	non-compensated donors	compensated donors	chi-square	non-compensated donors	compensated donors	chi-square	non-compensated donors	compensated donors	chi-square
Total	61.2	73.0	34.6***	55.9	60.2	4.3*	51.8	52.1	0.3 n.s.
Sex									
Men	63.0	75.5		60.5	61.0		54.8	53.8	
Women	60.0	70.8		53.0	59.5		49.8	50.7	
Age, years									
18–21	61.1	79.6		52.9	61.4		50.4	56.1	
22–29	54.4	66.1		45.9	56.9		40.3	46.8	
30–39	60.4	67.4		56.5	53.9		52.8	43.8	
40+	65.8	73.8		64.2	68.0		59.1	58.2	
Education									
Low educated	68.6	70.5		66.1	64.1		57.2	59.0	
Medium educated	64.5	74.8		57.3	60.4		55.1	56.0	
High educated	56.1	72.7		51.4	59.4		47.5	49.7	

*p < 0.05; ***p < 0.001

Table 3. Multivariate logistic regression models to predict at least one further donation within the 1st (1–12 months), the 2nd (13–24 months), and the 3rd year (25–36 months) after the initial donation

	Donor return within 1st year		Donor return within 2nd year		Donor return within 3rd year	
	adjusted odds ratio	95% CI	adjusted odds ratio	95% CI	adjusted odds ratio	95% CI
Sex						
Men	1		1		1	
Women	0.85	0.74–0.98	0.78	0.63–0.91	0.82	0.72–0.94
Age, years						
18–21	1		1		1	
22–29	0.67	0.55–0.81	0.76	0.63–0.91	0.66	0.54–0.79
30–39	0.80	0.65–0.97	1.00	0.83–1.21	0.94	0.77–1.13
40+	0.96	0.79–1.17	1.37	1.13–1.65	1.22	1.01–1.47
Education						
Low educated	1		1		1	
Medium educated	0.91	0.73–1.14	0.80	0.65–0.99	1.01	0.82–1.24
High educated	0.66	0.54–0.81	0.69	0.56–0.85	0.78	0.64–0.96
Compensation						
Non-compensated	1		1		1	
Compensated	1.86	1.54–2.24	1.32	1.11–1.57	1.12	0.95–1.33

As table 2 shows, donor return in the 1st year after the initial donation differed between both donor samples. Whereas 73.0% of the compensated donors returned at least once in the 1st year, the proportion of returning donors in the sample of non-compensated donors was 11.8% lower. A chi-square test indicates that these differences were significant, with a p value less than 0.001. In the 2nd year, differences in donor return between non-compensated (55.9%) and compensated donors (60.2%) were less pronounced but remained significant, with a p value less than 0.05. Interestingly, in the 3rd year, donor return only differed marginally between both donor groups, and the chi-square statistics were no longer significant. Among both non-compensated and compensated first-time donors 5 out of 10 donors returned in the 3rd year after the initial donation.

The trend of decreasing differences in donor return within the first 3 years between non-compensated and compensated donors also appeared in the subgroup analysis presented in table 2. Among women, the differences in donor return of compensated and non-compensated donors reduced from 10.8% points in the 1st year (70.8 vs. 60.0%) to 0.9 percent points in the 3rd year (50.7 vs. 49.8%). Among men, the pronounced differences in the 1st year (+12.5% points) were no longer apparent in the 3rd year (–1.0%). The highest reduction in differences between compensated and non-compensated donors was found for highly educated donors. The differences in this subgroup reduced from +16.6% points in the 1st year to +2.2% points in the 3rd year. Decreasing but remaining differences can be found among young (22–29 years) and very young donors (18–21 years). In both groups, the proportion of compensated donors who returned at least once in the 3rd year was more than 5% points higher than the

proportion of non-compensated donors. In contrast, donor return within the 3rd year was highest in the first sample of non-compensated donors within the age group of older donors.

The results obtained from the multivariate analysis that are shown in table 3 also confirm our findings of significant but decreasing differences in donor return of non-compensated and compensated donors. The probability of donor return for at least one further donation within the 1st year was 1.86 times higher among compensated donors than among non-compensated donors. These results were adjusted for sex, age, and education of the donors. In the 2nd year, the odds ratio reduced to 1.32 but still remained significant. In the 3rd year, however, the odds ratio reduced further to 1.12 and was no longer significant.

Discussion

The effects of payments on blood donor behavior have been discussed extensively, but there is still insufficient data for conclusions on the effect of monetary reward on donor return. The results of our pooled analysis of two non-randomized donor samples in southwest Germany showed differences in donor return of non-compensated and compensated German first-time donors. Within the 1st and the 2nd year after the initial donation, compensated donors were 1.86 times (1st year) and 1.32 times (2nd year) more likely to return for at least one further donation than non-compensated donors ($p < 0.05$). In the 3rd year, however, donor return did not significantly differ between non-compensated and compensated donors. These results suggest that payment of blood donors may influence short-term donor return but may have no impact on long-term donor retention.

Our findings of significant differences in short-term donor return rates between non-compensated and compensated blood donors do not support the result of a recently published meta-analysis of empirical studies on the relevance of monetary and non-monetary incentives. Analyzing seven experimental studies, the authors did not find evidence for the effectiveness of incentives for blood donors [11]. A possible explanation for the contradictive results in our study may lie in the fact that the meta-analysis did not include any studies on donor return of donors who received a monetary reward for their first donation. By offering monetary reward to first-time donors, as we did in sample 2, a different donor type may be attracted who is highly interested in the compensation and would not have started to donate without the prospect to receive a monetary reward. Consequently, this donor type may be easily encouraged to return for further donations by offering a monetary compensation.

Surprisingly, the differences in short-term donor return were not observed in the 3rd year after the initial donation, suggesting that there may be no effect of economic rewards on long-term donor return. These findings are in contrast to previous studies that underline the relevance of 1st year donation frequency for long-term donor retention [13, 16]. Schreiber et al. [16] demonstrated that further donations in the first months following the initial blood donation significantly increase the likelihood of becoming a regular blood donor. Contrary to these findings, the high proportion of compensated donors who returned in the 1st year was not associated with increased long-term donor return in sample 2. These findings may be explained by the divergent sample strategies in our samples and sociodemographic differences between non-compensated and compensated donors. The majority of the non-compensated first-time donors were recruited at mobile donation sites organized by the German Red Cross Blood Service. In almost every municipality in the federal states of Baden-Wuerttemberg and Hesse, at least one mobile donation per year is offered by the Blood Service [14]. Sample 1 therefore included donors from rural as well as from urban areas. In contrast, the compensated first-time donors in sample 2 were recruited at a university-based blood establishment. The high proportion of young and highly educated donors let us assume that students were an important group within sample 2 and were over-represented compared to sample 1. Students are known for a high mobility during the transition from student life to employment and therefore are less likely to return for successive donations. Previous studies showed that having moved to another city is an important barrier that deters donors from further blood donations [13, 16]. Consequently, the sharp decrease in the donor return rate within the first 3 years among compensated donors may be partly caused by the high mobility of the investigated donors in sample 2.

Further studies on the long-term effect of monetary reward on donor return should therefore aim to randomize partici-

pants into an intervention group that receives compensation and into a control group without receiving any reward to minimize sociodemographic differences between compensated and non-compensated donors. In our retrospective study based on donor return rates at different donation sites, a randomization was not possible. The findings of our analysis suggest that there are indeed short-term differences in donor return rates but no differences in long-term donor return. The findings should therefore be interpreted with caution and encourage prospective and randomized studies on the effect of monetary reward. Since randomization in long-term studies of blood donors prove to be difficult, an alternative approach could be a comparison of donors donating at university-based blood establishments that offer a monetary compensation versus donors donating at blood establishments that do not offer compensation in order to adjust the proportion of students in both donor groups. Such a sampling strategy could also help to separate the effects of monetary compensation on donor return from those of donation site type. In our study non-compensated and compensated donors were sampled from different donation sites: the non-compensated donors started to donate at mobile or fixed collection sites of the German Red Cross, whereas the compensated donors were recruited at a single university-based blood establishment. Therefore, our results may have also been affected by the different type of donation sites.

Further studies should also try to increase the response rate of the sampled donors to avoid non-response bias. In our survey conducted approximately 4 years after the initial donation, a high proportion of donors was included who had moved in the meantime and could not be contacted. Especially in sample 2, a high response rate was hampered due to the fact that mailings could not be delivered. Strategies to stay in touch with donors who move to another city, in order to follow up on further donations, are required in this context.

Although the response rates in both samples did not reach 40%, we discovered that our main findings of noticeable differences in short-term donor return rate, but no association between monetary reward and long-term donor return rate, were not biased by non-response. Additional analysis of further blood donations among all sample members of sample 1 ($n = 8,000$) and sample 2 ($n = 2,740$) showed results similar to those presented in table 2. Within the first 12 months compensated donors were more likely to return for further donations (+11.2% repeating donors). In the 2nd year, however, these differences were less pronounced (+1.7%) and disappeared in the 3rd year (−1.4%). These additional analyses suggest that differences in the response rates of both samples and the high proportion of compensated donors who did not return a filled-in questionnaire with requested further information on sex, age, and educational level were not responsible for the previously described differences in donor return.

Although the current study is based on a retrospective analysis of two non-randomized donor samples, the findings

have several implications for Blood Services that consider offering a monetary reward to blood donors. First, our results suggest that monetary rewards may attract different donor types who are very likely to return for further donations in the following months. Especially among young donors, men, and highly educated donors increased donor return rates in the first months after the initial donation can be expected. Offering a monetary compensation therefore seems to be a strategy to increase short-term blood donation and to avoid blood shortage. Second, high 1st year donor return rates among compensated donors do not predict long-term commitment. Although results of further randomized studies are required, our results suggest that compensated donors are not more likely to donate on a routine basis than non-compensated donors. Efficient donor retention strategies beyond monetary reward are therefore needed for both non-compensated and compensated first-time donors. Third, Blood Services should have in mind that offering compensation at a single donation site may reduce the number of blood donors at neighboring donation sites where no compensation is offered [9, 14]. The findings of our study were not affected by such substitution effects as we were able to record donor return at the university-based blood establishment of donors that initially started to donate at collection sites of the Red Cross Blood Service without receiving a monetary compensation. Furthermore,

Blood Services have to consider ethical implications of monetary reward as well as potential impact on blood safety. Both aspects were not assessed in our analysis [2]. The aim of this study was to describe donor return of non-compensated and compensated German first time-donors. Our results suggest that monetary reward offered to blood donors may influence a short-term donor return rate but may not affect long-term donor retention.

Acknowledgement

The authors would like to thank Daniela Griffiths for her support in preparing the English version of the manuscript.

Funding

The study was supported by the German Red Cross Blood Service of Baden-Wuerttemberg – Hesse.

Disclosure Statement

The authors declared no conflict of interest.

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