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Introduction

Plasma is a component of blood required for the manufacture of plasma-derived medical products (PDMPs), which are essential for both prophylaxis and the treatment of patients (Strengers & Klein, 2016). In the European Union (EU), there is an estimated annual shortfall of more than 4.5 million liters of plasma to meet demand (Marketing Research Bureau, 2023). As an economically important raw material, plasma is at high risk of supply disruption and the sustainability of the plasma supply chain depends on the willingness of individuals to donate their plasma on a regular basis (Domanović et al., 2023; Strengers & Klein, 2016). Seeking to increase the number of donors and the frequency of donations, blood establishments (BE) provide incentives to increase the willingness of individuals to donate plasma.

In the blood and plasma donation context, it has been shown that incentives can increase the motivation to donate and hereby help to overcome the costs associated with the donation (Goette et al., 2010). However, the impact of incentives is based on the underlying motivations of donors. The current literature on donor motivations and behavior is mostly focused on whole blood donation and scarcely addresses plasma donation. Although altruistic reasons are the most self-reported reasons for donating blood (e.g., Glynn et al., 2002; Ferguson, 2015), research has proposed to differentiate in motivations (Ferguson et al., 2008, 2012; Ferguson, 2015). Several studies examine motivational factors, such as social influence and self-efficacy (i.e., the perceived ability to donate) for blood donation (Bani & Strepparava, 2011; Giles, 2004; Veldhuizen et al., 2011), and other types of prosocial behavior (Glynn et al., 2001; Misje et al., 2005; Ringwald et al., 2007; Sojka & Sojka, 2008; Trimmel et al., 2005a).

However, motivations might differ between whole blood and plasma donors, as plasma donors have shown to have higher blood donation intentions, higher levels of altruism, higher self-efficacy, more positive attitudes about donating blood,



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and lower anxiety compared to whole blood donors, and this effect can already be observed at the onset of the donor career (Veldhuizen & Van Dongen, 2013).

Besides these psychographic blood donation motives, BE can provide incentives to encourage individuals to donate and to increase the quantity and regularity of donations. By definition, incentives are extrinsic rewards, either monetary or non-monetary, used to drive specific behavior (Gong et al., 2023). The effect of incentives is ambiguous. For example, one survey study found that university students in the US (where more than one blood organization is responsible for blood and plasma collection) were positively motivated to donate blood or plasma by the possibility of being paid. When payment was offered for both types of donations, study participants preferred to donate blood (France & France, 2020).

Despite a potentially positive effect on donations, incentives may also lead to a shift in individuals' donation motivation. The theory of motivational crowding out refers to a phenomenon where the donor's intrinsic motivation decreases with the availability of paid incentives and can even lead to a reduction in potential blood donors (Gneezy et al., 2011; Mellström & Johannesson, 2008; Titmuss, 2018). Previous studies show a positive effect of non-monetary incentives on blood donation intention and behavior (Costa-Font et al., 2013; Glynn et al., 2006; Sanchez et al., 2001; Van Dyke et al., 2020). The research on the influence of monetary incentives is less clear: various studies show negative effects of monetary incentives on the intention to donate blood (Berger et al., 2023; Costa-Font et al., 2013; Mellström & Johannesson, 2008; O'Malley & Andrews, 1983; Trimmel et al., 2005) while other studies report positive effects (Becker et al., 2019; France et al., 2022; lajya et al., 2013; Lacetera et al., 2012; Shehu et al., 2016; Tscheulin & Lindenmeier, 2005; Van Dyke et al., 2020). Additionally, one study shows that the availability of monetary incentives is the most important criterium for choosing a blood donation service in the German market, where blood donation collection is decentralized (i.e., more than one organization collects blood with and without financial compensation) (Mews, 2013).



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Work Package 2 (WP2) focuses on "Donor recruitment and retention best practices" and has two main deliverables that result in a transfer and recommendation plan (Figure 1). In our first Deliverable D2.1, we developed a document to provide an overview of plasma collectors and their incentives in EU, non-EU and worldwide countries. The aim of the current Deliverable D2.2 is the evaluation of the incentives we found in Deliverable 2.1 regarding their efficiency. Figure 1 demonstrates the interdependence of the Deliverables.

Deliverable 2.1

Overview of plasma donor recruitment and retention strategies

Deliverable 2.2

Assessing identified practices regarding efficiency and identifying novel practices

Transfer plan

Developing a recommendation and transfer plan

Figure 1: Deliverables and Tasks of WP2



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In the previous Deliverable D2.1, we developed an overview of incentives used in EU, non-EU, and other countries worldwide. We collected data on countries' BE and their incentive strategies. In total, we analyzed more than 490 organizations across 26 countries. Our results show that a broad portfolio of incentives is offered in different countries. Generally, snacks and pre-donation health checks are commonly provided. Additionally, loyalty and referral programs, small gifts, coupons, lotteries, travel compensations, and time off from work expand the strategic incentive portfolio. In European countries, BE in 7 different countries offer financial compensation ranging from the equivalent of 10 to 35 Euros per plasma donation.

In order for European nations to achieve self-sufficiency in plasma, it is crucial to explore the impact of incentive strategies on donor motivation and willingness to donate both blood and plasma, as well as the effects of market situations (centralized vs. decentralized blood and plasma collection model) and incentive portfolios (basic/advanced/various). In this Deliverable D2.2, we focus on analyzing the effects of different incentives on donation intentions, using the settings of Germany, Austria, France, and the Netherlands.

Overall, the results show that in countries with a decentralized plasma collection model (Germany, Austria, where more than one organization is responsible for plasma collection, some of which offer money as an incentive) the intention to donate plasma is lower than in France and the Netherlands (countries with a centralized, non-renumerated plasma collection model). We further observe that monetary incentives are preferred over other incentives in Germany and Austria, which are both countries that already offer money as an incentive to plasma donors. In the survey, we developed a hypothetical scenario where we examined the plasma donation intention when different incentives are being introduced. Among plasma donors in France, the (hypothetical) introduction of money as an incentive has a negative effect on the intention to donate plasma. More specifically, the results indicate that French plasma donors prefer not to receive any incentive for their plasma donation.



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Methods

Study Design: Selection of countries and donors

Based on the results of Deliverable 2.1, we developed a matrix to identify countries according to pre-defined criteria: (1) plasma collection model and (2) incentive portfolio (Table 1). Based on this matrix, we selected four countries, namely Austria, Germany, France, and the Netherlands, where we test different incentives in online studies with participants in each of the four countries.

		With financia	al compensation	Without financi	al compensation
		Basic incentive	Advanced incentive	Basic incentive	Advanced incentive
		portfolio	portfolio	portfolio	portfolio
			Canada		
	Decentralized	Austria	Czechia	Norway	Slovakia
	plasma	/ dot la	Germany	Horway	Clovalla
	collection	US		Portugal	Spain
			Hungary		
nodel			Sweden		
u no				Austria	Delaium
lecti				England	Beigium
co				U U	Denmark
sma				France	Estonia
Pla	Centralized	Latvia		North	LStofila
collection		Lithuania	-	Macedonia	Italy
				Luxembourg	The Netherlands
				Slovenia	
				Quality and an el	Poland
				Switzerland	

Table 1: Identification of Countries based on their (1) plasma collection model and (2) incentive portfolio.





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Germany has a decentralized plasma collection model, as one can donate plasma at different plasma organizations¹ (e.g., the German Red Cross, CSL plasma). In all BE in Germany, financial compensation is offered for plasma donations. In addition, an advanced incentive portfolio is provided, e.g., referral programs, coupons, lotteries, gifts, additional health checks, loyalty programs, travel compensation and snacks.

Austria, similar to Germany, has a decentralized plasma collection model, where more than one blood organization is active. Some BE in Austria offer financial compensation for plasma donations, and some additional non-monetary incentives (basic incentive strategy) including post-donation snacks, additional health checks, and loyalty programs.

France has a centralized plasma collection model in place. Établissement français du sang (engl. French Blood Establishment) offers no monetary compensation for plasma donations. The incentive portfolio includes post-donation snacks, gifts, and (upon request) travel cost reimbursement.

The Netherlands operates in a centralized plasma collection model as well and the Dutch blood and plasma organization (Sanquin) offers no monetary compensation for plasma donations. However, donors receive a wide range of non-monetary incentives including post donation snacks, travel reimbursement (upon request), loyalty programs, gifts, and referral programs (Table 2).

Incentives	Austria	Germany	France	Netherlands
Money	x	x		
Referral program		x		х
Coupons		x		
Lottery		x		
Gifts		x	x	х
Health checks	х	x		

Table 2 Status Quo of Incentives in our default countries

¹ There are several plasma organizations in countries such as Germany and Austria. For instance, in Germany, the German Red Cross and CSL Plasma are plasma collecting organizations. These organizations comprise various establishments that are part of a single organization.





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Loyalty program	х	х		х
Travel compensation		х	х	х
Time off				
Snacks	х	х	х	х
SUM	4	9	3	5

We conducted an online survey in Austria, Germany, France, and the Netherlands. In each country, we derived a sample of 600 participants consisting of an equal number of blood donors (n= 200), plasma donors (n=200) and non-donors (n=200). The studies are based on a demographically representative sample of non-donors for the Austrian, German, French and Dutch population (Appendix 1). The survey was created in German and translated to French and Dutch so we could offer the questionnaire in the participants' own language.

Measurements

In total, our survey covers five categories, namely (1) donation intentions, (2) donation history, (3) evaluation of incentives, (4) donor motives and (5) sociodemographic factors. To measure donation intention, we asked participants about their short-term plasma donation intentions ("I intend to donate blood on the next possible date" 1 = strongly disagree to 7 = strongly agree). Measuring plasma donation intentions allows us to derive predictions and use the intention as our dependent variable.

We classify respondents into donor groups based on their self-reported blood and plasma donation behavior ("Have you donated blood/plasma?" – Yes/No). Due to the challenge of recruiting individuals who exclusively donate plasma, we consider individuals who reported donating both blood and plasma to be plasma donors. Therefore, we distinguish blood donors as individuals who exclusively donate blood, while plasma donors include (a) those who donate exclusively plasma and (b) those who donate both plasma and blood (Figure 3).



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Figure 2 Proportion of donor groups in the German, Austrian, French, and Dutch sample

Moreover, we assessed respondent's donation history, including how often they had donated blood/plasma overall (1 time, 2-4 times, 5 or more times), whether they had donated blood/plasma in the last 24 months (yes/no), and how often they had donated blood/plasma in the last 24 months (1 time, 2-4 times, 5 or more times).

For the incentive evaluation, we first asked respondents to rank 15 incentives for blood and plasma donation (1 = the most appealing and 16 = the least appealing). These incentives were money, donation to charity, referral program, loyalty program, snacks, health checks, lottery ticket, gifts, travel reimbursement, paid day-off, coupons, tax benefits, honors, entertainment options and recognition (see exact definition in Appendix 2). We also added the option "I don't need any incentives". Second, for each incentive, we measure donation intention by asking respondents to what extent the incentives would motivate them to donate plasma ("I intend to donate plasma on the next possible date" 1 = strongly disagree to 7 = strongly agree) and whether the introduction of the incentive would make them stop donating (yes/no) (see Appendix 3).



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Analysis

To compare donation intentions and the ranking of different incentives between donor groups and countries, we used t-tests, chi²-tests and ANOVA. In addition, we conducted regression analyses to predict the intention to donate plasma (dependent variable) by including plasma organization model, incentive portfolio and donor status as independent variables in the regression.

Results

Descriptive statistics on donor history are included in Appendix 3 to 6. Appendix 3 includes information on whether the blood and plasma donors are considered to be active blood and/or plasma donors, as well as the number and the proportion of plasma donors who are active blood donors. Appendix 4 to 6 provide information on blood donors' and plasma donors' blood donation history as well as plasma donors' plasma donors is blood donors have donated blood/plasma in general and in the last 24 months. In terms of donation history, the proportion of active blood donors ranges from 37.2% in Germany to 66.1% in France. Among plasma donors, 47.8% of Austrian, 54.9% of German, 64.9% of French and 42.8% of Dutch plasma donors are active donors (Appendix 4).

Ranking of Incentives – between countries

To evaluate incentives, we first analyze the ranking of incentives. The following Tables (Tables 3 to 6) show the top 3 incentives in each country for all three donor groups. We then compared mean rankings between countries for all three donor groups and all 16 incentives (Tables 7 to 9). Mean ranking comparisons between donor groups are included in Appendix 7 to 10. Since 1 is the most appealing



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incentive and 16 is the least appealing incentive, lower mean values of ranking indicate that the incentive is more preferred than others.

Examining the top three incentives for each country based on the ranking, we find a consistent ranking of incentives in Germany among non-donors, blood donors and plasma donors. Money is ranked as the most preferred incentive (M: 3.88; 4.46; 3.13), followed by a paid day-off (M: 5.68; 5.90; 6.16) and health checks (M: 6.28; 6.08; 6.72) (Table 3). Across all donor groups, the top three incentives in Austria are the same as in the German sample, although health checks and a paid day-off were reversed in Austria (Table 4).

Table 3: Top three incentives in Germany.

	Ranking of Incentives ¹ in Germany									
#	Non-donor		Blood donor		Plasma donor					
1	Money	3.88	Money	4.46	Money	3.13				
2	Paid day-off	5.68	Paid day-off	5.90	Paid day-off	6.16				
3	Health checks	6.28	Health checks	6.08	Health checks	6.72				

1 Participants were requested to rank 15 incentives (see Appendix 2) and the option "I don't need incentives" in order of preference. Lower numbers indicate highly appealing incentives, while higher numbers depict less desirable ones (ranging from 1 to 16).

Table 4: Top three incentives in Austria.

	Ranking of Incentives ¹ in Austria								
#	Non-donor		Blood donor		Plasma donor				
1	Money	3.59	Money	4.79	Money	3.94			
2	Health checks	5.56	Health checks	5.62	Health checks	6.20			
3	Paid day-off	5.73	Paid day-off	6.74	Paid day-off	6.37			

1 Participants were requested to rank 15 incentives (see Appendix 2) and the option "I don't need incentives" in order of preference. Lower numbers indicate highly appealing incentives, while higher numbers depict less desirable ones (ranging from 1 to 16).





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In France, both non-donors and blood donors rank the first three incentives equally. Health checks (M: 6.94; 6.26) are ranked first, followed by reimbursement of travel costs (M: 7.00; 6.58), and a paid day-off (M: 7.11; 6.86) in third place. French plasma donors, however, rank 'no need for incentives' best (M: 5.88), followed by snacks (M: 6.10) and health checks (M: 6.17) (Table 5).

Table 5 Top three incentives in France.

	Ranking of Incentives ¹ in France									
#	Non-donor		Blood donor		Plasma donor					
1	Health checks	6.94	Health checks	6.26	No need for incentives	5.88				
2	Reimbursement of travel costs	7.00	Reimbursement of travel costs	6.58	Snacks	6.10				
3	Paid day-off	7.11	Paid day-off	6.86	Health checks	6.17				

1 Participants were requested to rank 15 incentives (see Appendix 2) and the option "I don't need incentives" in order of preference. Lower numbers indicate highly appealing incentives, while higher numbers depict less desirable ones (ranging from 1 to 16).

In the Netherlands, we observe an ambiguous picture regarding donor's incentive preferences. Among non-donors, money ranks first (M: 5.30), with reimbursement of travel costs (M: 6.37) in second place and health checks in third (M: 6.45). Among blood donors, health checks rank first (M: 6.06), with reimbursement of travel costs (M: 6.27) in second place and money in third (M: 6.96). Dutch plasma donors also rank health checks best (M: 6.26), followed by recognition (M: 6.94) and 'no need for incentives' (M: 7.28) (Table 6).



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Table 6: Top three incentives in the Netherlands

		-				
#	Non-donor		Blood donor		Plasma donor	
1	Money	5.30	Health checks	6.06	Health checks	6.26
2	Reimbursement of travel costs	6.37	Reimbursement of travel costs	6.27	Recognition/ Thank you	6.94
3	Health checks	6.45	Money	6.96	No need for incentives	7.38

Ranking of Incentives¹ in the Netherlands

1 Participants were requested to rank 15 incentives (see Appendix 2) and the option "I don't need incentives" in order of preference. Lower numbers indicate highly appealing incentives, while higher numbers depict less desirable ones (ranging from 1 to 16).

In addition to the top three of incentives per donor group within each country, we now compare the mean rankings of incentives between countries (Tables 7 to 9). Among non-donors (Table 7), there are significant differences in the mean ranking of money between countries, except between Austria and Germany. Money is the most appealing incentive in Austria and Germany, with mean rankings of 3.59 and 3.88, respectively. Among non-donors, there are statistically significant differences between all countries except Germany and the Netherlands regarding snacks as incentives. The mean ranking of snacks is 7.73 in Germany, 8.71 in Austria, 7.51 in France and 10.24 in the Netherlands.

Among blood donors, we observe statistically significant differences between the Netherlands and all other countries regarding receiving honors (Table 8). German and Austrian blood donors rank receiving honors on average 11.30 and 11.14, respectively. In France the mean ranking is 10.51, whereas Dutch blood donors rank receiving honors best with a mean ranking of 7.99.

Based on plasma donors' ranking, the results show statistically significant differences between all countries except Germany and Austria for money. German



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and Austrian plasma donors rank money on average 3.13 and 3.94 respectively, while French and Dutch plasma donors rank money 5.31 and 7.85 respectively.



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Table 7: Non-donors' mean ranking of incentives by country

	Ranking of Incentives										
	Non-donor										
	Ge	ermany	A	ustria	Fra	ince	The Net	herlands			
	М	SD	М	SD	М	SD	М	SD			
Money	3.88 ^{a***b*}	4.18	3.59 ^{c***d**}	4.16	7.24 ^a *** ^c *** ^e ***	5.35	5.30 ^{b*d**e***}	5.23			
donation to charity	9.47	4.32	9.14	4.30	8.50	4.61	9.15	4.19			
referral program	10.70	3.44	11.16 ^{a**}	3.16	10.55	3.75	9.93 ^a **	3.50			
loyalty program	10.35	3.55	10.84 ^{a*}	3.32	10.17	3.69	9.80 ^a *	3.68			
snacks	7.73 ^{a***}	3.82	8.71 ^{b*c**}	3.65	7.51 ^{b*d***}	4.45	10.24 ^a *** ^c ** ^d ***	4.22			
health checks	6.28	4.40	5.56 ^a *	4.31	6.94 ^a *	4.40	6.45	4.46			
lottery ticket	9.26 ^{a**}	4.10	9.46 ^b *	3.96	9.92	4.25	10.62 ^{a**b*}	4.00			
gifts	7.49	3.81	8.27	4.08	8.47	4.09	7.88	4.04			

continues



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continued			Ra	anking of Incenti	ves						
Non-donor											
	Ger	many	Aus	stria	Fra	France		herlands			
	М	SD	М	SD	М	SD	Μ	SD			
travel reimbursement	7.13	4.39	7.19	4.04	7.00	4.07	6.37	3.97			
paid day-off	5.68 ^{a*b*}	4.36	5.73 ^{c*d*}	4.44	7.11 ^{a*c*}	4.56	7.05 ^{b*d*}	4.52			
coupons	7.95 ^a **	4.06	7.80 ^b **	4.15	9.33 ^{a**b**c**}	3.80	7.82 ^{c**}	3.93			
tax benefits	7.81	4.38	6.79	4.24	7.88	4.59	7.81	4.71			
honors	11.89 ^{a**b***}	3.43	11.99 ^{c***d***}	3.50	10.35 ^{a**c***e*}	4.42	9.13 ^{b***d***e*}	4.30			
entertainment options	9.72	3.78	9.70	3.53	10.32	3.51	10.35	3.74			
recognition	9.81 ^{a***b***}	4.36	9.86 ^{c***d***}	4.34	7.43 ^{a***c***}	4.87	7.92 ^{b***d***}	4.42			
No need for incentives	10.85 ^{a***}	5.29	10.20 ^{b***}	5.25	7.28 ^a *** ^b *** ^c ***	5.74	10.19 ^{c***}	5.83			

Note: The same letter between groups indicates a statistically significant difference between the groups; scale ranges from 1 (most appealing incentive) to 16 (least appealing incentive); ***p <0.001; **p < 0.01; *p < 0.05



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Table 8 Blood donors' mean ranking of incentives by country

			R	anking of Ince	ntives			
				Blood dono	r			
	Gei	rmany	Au	ustria	Fr	ance	The Netherlands	
	М	SD	М	SD	М	SD	М	SD
Money	4.46 ^{a***b***}	4.74	4.79 ^{c***d***}	4.86	7.20 ^{a***c***}	5.50	6.96 ^{b***d***}	5.11
donation to charity	9.67	4.19	8.79	4.49	9.03	4.47	9.07	4.16
referral program	10.68	3.69	10.87	3.70	10.72	3.44	10.24	3.84
loyalty program	10.17	3.87	9.81	3.76	10.51	3.58	10.06	3.54
snacks	7.91 ^{a*b***}	3.92	9.12 ^a *	3.99	8.07 ^{c***}	4.20	9.83 ^{b***c***}	4.09
health checks	6.08	4.19	5.62	4.29	6.26	4.18	6.06	4.25
lottery ticket	9.38 ^a **	4.31	9.53 ^b *	4.02	9.35 ^{c**}	3.92	10.76 ^{a**b*c**}	3.96
gifts	7.88	3.79	8.30	4.07	8.28	4.04	8.67	4.12
travel reimbursement	7.22	4.17	6.93	3.85	6.58	4.27	6.27	4.32
paid day-off	5.90 ^a *	4.51	6.74	4.60	6.86	4.79	7.24 ^a *	4.75
coupons	7.85	3.87	7.71	3.92	8.76	3.91	8.65	3.98
tax benefits	7.06 ^{a**}	4.29	7.10 ^{b**}	4.52	7.24 ^{c**}	4.78	8.85 ^{a**b**c**}	4.70
								continues
				PLY	Co-funded by	on		

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continued				Ranking o	f Incentives			
				Blood donor				
	Gerr	nany	Aus	Austria France		The Neth	The Netherlands	
	М	SD	М	SD	М	SD	М	SD
honors	11.30 ^a **	3.70	11.14 ^{b***}	3.92	10.51 ^{c**}	4.17	7.99 ^{a**b**d**}	4.61
entertainment options	10.61 ^{a***}	3.84	10.71 ^{b***}	3.70	10.26 ^{c***}	3.77	10.48 ^a *** ^b *** ^c ***	3.61
recognition	9.55 ^{a**b***}	4.27	9.11 ^{c***}	4.38	8.07 ^{a**}	4.58	7.30 ^{b***c***}	4.67
No need for incentives	10.28 ^{a**b***}	5.39	9.74 ^{c**}	5.46	8.31 ^{a**}	5.98	7.54 ^{b***c**}	5.83

Note: The same letter between groups indicates a statistically significant difference between the groups; scale ranges from 1 (most appealing incentive) to 16 (least appealing incentive); ***p <0.001; **p < 0.01; *p < 0.05



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Table 9 Plasma donors' mean ranking of incentives by country

	Ranking of Incentives											
	Plasma donor											
	Ger	many	Au	stria	France		The Netherlands					
	М	SD	М	SD	М	SD	М	SD				
Money	3.13 ^{a***b***}	3.89	3.94 ^{c***d***}	4.74	8.99 ^{a***c***}	5.31	7.85 ^{b***d***}	5.44				
donation to charity	9.95 ^{a*b*}	4.28	10.03 ^{c**d*}	4.56	8.55 ^{a*c**}	4.40	8.69 ^{b*d*}	4.34				
referral program	10.41	3.53	9.77	3.72	10.28	3.62	9.63	3.99				
loyalty program	10.17	3.95	9.62	3.79	9.88	3.90	9.68	3.98				
snacks	7.63 ^{a**b**}	4.03	7.95 ^{c***d*}	4.11	6.10 ^a ** ^c *** ^e ***	4.54	9.10 ^{b**d*e***}	4.26				
health checks	6.72	4.35	6.20	4.43	6.17	4.34	6.26	4.47				
lottery ticket	9.69 ^{a**}	4.25	9.29 ^{b***}	4.04	9.73 ^{c**}	3.98	11.24 ^a ** ^b *** ^c **	3.93				
gifts	8.11	4.11	7.94	4.11	8.91	4.43	8.63	3.89				
travel reimbursement	7.96	4.36	8.14	4.24	8.04	4.14	7.43	4.14				
paid day-off	6.16 ^{a***b***}	4.54	6.37 ^{c***d**}	4.49	8.78 ^{a***c***}	4.70	8.20 ^{b***d**}	4.63				
coupons	7.45 ^{a***b*}	4.21	7.48 ^{c***d**}	4.09	9.76 ^{a***c***}	3.50	8.71 ^{b*d**}	4.09				

continues



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continued	Ranking of Incentives										
Plasma donor											
	Ger	many	Au	stria	Fra	France		herlands			
	Μ	SD	М	SD	Μ	SD	Μ	SD			
tax benefits	8.09	4.13	7.52	4.26	8.65	4.65	8.64	4.53			
honors	10.75 ^{a***}	3.85	11.24 ^{b**c***}	3.61	9.84 ^{b**}	4.63	7.38 ^a *** ^b *** ^c ***	4.54			
entertainment options	10.23	3.61	10.00	3.65	9.53	3.80	10.24	4.06			
recognition	9.02 ^{a***b***}	4.33	9.70 ^{c***d***}	4.29	6.90 ^{a***c***}	4.50	6.94 ^{b***d***}	4.50			
No need for incentives	10.54 ^{a***b***}	5.15	10.82 ^{c***d***}	5.15	5.88 ^{a***c***e*}	5.41	7.38 ^{b***d***e*}	5.86			

Note: The same letter between groups indicates a statistically significant difference between the groups; scale ranges from 1 (most appealing incentive) to 16 (least appealing incentive); **p < 0.001; *p < 0.01; *p < 0.05



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Plasma Donation Intentions – between countries

Next, we analyze plasma donation intentions between countries given different incentives, compared to a baseline plasma donation intention in each country (Tables 10 to 12). In the first part of our survey, we asked respondents in each country to state their donation intention to donate plasma at the next possible date (without mentioning any specific incentives) and define this as the baseline intention to donate plasma for each country. At a later stage in the survey, we asked respondents to state their intention to donate plasma if a specific incentive was offered. In this way, we measured donation intentions for each incentive.

Comparing the baseline donation intentions between countries (Table 10), we find that non-donors' baseline plasma donation intentions in France (M = 2.32) and the Netherlands (M = 2.28) are significantly higher compared to the baseline donation intention in Austria (M = 1.79). Blood donors' baseline intention to donate plasma is significantly higher in France (M = 2.78) compared to Austria (M = 2.31), but there are no significant differences between the other countries (German: M = 2.51; the Netherlands: M = 2.50). Among plasma donors, we observe a significantly higher baseline donation in the Netherlands (M = 4.48) compared to Austria (M = 3.68). We find no significant differences to/between the other countries (Germany: M = 4.14; France: M = 4.08).

Results indicate that offering incentives increases² the intention to donate plasma. Among non-donors, the top three incentives that increase the baseline donation

² By comparing the baseline plasma donation intention with the plasma donation intention based on the different incentives, we define any value above the baseline donation intention as an increase.



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intention are: money (M = 4.12), a paid day-off (M = 3.85) and health checks (M = 3.59) in Germany, money (M = 4.24), a paid day-off (M = 3.83) and health checks (M = 3.82) in Austria, health checks (M = 3.85), travel compensation (M = 3.81) and money (M = 3.78) in France, and money (M = 3.99), health checks (M = 3.71) and a paid day-off (M = 3.58) in the Netherlands. Interestingly, for non-donors, there are no statistically significant differences between the countries in plasma donation intentions when these top incentives are offered.

In line with the results for non-donors, offering incentives also increases the intention to donate plasma for blood donors. The top three incentives that increase the intention to donate plasma among blood donors are: money (M = 4.93), a paid day-off (M = 4.71), and health checks (M = 4.59) in Germany, money (M = 4.89), health checks (M = 4.66), and a paid day-off (M = 4.26) in Austria, tax benefits (M = 4.85), travel reimbursement (M = 4.72), and health checks (M = 4.70) in France, and health checks (M = 4.40), travel reimbursement (M = 4.33), and a paid day-off (M = 4.20) in the Netherlands. With regard to the plasma donation intention when money would be given, we find statistically significant differences between Germany and the Netherlands and Austria and the Netherlands, with lower plasma donation intentions among Dutch blood donors (Table 11).

The top three incentives that increase the plasma donation intention for plasma donors are: money (M = 5.80), a paid day-off (M = 5.15), and health checks (M = 4.83) in Germany, money (M = 5.51), health checks (M = 4.83), and a paid day-off (M = 4.78) in Austria, snacks (M = 5.22), health checks (M = 5.14), and recognition (M = 4.99) in France, and health checks (M = 4.94), recognition (M = 4.87), and honors (M = 4.75) in the Netherlands.

As the plasma donation baseline among plasma donors is comparably high, we also find that some incentives decrease the baseline intention to donate plasma for plasma donors. Besides the top three of incentives, only gifts, travel reimbursement, coupons, and tax benefits increase the intention to donate plasma in Germany compared to baseline. Among plasma donors in Austria, incentives for donating to



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charity, receiving honors, and recognition decrease the intention to donate plasma compared to the baseline plasma donation intention. In France, the intention to donate plasma is lower than the baseline plasma donation intention when money, referral programs, loyalty programs, and receiving honors are offered. In the Netherlands, only the top three of incentives as well as money and travel reimbursement increase plasma donation intention, compared to the baseline plasma donation intention.



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	Intention' to donate plasma at the next possible date									
Non-donors										
	Ge	ermany	ŀ	Austria	Fra	ince	The Netherlands			
	М	SD	М	SD	Μ	SD	Μ	SD		
Baseline	1.91	1.36	1.79 ^{a**b*}	1.35	2.32 ^{a**}	1.64	2.28 ^{b*}	1.74		
Money	4.12	2.30	4.24	2.45	3.78	2.26	3.99	2.23		
donation to charity	2.84 ^{a***}	1.81	2.96 ^{b**}	1.91	3.65 ^{a*** b** c**}	2.07	3.03 ^{c**}	1.89		
referral program	2.58	1.71	2.58	1.68	3.02	1.89	3.01	1.90		
loyalty program	2.65	1.70	2.67	1.76	3.09	1.91	3.04	1.87		
snacks	2.88 ^{a***}	1.75	2.86 ^{b***}	1.88	3.67 ^a *** ^b *** ^c ***	2.16	2.67 ^{c***}	1.78		
health checks	3.59	2.22	3.82	2.27	3.85	2.13	3.71	2.13		
lottery ticket	2.81	1.93	2.93	1.94	3.12	1.97	2.77	1.89		

Table 10 Non-donors' intention to donate plasma on the next possible date differentiated by country

continues



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Non-donors										
	Ger	many	Αι	Austria		ince	The Netherlands			
	М	SD	М	SD	М	SD	М	SD		
gifts	3.08	1.85	3.14	2.01	3.50	2.09	3.39	2.02		
travel reimbursement	3.28	2.05	3.44	2.07	3.81	2.20	3.57	2.10		
paid day-off	3.85	2.35	3.83	2.35	3.75	2.23	3.58	2.25		
coupons	3.27	1.94	3.42	2.09	3.32	2.01	3.40	2.02		
tax benefits	3.46	2.06	3.58	2.10	3.67	2.17	3.36	2.09		
honors	2.41 ^{a***b***}	1.71	2.22 ^{c***d***}	1.54	3.12 ^{a***c***}	1.94	3.14 ^{b***d***}	1.99		
entertainment options	2.66	1.72	2.96	1.89	3.06	1.90	2.91	1.83		
recognition	2.68 ^{a***}	1.81	2.58 ^{b***c*}	1.76	3.75 ^{a***b***d*}	2.16	3.17 ^{c*d*}	2.01		

Intention¹ to donate plasma at the next possible date

continued

Note: The same letter between groups indicates a statistically significant difference between the groups; ***p <0.001; **p < 0.01; *p < 0.05; ¹Intention ranges from 1 (= strongly disagree) to 7 (strongly agree)



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Intention ¹ to donate plasma on the next possible time											
Blood donor											
	(Germany		Austria	Fra	ance	The N	etherlands			
	М	SD	М	SD	М	SD	М	SD			
Baseline	2.51	1.52	2.31 ^{a*}	1.52	2.78 ^{a*}	1.69	2.50	1.80			
Money	4.93 ^{a**}	2.03	4.89 ^{b**}	2.22	4.60	2.19	4.17 ^{a** b**}	2.20			
donation to charity	3.73	1.82	3.64	2.09	4.05	1.96	3.72	1.99			
referral program	3.33	1.72	3.09 ^{a*}	1.85	3.61 ^{a*}	1.94	3.45	1.95			
loyalty program	3.40	1.73	3.22 ^{a*}	1.89	3.81 ^{a*}	1.99	3.64	1.93			
snacks	3.60 ^{a***}	1.84	3.31 ^{b***}	1.95	4.42 ^{a*** b***} c***	1.87	3.34 ^{c***}	1.95			
nealth checks	4.59	2.04	4.66	2.15	4.70	1.89	4.40	2.10			
ottery ticket	3.59	1.82	3.48	2.00	3.98 ^{a***}	2.05	3.10 ^{a***}	1.98			
gifts	3.87	1.77	3.76	2.01	4.35 ^{a**}	2.03	3.56 ^{a**}	2.00			
travel			· · · b**	- /-	·						
reimbursement	4.03 ^a	1.97	4.11 ^{D^{aa}}	2.19	4.72 ^{a-b-4}	1.97	4.33	2.11			
oaid day-off	4.71	1.99	4.26	2.31	4.65	2.15	4.20	2.24			
coupons	3.88	1.75	3.96	2.04	4.22	2.00	3.80	2.06			

Table 11 Blood donors' intention to donate plasma on the next possible date differentiated by country

continues



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continued		Intention ¹ to donate plasma on the next possible time								
Blood donor										
	Ge	rmany	A	ustria	Fr	ance	The Netherlands			
	М	SD	М	SD	М	SD	М	SD		
tax benefits	4.28 ^{a*}	1.99	4.25 ^{b*}	2.19	4.85 ^{a*b*c***}	2.06	3.82 c***	2.17		
honors	2.94 ^{a*** b***}	1.68	2.85 c***d***	1.90	3.85 ^{a***c***}	1.95	3.96 ^{b***d***}	2.03		
entertainment options	3.28 ^{a**}	1.78	3.14 ^{b***}	1.95	3.92 ^{a**b***c**}	1.92	3.27 ^{c**}	1.91		
recognition	3.34 ^{a***b***}	1.81	3.26 c***d***	2.01	4.37 a**** c***	1.99	4.14 ^{b*** d***}	2.06		

Note: The same letter between groups indicates a statistically significant difference between the groups; ***p <0.001; **p < 0.01; *p < 0.05; ¹Intention ranges from 1 (= strongly disagree) to 7 (strongly agree)



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Intention ¹ to donate plasma on the next possible time												
	Plasma donor											
	Ge	ermany	A	ustria	Fra	ance	The N	etherlands				
	М	SD	М	SD	М	SD	М	SD				
Baseline	4.14	2.24	3.68 ^{a**}	2.27	4.08	2.34	4.48 ^{a**}	2.16				
Money	5.80 ^{a***b***}	1.81	5.51 c***d***	2.04	3.95 ^{a***c***}	2.34	4.52 ^{b***d***}	2.31				
donation to charity	3.78 ^{a*}	2.02	3.66 ^{b**c*}	2.08	4.45 ^{a*b**}	2.20	4.29 ^{c*}	2.09				
referral program	3.84	1.95	3.71	2.12	3.78	2.25	4.03	2.05				
loyalty program	3.79	1.90	3.72	2.14	3.92	2.20	4.23	2.09				
snacks	4.35 ^{a***}	1.94	3.98 ^{b***}	2.06	5.22 a***b***c***	1.98	4.03 c***	1.99				
health checks	4.83	1.86	4.83	2.05	5.14	2.08	4.94	2.04				
lottery ticket	3.86	1.96	3.85	2.09	3.89	2.22	3.74	2.10				
gifts	4.42	1.89	4.14	2.13	4.23	2.16	4.35	2.07				
travel reimbursement	4 62	1 92	4 45	2 12	4 59	2 21	4 56	2 07				
paid day-off	5.15 ^{a*b**}	1.99	4.78	2.29	4.44 ^{a*}	2.37	4.41 ^{b**}	2.15				
coupons	4.59	1.83	4.36	2.17	4.14	2.17	4.45	2.07				

Table 12 Plasma donors' intention to donate plasma on the next possible date differentiated by country

continues



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Plasma donor											
	Germany		A	Austria		France		therlands			
	М	SD	М	SD	М	SD	М	SD			
tax benefits	4.66	1.96	4.39	2.23	4.35	2.22	4.45	2.13			
honors	3.54 ^{a***}	1.96	3.19 ^{b** c***}	2.12	3.88 ^{b**d***}	2.19	4.75 a***c***d***	2.08			
entertainment options	3.99	1.94	3.76	2.07	4.13	2.18	3.86	2.09			
recognition	3.98 ^{a***b***}	1.99	3.60 c***d***	2.14	4.99 ^{a***c***}	2.16	4.87 ^{b***d***}	2.10			

Intention¹ to donate plasma on the next possible time

continued

Note: The same letter between groups indicates a statistically significant difference between the groups; ***p <0.001; **p < 0.01; *p < 0.05; ¹Intention ranges from 1 (= strongly disagree) to 7 (strongly agree)



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Plasma donation intentions between donor groups for each country are included in the Appendix 11 to 14.

Moreover, we analyze the proportion of donors who have donated plasma in the past because of the incentives that are offered in their country (Figure 3 and 4). Among blood donors, we found that Germany has the highest proportion of blood donors who have donated blood because of an incentive (23.9%), which is significantly higher than in Austria (13.4%), France (11.8%), and the Netherlands (11.9%).



Figure 3: proportion of blood donors that donated because of existing incentives



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The highest proportion of plasma donors who have donated plasma/blood in the past because of an incentive are found in Germany (60.7%) and Austria (68.6%). This proportion is significantly higher compared to both the Netherlands (20.6%) and France (12.0%).



Figure 4: proportion of plasma donors that donated because of existing incentives

In addition, 8.9% of the plasma donors in France and 7.7% of the plasma donors in the Netherlands reported that they would stop donating plasma if money was offered as an incentive (Figure 5). This means that significantly more plasma donors would stop donating in France and the Netherlands if they would be paid for their donation than in decentralized countries that already offer money as an incentive (Germany: 1.6%, Austria: 2.6%).



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Figure 5 proportion of plasma donors who would stop donating when money is introduced as an incentive

Effect of Plasma Collection Model and Incentive Strategy on Plasma Donation Intentions

Third, we estimated a linear regression model to measure the effects of plasma collection model (centralized / decentralized) and incentive strategy (basic / advanced incentive portfolio) on plasma donation intentions (Table 13). Note that each of the four countries in our consolidated data (N = 1,746) represents a unique combination of these two factors (i.e., Germany: decentralized model & advanced portfolio; Austria: decentralized model & basic portfolio; France: centralized model & basic portfolio; Netherlands: centralized model & advanced portfolio). We also included the donor groups as independent variables to analyze differences based on the different target groups. Lastly, we control for age and gender.



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Results show that being a blood donor ($\beta = 0.53$, p < .001) or a plasma donor ($\beta = 1.63$, p < .001) predicts significantly higher intentions to donate plasma at the next possible date, compared to non-donors. In addition, with increasing age, plasma donation intentions significantly decrease ($\beta = -0.03$, p < .001), while no gender differences were found. Most importantly, the intention to donate plasma significantly decreases for countries with a decentralized plasma collection model (e.g., Germany and Austria) compared to countries with a centralized plasma collection model (e.g., France and the Netherlands) by 0.32 (p = .003). This result also suggests that plasma donation intentions are lower in countries that also offer monetary compensation for plasma donations (e.g., Germany and Austria). We find no significant effect of the size of the incentive portfolio on plasma donation intentions.



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Table 13: Linear Regression to predict plasma donation intention (Intention to donate on the next possible date)

	Plasma	donation intent	ion			
					95% CI	
Predictor	β	Std. error	t	р —	LI	UI
Ref. Being male						
Being female	0.09	0.09	1.1	0.273	-0.07	0.26
Age	-0.03	0.00	-9.24	0.000	-0.03	-0.02
Ref. Non-donor						
Blood donor	0.53	0.09	5.55	0.000	0.34	0.71
Plasma donor	1.63	0.10	16.79	0.000	1.44	1.82
Ref. Basic incentive portfolio						
Advanced incentive portfolio	0.18	0.10	1.74	0.081	-0.02	0.38
Ref. Centralized plasma collection						
Decentralized plasma collection	-0.32	0.10	-3.03	0.003	-0.52	-0.11
Intercept	3.24	0.21	15.78	0.000	2.84	3.65
Ν	1,746					
R ²	0.25					



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Discussion and Implications

In our study, we analyzed how incentives are being perceived in four different countries that differ in their plasma collection model and their incentive strategy. Germany and Austria both have a decentralized plasma model but differ in that Germany has an advanced incentive portfolio with a wider range of incentives (offering money and 8 additional incentives), whereas Austria has a basic incentive portfolio (offering money and 3 additional incentives). Among the surveyed centralized countries, both France and the Netherlands offer no monetary compensation. France offers 3 incentives and is therefore considered an organization with a basic incentive portfolio, whereas the Netherlands offers an advanced incentive portfolio (with 5 incentives). Our results show that in countries with a centralized plasma model (NL, FR), individuals generally have a higher intention to donate plasma. Furthermore, individuals in countries that already offer financial compensation (AT, DE) also rank money as the most appealing incentive. Especially in France, we observe significant differences compared to the other countries: plasma donors perceive not receiving any incentives most appealing. We also find that significantly more plasma donors in countries with a centralized model would stop donating plasma if money were introduced as an incentive, compared to plasma donors in countries with a decentralized model. These findings can be explained by the theory of crowding out, according to which offering incentives (e.g., money) can lead to a decrease in voluntary, altruistic blood/plasma donations, i.e. crowding out of altruistic motives (Gneezy et al., 2011; Mellström & Johannesson, 2008; Titmuss, 2018).



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From a managerial perspective, given the consistently high rating of the health check in different countries, health checks should be considered as an impactful incentive in all countries. Countries with decentralized plasma models should continue to provide financial incentives, especially as (1) money is widely preferred amongst all groups (non-donors, plasma, and blood donors) in Austria and Germany and (2) plasma donors are used to receiving money as an incentive.

In the Netherlands, there is an ambiguous picture of preferred incentives. The ranking of incentives reveals that among Dutch non-donors, there is a relatively high preference for money. While introducing money as an incentive can possibly be strategic in recruiting new donors (e.g., in the Netherlands), the impact on current donor engagement should be diligently evaluated, especially in light of the proportion of current donors indicating they would stop donating if money would be introduced as incentive in their country. This is especially important as our data from France, a centralized non-paying country like the Netherlands, reveals those donors indeed favor not receiving any incentives for their donation at all, implying altruistic reasons for their plasma donation.

The main focus in this Deliverable D2.2 was to derive implications for donor recruitment and retention based on incentives that are given for a plasma donation. However, incentives are only one possibility to recruit and retain plasma donors. Individuals could also be motivated to donate blood/ plasma through different recruitment efforts by organizations. An additional study conducted within the WP2 project with representatives of blood organizations in 15 countries covers several additional practices for the recruitment and retention of donors. The results indicate that plasma and blood collecting organizations use a large variety of marketing practices, including leaflets and social media. Moreover, we found that traditional mass media (such as TV, radio, and newspapers) were used to recruit blood donors, but not plasma donors (Appendix 16).

Future research could experimentally test how different donors respond to various incentives to establish causality between incentives and donation behavior. For





example, it would be worthwhile to investigate the impact of removing money as an incentive from the incentive portfolio in countries that pay donors. This research can provide insights into donor motivations and preferences, enabling plasma organizations to tailor their incentive strategies according to the diverse preferences and values of donors. In future research, it is important to provide a more detailed definition of health checks. In this study, we specified health checks as follows: "Donors receive a health check after the donation, for example, a comprehensive blood analysis" (see Appendix 2). However, it is worth noting that currently, different health parameters are being evaluated and reported to the donors in different countries. For the evaluation of health checks, future research should include details on the health parameters that are assessed and reported to the donor.

The aim of D2.2 was to evaluate the incentives we found in D2.1 regarding their effectiveness. Therefore, we used an online survey in four countries, namely Austria, Germany, France, and the Netherlands. To recruit the sample of the respective countries, we used a market research institute. A strength of the survey is that the non-donor sample is representative of the population in the surveyed countries by age and gender.

However, this study also has limitations. In our survey, we distinguish non-donors, blood donors and plasma donors. However, given the difficulty in recruiting enough plasma donors, we have categorized individuals who have reported both plasma and blood donations as plasma donors. Therefore, it is important to note that plasma donors and blood donors cannot be sharply distinguished from each other. Classifying donors into different groups is crucial, as literature suggests that the motives of plasma and blood donors, helping others is the most common motive for donating (88.2%). In contrast, plasma donors are motivated to donate by financial compensation in 68.8% of cases and by medical check-ups in 56.3% of cases (Trimmel et al., 2005). Thus, one could assume that there are differences between plasma donors and blood donors we cannot observe in our study as 83.1%



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(162/195) of the German plasma donors also had donated blood. Therefore, our results might be biased.

Moreover, data collection was limited due to challenges in accessing plasma donors, particularly in the Netherlands. Plasma donors are comparatively rare within the population. For example, in Germany, whole blood donations make up 57% of all donations, while plasma donations comprise only 40.5% (Henseler, 2021).

With regard to our data, we observe that the response rates are ranging between 15.9% in the Netherlands to 45.8% in Austria (Figure 6). Due to the high nonresponse rates in the Netherlands and in France, it is important to note that high non-response rates can lead to selection bias, as individuals who participate in this survey differ systematically from those who do not participate. Therefore, we only include information of those individuals who have self-selected themselves and might show interest in the topic (Sedgwick, 2014). One potential consequence could be that our sample does not accurately reflect the donors' reality, meaning that they may have different preferred incentives. In our German blood donor sample, only 37.2% were active donors, meaning that they have donated blood in the last 24 months. The consequence could be that our sample may have different incentive preferences, e.g., active donors may have different incentive preferences than those who didn't donate in the last 24 months. Lastly, there might be a recall bias when it comes to the number of donations an individual has previously made but also a social desirability bias wherein individuals may choose alternative, more socially desired incentives over their actual, preferred options.



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Figure 6: Response Rates in Germany, France, Austria, and the Netherlands



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Appendix

Appendix 1: Demographic composition of non-donors of blood and plasma in Germany, Austria, France and the Netherlands.





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Appendix 2: In our survey, we used the following definitions for the Incentives

Incentive	Description
Money	A financial compensation or reimbursement
Donation to charity	Donors are given the option to donate their compensation to a charity organization.
Referral program	When donors are recruited by another donor, and both receive a reward for it.
Loyalty program	E.g. in the form of stamp cards or point collection, etc., which can be exchanged for rewards.
Snacks	Snacks during the blood donation, such as gummy bears, small sandwiches, beverages.
Health check	Donors receive a health check after the donation, for example, a comprehensive blood analysis.
Lottery ticket	Donors can participate in a raffle with a chance to win prizes.
Gifts	Donors receive small gifts after the blood donation, like keychains, mugs, t-shirts, tote bags, etc.
Travel	Donors get their travel expenses reimbursed, e.g., train
reimbursement	tickets, gas money, free parking, etc.
Paid day off	During work hours, donors are granted leave with full pay for the duration of the donation.
Coupons/vouchers	Donors receive coupons, for example, for a nearby café or online shops.
Tax benefit	Donors can claim their donations as tax deductions in their tax returns.
Honors	Donors receive honors in form of certificates, badges, pins, etc.
entertainment options	Entertainment options during the donation, such as free WiFi, books, TV shows, Netflix, music, etc.
recognition/thank you	Donors receive recognition and gratitude after their donation, such as a verbal "thank you" from the staff at the donation center, through a follow-up thank-you email or a phone call.



Appendix 3:	Operationalization
-------------	--------------------

Variable	Description	Operationalization
Ranking of Incentives	If you could choose the incentive that motivates you most for donating plasma, which is the most appealing incentive.	1 = most appealingincentive16 = least appealingincentive
	Put them in an order!	
Plasma donation intention (Baseline)	l intend to donate plasma on the next possible date	1 = totally disagree 7= totally agree
Plasma donation intention when respective incentives are given	When x [e.g., money] is given, I intend to donate plasma on the next possible date	1 = totally disagree 7= totally agree
Donation stop		
Donated due the incentives received	Have you ever donated blood/plasma because of existing incentives	0 = no 1 = yes
Gender	What is your gender?	0 = male 1 = female
Age	How old are you	Range from 18 to 70
Blood donor	Have you ever donated blood?	0 = no 1 = yes
Plasma donor	Have you ever donated plasma?	0 = no





		1 = yes
Years of donating	How many years have you	1 = less than 1 year
	been donating blood/ plasma?	2 = 1 year
		3 = 2-3 years
		4 = 4 years or more
Donation frequency	How often have you donated	1 = 1 time
	blood/ plasma?	2 = 2 to 4 times
		3 = 5 times or more
Donation in the last	Have donated blood/ plasma	0 = no
24 months	in the last 24 months	1 = yes
Donation frequency	How often have you donated	1 = 1 time
in the last 24 months	blood in the last 24 months	2 = 2 to 4 times
		3 = 5 times or more





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Appendix 4: Donor History (Active Donors)

donor	country	n in each	n		Active ¹ blo	od donc	or		Active ¹ plas	sma don	or
group	Country	country	in total	n	%	n	%	n	%	n	%
	AT	193									
non-donor	DE	198	781								
	FR	193	701								
	NL	197									
	AT	194		88	45.4%	404					
blood	DE	196	775	73	37.2%		404 52.1%				
donor	FR	192	115	127	66.1%						
	NL	193		116	60.1%						
	AT	186		108	58.1%			89	47.8%		
plasma	DE	195	766	80	41.0%	347	15 3%	107	54.9%	103	52 6%
donor	FR	191	700	81	42.4%	547	40.070	124	64.9%	403	52.076
	NL	194		78	40.2%			83	42.8%		

¹ active donors are defined as individuals who donated blood/plasma in the last 24 months.



Appendix 5: Blood Donation History (Blood Donoi

		BLOOD D	DONATION H	IISTORY				
		ł	blood donors					
	Germar	лу	Austria		France	е	The Nether	lands
	n %	n	%	n	%	n n	%)
Years of donating blood								
< 1 year	29	14.9%	36	18.4%	15	7.8%	28	14.5%
1 year	15	7.7%	8	4.1%	14	7.3%	17	8.8%
2-3 years	38	19.6%	26	13.3%	23	12.0%	31	16.1%
≥4 years	112	57.7%	126	64.3%	140	72.9%	117	60.6%
number of blood donations								
1 time	40	20.6%	37	18.9%	43	22.4%	36	18.7%
2-4 times	63	32.5%	74	37.8%	74	38.5%	56	29.0%
≥5 times	91	46.9%	85	43.4%	75	39.1%	101	52.3%
number of blood donations in t	he last 24 months	6						
1 time	23	26.1%	34	46.6%	23	35.4%	19	24.7%
2-4 times	41	46.6%	34	46.6%	35	53.8%	50	64.9%
≥5 times	24	27.3%	5	6.8%	7	10.8%	8	10.4%



Appendix 6: Blood Donation History (Plasma	Donors)
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		BLOOD [DONATION H	IISTORY				
		р	lasma donor	S				
	Germa	ny	Austria		Franc	е	The Nether	lands
	n %	n	%	n	%	n n	%	, 0
Years of donating blood								
< 1 year	15	9.1%	17	10.5%	8	4.3%	22	12.0%
1 year	8	4.8%	13	8.0%	8	4.3%	17	9.2%
2-3 years	42	25.5%	27	16.7%	18	9.6%	50	27.2%
≥4 years	100	60.6%	105	64.8%	154	81.9%	95	51.6%
number of blood donations								
1 time	13	7.9%	16	9.9%	12	6.4%	16	8.7%
2-4 times	44	26.7%	52	32.1%	35	18.6%	56	30.4%
≥5 times	108	65.5%	94	58.0%	141	75.0%	112	60.9%
number of blood donations in	the last 24 months	S						
1 time	18	16.7%	15	18.8%	19	17.8%	28	26.4%
2-4 times	66	61.1%	52	65.0%	69	64.5%	66	62.3%
≥5 times	24	22.2%	13	16.3%	19	17.8%	12	11.3%



Appendix	7: Plasm	a Donation	History	(Plasma	Donors)
<i>i</i> ippoliaix	1.1.100111	Domation	i notor y	(1 laonna	2011010	,

		BLOOD D	ONATION H	ISTORY				
		р	lasma donors	S				
	Germar	ıy	Austria		France	е	The Nether	lands
	n %	n	%	n	%	n	%	, D
Years of donating plasma								
< 1 year	28	15.1%	39	20.0%	15	7.9%	40	20.6%
1 year	33	17.7%	16	8.2%	22	11.5%	29	14.9%
2-3 years	47	25.3%	44	22.6%	20	10.5%	44	22.7%
≥4 years	78	41.9%	96	49.2%	134	70.2%	81	41.8%
number of plasma donations								
1 time	36	19.4%	37	19.0%	59	30.9%	55	28.4%
2-4 times	65	34.9%	44	22.6%	64	33.5%	57	29.4%
≥5 times	85	45.7%	114	58.5%	68	35.6%	82	42.3%
number of plasma donations in	the last 24 month	าร						
1 time	21	21.6%	23	26.1%	35	52.2%	49	44.1%
2-4 times	43	44.3%	32	36.4%	22	32.8%	36	32.4%
≥5 times	33	34.0%	33	37.5%	10	14.9%	26	23.4%



Ranking of Incentives									
GERMANY									
		Non-donor		Blood donor	P	asma donor			
	Μ	SD	Μ	SD	Μ	SD			
Money	3.88	4.18	4.46 ^{a**}	4.74	3.13 ^{a**}	3.89			
donation to charity	9.47	4.32	9.67	4.19	9.95	4.28			
referral program	10.70	3.44	10.68	3.69	10.41	3.53			
loyalty program	10.35	3.55	10.17	3.87	10.17	3.95			
snacks	7.73	3.82	7.91	3.92	7.63	4.03			
health checks	6.28	4.40	6.08	4.19	6.72	4.35			
lottery ticket	9.26	4.10	9.38	4.31	9.69	4.25			
gifts	7.49	3.81	7.88	3.79	8.11	4.11			
travel reimbursement	7.13	4.39	7.22	4.17	7.96	4.36			
paid day-off	5.68	4.36	5.90	4.51	6.16	4.54			
coupons	7.95	4.06	7.85	3.87	7.45	4.21			
tax benefits	7.81	4.38	7.06	4.29	8.09	4.13			
honors	11.89 ^{a**}	3.43	11.30	3.70	10.75 ^{a**}	3.85			
entertainment options	9.72	3.78	10.61	3.84	10.23	3.61			

Appendix 8: Mean ranking on incentives between donor groups (Germany)



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No need for incentives 10.85 5.29 10.28 5.39 10.54 5.15	recognition	9.81	4.36	9.55	4.27	9.02	4.33
	No need for incentives	10.85	5.29	10.28	5.39	10.54	5.15



			Ranking of Incer	ntives					
	AUSTRIA								
	Non-donor		Blood donor		Plasma donor				
	Μ	SD	Μ	SD	Μ	SD			
Money	3.59 ^a *	4.16	4.79 ^a *	4.86	3.94	4.74			
donation to charity	9.14	4.30	8.79 ^a *	4.49	10.03 ^a *	4.56			
referral program	11.16 ^{a***}	3.16	10.87 ^{b**}	3.70	9.77 ^{a***b**}	3.72			
loyalty program	10.84 ^{a*b**}	3.32	9.81 ^a *	3.76	9.62 ^{b**}	3.79			
snacks	8.71	3.65	9.12 ^a *	3.99	7.95 ^a *	4.11			
health checks	5.56	4.31	5.62	4.29	6.20	4.43			
lottery ticket	9.46	3.96	9.53	4.02	9.29	4.04			
gifts	8.27	4.08	8.30	4.07	7.94	4.11			
travel reimbursement	7.19	4.04	6.93 ^{a*}	3.85	8.14 ^{a*}	4.24			
paid day-off	5.73	4.44	6.74	4.60	6.37	4.49			
coupons	7.80	4.15	7.71	3.92	7.48	4.09			
tax benefits	6.79	4.24	7.10	4.52	7.52	4.26			
honors	11.99	3.50	11.14	3.92	11.24	3.61			
entertainment options	9.70 ^{a*}	3.53	10.71 ^{a*}	3.70	10.00	3.65			

Appendix 9: Mean ranking on incentives between donor groups (Austria)



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No need for	4.34	9.11	4.38	9.70	4.29	
incentives 10.20	5.25	9.74	5.46	10.82	5.15	



			Ranking of Ince	ntives					
	FRANCE								
	Non-donor		Blood donor		Plasma donor				
	М	SD	Μ	SD	Μ	SD			
Money	7.24 ^{a**}	5.35	7.20 ^{b**}	5.50	8.99 ^{a**b**}	5.31			
donation to charity	8.50	4.61	9.03	4.47	8.55	4.40			
referral program	10.55	3.79	10.72	3.44	10.28	3.62			
loyalty program	10.17	3.69	10.51	3.58	9.88	3.90			
snacks	7.51 ^{a**}	4.45	8.07 ^{b***}	4.20	6.10 ^{a**b***}	4.54			
health checks	6.94	4.40	6.26	4.18	6.17	4.34			
lottery ticket	9.92	4.25	9.35	3.92	9.73	3.98			
gifts	8.47	4.09	8.28	4.04	8.91	4.43			
travel reimbursement	7.00 ^a *	4.07	6.58 ^{b**}	4.27	8.04 ^{a*b**}	4.14			
paid day-off	7.11 ^{a**}	4.56	6.86 ^{b***}	4.79	8.78 ^{a**b***}	4.70			
coupons	9.33	3.80	8.76 ^a *	3.91	9.76 ^a *	3.50			
tax benefits	7.88	4.59	7.24 ^a *	4.78	8.65 ^a *	4.65			
honors	10.35	4.42	10.51	4.17	9.84	4.63			
entertainment options	10.32	3.51	10.26	3.77	9.53	3.80			

Appendix 10: Mean ranking on incentives between donor groups (France)



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recognition	7.43	4.87	8.07 ^{a*}	4.58	6.90 ^a *	4.50				
No need for incentives	7.28	5.74	8.31 ^{a***}	5.98	5.88 ^{a***}	5.41				
*** 0.001 ** 0.0										



			Ranking of Ince	entives		
			THE	NETHERLANDS		
	N	lon-donor	Blood donor		P	lasma donor
	Μ	SD	М	SD	Μ	SD
Money	5.30 ^{a**b***}	5.23	6.96 ^{a**}	5.11	7.85 ^{b***}	5.44
donation to charity	9.15	4.19	9.07	4.16	8.69	4.34
referral program	9.93	3.50	10.25	3.84	9.63	3.99
loyalty program	9.80	3.68	10.06	3.54	9.68	3.98
snacks	10.24 ^a *	4.22	9.83	4.09	9.10 ^a *	4.26
health checks	6.45	4.46	6.06	4.25	6.26	4.47
lottery ticket	10.62	4.00	10.76	3.96	11.24	3.93
gifts	7.88	4.04	8.67	4.12	8.63	3.89
travel reimbursement	6.37 ^a *	3.97	6.27 ^b *	4.32	7.43 ^{a*b*}	4.14
paid day-off	7.05 ^a *	4.52	7.24	4.75	8.20 ^{a*}	4.63
coupons	7.82	3.93	8.65	3.98	8.71	4.09
tax benefits	7.81	4.71	8.85	4.70	8.64	4.53
honors	9.13 ^{a*b***}	4.30	7.99 ^a *	4.61	7.38 ^{b***}	4.54
entertainment options	10.35	3.74	10.48	3.61	10.24	4.06

Appendix 11: Mean ranking on incentives between donor groups (The Netherlands)



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No need for	4.42	7.30	4.67	6.94	4.50	
incentives 10.19 ^a *	*** ^b *** 5.83	7.54 ^{a***}	5.83	7.38 ^{b***}	5.86	



		Intention	to donate plasma on the	e next possible da	ate	
			G	ERMANY		
	N	on-donor	Bl	Blood donor		sma donor
	Μ	SD	Μ	SD	М	SD
Baseline	1.91 ^{a**b***}	1.36	2.51 ^{a**c***}	1.52	4.14 ^{b***c***}	2.24
Money	4.12 ^{a***b***}	2.30	4.93 ^{a***c***}	2.03	5.80 ^{b***c***}	1.81
donation to charity	2.84 ^{a***b***}	1.81	3.73 ^{a***}	1.82	3.78 ^{b***}	2.02
referral program	2.58 ^{a***b***}	1.71	3.33 ^{a***c*}	1.72	3.84 ^{b***c*}	1.95
loyalty program	2.65 ^{a***b***}	1.70	3.40 ^{a***}	1.73	3.79 ^{b***}	1.90
snacks	2.88 ^{a***b***}	1.75	3.60 ^{a***c***}	1.84	4.35 ^{b***c***}	1.94
health checks	3.59 ^{a***b***}	2.22	4.59 ^{a***}	2.04	4.83 ^{b***}	1.86
lottery ticket	2.81 ^{a***b***}	1.93	3.59 ^{a***}	1.82	3.86 ^{b***}	1.96
gifts	3.08 ^{a***b***}	1.85	3.87 ^{a***c*}	1.77	4.42 ^{b***c*}	1.89
travel reimbursement	3.28 ^{a**b***}	2.05	4.03 ^{a**c*}	1.97	4.62 ^b *** ^c *	1.92
paid day-off	3.85 ^{a***b***}	2.35	4.71 ^{a***}	1.99	5.15 ^{b***}	1.99
coupons	3.27 ^{a**b***}	1.94	3.88 ^{a**c**}	1.75	4.59 ^{b***c**}	1.83
tax benefits	3.46 ^{a***b***}	2.06	4.28 ^a ***	1.99	4.66 ^{b***}	1.96
honors	2.41 ^{a*b***}	1.71	2.94 ^{a*c**}	1.68	3.54 ^{b***c**}	1.96

Appendix 12: Plasma Donation Intention between donor groups (Germany)



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entertainment options	2.66 ^{a**b***}	1.72	3.28 ^{a**c***}	1.78	3.99 ^{b***c***}	1.94
recognition	2.68 ^{a**b***}	1.81	3.34 ^{a**c**}	1.81	3.98 ^{b***c**}	1.99



		Intention	to donate plasma on th	e next possible da	ate	
			/	AUSTRIA		
	N	on-donor	B	Blood donor		sma donor
	Μ	SD	Μ	SD	Μ	SD
Baseline	1.79 ^{a*b***}	1.35	2.31 ^{a*c***}	1.52	3.68 b***c***	2.27
Money	4.24 ^{a*b***}	2.45	4.89 ^{a*c*}	2.22	5.51 ^{b***c*}	2.04
donation to charity	2.96 ^{a**b**}	1.91	3.64 ^{a**}	2.09	3.66 ^{b**}	2.08
referral program	2.58 ^{a*b***}	1.68	3.09 ^{a*c**}	1.85	3.71 ^{b***c**}	2.12
loyalty program	2.67 ^{a*b***}	1.76	3.22 ^{a*c*}	1.89	3.72 ^{b***c*}	2.14
snacks	2.86 ^{a***}	1.88	3.31 ^{a***b**}	1.95	3.98 ^{b**}	2.06
health checks	3.82 ^{a***b***}	2.27	4.66 ^{a***}	2.15	4.83 ^{b***}	2.05
lottery ticket	2.93 ^{a*b***}	1.94	3.48 ^a *	2.00	3.85 ^{b***}	2.09
gifts	3.14 ^{a**b***}	2.01	3.76 ^{a**}	2.01	4.14 ^{b***}	2.13
travel reimbursement	3.44 ^{a**b***}	2.07	4.11 ^{a**}	2.19	4.45 ^{b***}	2.12
paid day-off	3.83 ^{a***}	2.35	4.26	2.31	4.78 ^{a***}	2.29
coupons	3.42 ^{a*b***}	2.09	3.96 ^a *	2.04	4.36 ^{b***}	2.17
tax benefits	3.58 ^{a**b**}	2.10	4.25 ^{a**}	2.19	4.39 ^{b**}	2.23
honors	2.22 ^{a**b***}	1.54	2.85 ^{a**}	1.90	3.19 ^{b***}	2.12

Appendix 13: Plasma Donation Intention between donor groups (Austria)



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entertainment options	2.96 ^{a***}	1.89	3.14 ^{b**}	1.95	3.76 ^{a***b**}	2.07
recognition	2.58 ^{a**b***}	1.76	3.26 ^{a**}	2.01	3.60 ^{b***}	2.14



		Intention	to donate plasma on th	e next possible da	ate		
				RANCE			
	N	on-donor	B	Blood donor		sma donor	
	Μ	SD	Μ	SD	Μ	SD	
Baseline	2.32 ^{a***}	1.64	2.78 ^{b***}	1.69	4.08 ^{a***b***}	2.34	
Money	3.78 ^{a**}	2.26	4.60 ^{a**b*}	2.19	3.95 ^b *	2.34	
donation to charity	3.65 ^{a**}	2.07	4.05	1.96	4.45 ^{a**}	2.20	
referral program	3.02 ^{a*b**}	1.89	3.61 ^a *	1.94	3.78 ^{b**}	2.25	
loyalty program	3.09 ^{a**b***}	1.91	3.81 ^{a**}	1.99	3.92 ^{b***}	2.20	
snacks	3.67 ^{a**b***}	2.16	4.42 ^{a**c***}	1.87	5.22 ^{b***c***}	1.98	
health checks	3.85 ^{a***b***}	2.13	4.70 ^{a***}	1.89	5.14 ^{b***}	2.08	
lottery ticket	3.12 ^{a***b**}	1.97	3.98 ^{a***}	2.05	3.89 ^{b**}	2.22	
gifts	3.50 ^{a***b**}	2.09	4.35 ^{a***}	2.03	4.23 ^{b**}	2.16	
travel reimbursement	3.81 ^{a***b**}	2.20	4.72 ^{a***}	1.97	4.59 ^{b**}	2.21	
paid day-off	3.75 ^{a***b**}	2.23	4.65 ^{a***}	2.15	4.44 ^{b**}	2.37	
coupons	3.32 ^{a***b***}	2.01	4.22 ^{a***}	2.00	4.14 ^{b***}	2.17	
tax benefits	3.67 ^{a***b**}	2.17	4.85 ^{a***}	2.06	4.35 ^{b**}	2.22	
honors	3.12 ^{a**b**}	1.94	3.85 ^{a**}	1.95	3.88 ^{b**}	2.19	

Appendix 14: Plasma Donation Intention between donor groups (France)



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entertainment options	3.06 ^{a***b***}	1.90	3.92 ^{a***}	1.92	4.13 ^{b***}	2.18
recognition	3.75 ^{a**b***}	2.16	4.37 ^{a**c**}	1.99	4.99 ^{b***c**}	2.16



		Intention	to donate plasma on the	e next possible da	ate			
	THE NETHERLANDS							
	Non-donor		Blo	Blood donor		sma donor		
	Μ	SD	Μ	SD	Μ	SD		
Baseline	2.28 ^{a***}	1.74	2.50 ^{b***}	1.80	4.48 a*** b***	2.16		
Money	3.99	2.23	4.17	2.20	4.52	2.31		
donation to charity	3.03 ^{a**b***}	1.89	3.72 ^{a**c*}	1.99	4.29 ^{b***c*}	2.09		
referral program	3.01 ^{a***}	1.90	3.45 ^{b**}	1.95	4.03 ^{a***b**}	2.05		
loyalty program	3.04 ^{a**b***}	1.87	3.64 ^{a**c*}	1.93	4.23 ^{b***c*}	2.09		
snacks	2.67 ^{a**b***}	1.78	3.34 ^{a**c**}	1.95	4.03 ^{b***c**}	1.99		
health checks	3.71 ^{a**b***}	2.13	4.40 ^{a**c*}	2.10	4.94 ^{b***c*}	2.04		
lottery ticket	2.77 ^{a***}	1.89	3.10 ^{b**}	1.98	3.74 ^{a***b**}	2.10		
gifts	3.39 ^{a***}	2.02	3.56 ^{b**}	2.00	4.35 ^{a***b**}	2.07		
travel reimbursement	3.57 ^{a**b***}	2.10	4.33 ^{a**}	2.11	4.56 ^{b***}	2.07		
paid day-off	3.58 ^{a*b**}	2.25	4.20 ^a *	2.24	4.41 ^{b**}	2.15		
coupons	3.40 ^{a***}	2.02	3.80 ^{b**}	2.06	4.45 ^{a***b**}	2.07		
tax benefits	3.36 ^{a***}	2.09	3.82 ^b *	2.17	4.45 ^{a***b*}	2.13		
honors	3.14 ^{a***b***}	1.99	3.96 ^{a***c***}	2.03	4.75 ^{b***c***}	2.08		

Appendix 15: Plasma Donation Intention between donor groups (The Netherlands))



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entertainment options	2.91 ^{a***}	1.83	3.27 ^b *	1.91	3.86 ^{a***b*}	2.09
recognition	3.17 ^{a***b***}	2.01	4.14 ^{a***c**}	2.06	4.87 ^{b***c**}	2.10





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Appendix 16: Survey on current practices for recruitment and retention throughout the EU

Methods

An online survey was sent to blood establishments and plasma collectors via e-mail. Initially the invitation to participate was distributed via the network of the European Blood Alliance (EBA), but after the invitation and reminder did not result in many responses, we also actively reached out to blood and plasma collectors through our own networks, mostly via e-mail. Between July and October 2023, 17 respondents replied to the survey for their organization.

The start of the survey consisted of question related to general information about the respondents' organization. Here, we assessed the kind of organization (e.g., not-for-profit, governmental, hospital-based, commercial/private), what type of blood products are collected and the share of self-sufficiency (for plasma collecting organizations). We also asked several questions related to processes, such as how potential donors can register to become donors, and what processes donors go through when they come to a donation to donate.

The next section was related to donor recruitment. We queried whether the respondents' organizations had strategies and targets in place for donor recruitment, and who carries out the donor recruitment for the organization. In addition, we provided respondents with a long list of possible methods used in donor recruitment and asked them to indicate which of them they had used in their recruitment in 2022 (e.g., TV commercials, direct mail campaigns, street advertising, recruitment teams at events or fairs, or commercials/campaigns on social media). We also asked to



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indicate which elements were used in donor recruitment in 2022, such as 'raising awareness about the need for blood/plasma', 'information on the blood/plasma donation process', 'patient stories', and 'Celebrities/influencers/vloggers'. We also asked what factors complicated donor recruitment (e.g., budgets, IT limitations, lack of expertise) and whether they communicated on (inter)national plasma-related issues (possible shortages, self-sufficiency levels) to different audiences (e.g., staff, donors, general public, politics).

The next section of the survey was dedicated to what organizations offered donors for their donations. We deliberately steered away from terms as 'rewards' and 'incentives'. Instead, respondents were provided with a list of possible offerings and were asked to indicate which of them they offered to their donors. For the items they did offer, we asked whether they explicitly communicated this offering prior to donation, and how it is offered (when, how often, how much).

The following section related to retention strategies. We asked whether specific groups were targeted in retention strategies, whether loyalty or savings programs were in place for donors, and whether donors receive a message after their donation. We also asked whether donors are informed about their personal donation history, and if so, via what method (e.g., during the donation, via a personal donor account, or through e-mail).

The final sections were dedicated to evaluation of recruitment and retention strategies, recruitment and retention in crisis situations, and optional data reporting. For the latter, we asked respondents to report (if they could) how many donors were recruited and retained in 2022.

Results

Of the 17 respondents who answered the survey, 15 work in organizations that operate within a European Union (EU) country, while the other two operate in countries outside of the EU (e.g., Scotland). The majority of their organizations (10)


were governmental or state public bodies, while 5 were non-governmental or nonstate not-for-profit organizations, and 2 were hospital-based blood establishments. All 17 of these organizations collect whole blood, 16 collect platelets, 12 collect plasma, and 7 also collect combinations of blood products (e.g., plasma and platelets).

Self-sufficiency

Of the 12 plasma-collecting organizations, the majority (9) indicated they do not collect enough to meet national demand and are thus (partially) dependent on plasma from other countries. Six (out of nine) organizations also shared the proportion of self-sufficiency for their organization, which ranged between 0-70% (40% on average). Of the organizations who indicated their country collected enough plasma to meet national demands, one organization indicated that national demand was met by (other) organizations in their country, and two organizations said their own organization collects enough to meet national demands.

When asked whether they communicated about (inter)national plasma-related issues, all but 1 (out of 12) plasma-collecting organizations indicated they did communicate about plasma-related issues. The 11 organizations who did communicate about such issues all communicated about this to their staff. Nine of them also communicated about it to donor associations and voluntary organizations, nine communicated about it to politics, and nine communicated about it to the general public. In an open text field, one organization indicated they also communicated about it to their donors, one also communicated it to competent authorities, blood establishments, and scientific societies, and one organization also indicated they communicate about plasma-related issues to news media and journalists.

Donor recruitment



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In 16 out of the 17 organizations, donor recruitment was (partially) carried out by marketing/communication/promotion departments at national (n = 10), regional (n = 10), or blood bank level (n = 7). A donor service department also contributed to donor recruitment in 6 organizations, as well as local Red Cross or Red Crescent organizations (n = 5), voluntary organizations (n = 6), blood collection teams (n = 4), and student organizations (n = 4). Two organizations had also partially outsourced recruitment to a different organization.

When asked what challenges organizations faced in the recruitment of whole blood donors, many of the 17 organizations indicated that they had limited capacity (e.g., staff shortages; n = 13), low budgets (n = 9), and there were limitations to the IT infrastructure (n = 7). Competition in the blood/plasma market, changing regulations, and lack of marketing or social media expertise were mentioned by 3 respondents. For the 12 organizations active in plasma collection, the main challenges were also limited capacity (n = 7), low budgets (n = 7), and limitations to the IT infrastructure (n = 6).

All 17 organizations indicated they had recruitment strategies in place, and 15 of them also had targets (or KPIs) for recruitment. Of the organizations who collected both whole blood and plasma (*n* = 12), eight had separate recruitment strategies for whole blood and plasma donor recruitment (while four did not). When asked what were the main differences between whole and plasma donor recruitment, respondents explained that different messages were used for both, that more efforts were needed for plasma donor recruitment, and that whole blood donors were mostly recruited among non-donors while plasma donors were often recruited from the whole blood and plasma donor recruitment. As shown in Table 1, mass media such as television, radio and newspapers were mostly used for whole blood donor recruitment at events or fairs, in companies, in schools and in cooperation with other organizations who used



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social media in their recruitment in 2022, the most popular social media channels were Facebook, YouTube, Instagram and Twitter (for both whole blood and plasma donor recruitment; see Table 2).

	Whole	Plasma
	blood	(n - 10)
	(<i>n</i> = 17)	(n = 12)
Television commercials	7	2
Radio commercials	9	3
Social media commercials/campaigns	16	9
Campaigns via adverts in search engines (e.g., Google, Yahoo)	5	4
Newspaper advertisements	11	4
Magazine advertisements	6	2
Leaflets/brochures	14	9
Direct mail campaigns (post)	7	4
Direct e-mail campaigns	8	5
Information in places of worship (e.g., churches, mosques)	5	0
Information in public buildings	12	5
Advertisements on ATMs (cash machines)	1	1
Telephone marketing	6	4
Recruitment teams at events/fairs	16	8
Recruitment in companies/corporations	14	7
Street advertising	10	5
Door-to-door recruitment	2	2





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Replacements donors	1	1
Awareness programs in schools to recruit future donors	12	7
Cooperation with other organizations (e.g., Red	10	6
Cross/Crescent, police/rescue/military forces, other not-for-		
profit organizations)		
Open text: Bus campaigns	1	1
Open text: Direct SMS to donors	2	N/A
Open text: Recruitment among whole blood donors	N/A	1

Table 1. Number of organizations who made use of each method for the recruitment of whole blood and plasma donors in 2022; the last three methods were mentioned by respondents in an open text field

	Whole	Plasma
		(<i>n</i> = 9)
	(<i>n</i> = 16)	
Whatsapp	1	1
Facebook	16	9
LinkedIn	7	3
YouTube	10	5
Pinterest	1	0
Twitter (now X)	9	5
Instagram	15	7
TikTok	5	1

Table 2. Number of organizations who made use of each social media channel for the recruitment of whole blood and plasma donors in 2022



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When asked what elements their recruitment strategies contained in 2022, all 17 organizations indicated they created awareness of the need for blood, while 10 organizations also created awareness of the need for plasma. 14 organizations included general information about blood, and 9 organizations included general information about blood, and 9 organizations included general information about plasma. Information on the diseases and conditions to be treated with blood (products) was included in the recruitment efforts of 14 organizations. 15 and 8 organizations respectively included information on the whole blood and plasma donation process. Patient and donors stories were both included by 14 organizations, while 10 organizations used celebrities/influencers/vloggers and donor ambassadors in their recruitment efforts.

Donor retention

Out of the 17 organizations, three indicated they had no clear retention strategy in place. Of the 14 organizations that did have a retention strategy, the majority said they targeted first-time donors (n = 11) and repeat donors (n = 10). Donors with blood type O were only targeted in six organizations, and deferred donors and young donors were both targeted in four. Other groups that were targeted in one organization each were women, foreigners, and lapsed donors.

Three organizations indicated they had a loyalty or savings program in place for plasma donors, and one organizations offered such a program to their whole blood donors.

Nine organizations send out a 'thank you' message to their whole blood donors after their donation, and five send a message to whole blood donors when the blood product has been used or has been sent to a hospital for use. Six organizations send this message via SMS or text message, four do so via e-mail, 2 via a letter or postcard, and 2 organizations use different media to send the message. In contrast to the messages whole blood donors get, plasma donors only receive a 'thank you' message in 5 organizations and no organizations sent out messages to plasma donors when their plasma has been used.



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Evaluation

Eight (out of 17) organizations systematically evaluate the effectiveness of their recruitment and retention campaigns, and an additional 7 organizations do this every now and then or only for specific campaigns. 13 organizations who said they either systematically or sporadically evaluate campaigns noted that they do this by determining goals or performance indicators prior to the campaign and check afterwards if these goals or indicators were reached. 13 organizations also indicated that they compare performance indicators during the campaign period to a comparable time period. For social media campaigns, 14 organizations assess views, likes, clicks and/or engagement. Five organizations also evaluate by relating the costs of campaigns to the number of recruited donors. Two organizations used more global indicators, such as stock levels, the number of first-time donors, or the number of plasma donors.

Recruitment and retention during crisis situations

Of the 17 organizations, 14 stated they had to adapt their recruitment strategies during the COVID-19 pandemic. Many organizations indicated they were forced to stop face-to-face recruitment (e.g., in schools, street advertising) and resorted to more online campaigns (e.g., social media, using influencers). Several organizations also changed their donation system to by-appointment only, to ensure social distancing in the donation centers. Only 4 organizations indicated that their current recruitment strategies were not or only to very small extent affected by the changes made during the pandemic. The organizations in which the pandemic did influence their current recruitment strategies indicated they now use new or different media (n = 3), they had abandoned certain media (n = 2), they now target new or different audiences (n = 3), they forged new collaborations with other organizations/authorities/companies (n = 4), or ended existing collaborations (n = 2).

Unlike recruitment strategies, retention strategies were unchanged during the pandemic in 13 organizations. The three organizations that did indicate that they





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made changes to their retention strategies said they changed what they offered donors (n = 1), they communicated via new or different media with donors (n = 1), and that they communicated more with donors than before (n = 3).



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