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# Donating blood: A meta-analytic review of self-reported motivators and deterrents

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Short Title: Blood donation motivators and deterrents

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## ABSTRACT

Although research into blood donor motivation abounds, most studies have typically focused on small sets of variables, used different terminology to label equivalent constructs, and have not attempted to generalize findings beyond their individual settings. The current study sought to synthesize past findings into a unified taxonomy of blood donation drivers and deterrents, and estimate the prevalence of each factor across the worldwide population of donors and eligible non-donors. Primary studies were collected and cross-validated categories of donation motivators and deterrents were developed. Proportions of first-time, repeat, lapsed, apheresis and eligible non-donors endorsing each category were calculated. In terms of motivators, first-time and repeat donors most frequently cited convenience, prosocial motivation and personal values; apheresis donors similarly cited the latter two motivators. Conversely, lapsed donors more often cited collection agency reputation, perceived need for donation, marketing communication and incentives as motivators. In terms of deterrents, both donors and non-donors most frequently referred to low self-efficacy to donate, low involvement, inconvenience, absence of marketing communication, ineffective incentives, lack of knowledge about donating, negative service experiences, and fear. The integration of past findings has yielded a comprehensive taxonomy of factors influencing blood donation, and has provided insight into the prevalence of each factor across multiple stages of donors' careers. Implications for collection agencies are discussed.

## INTRODUCTION

Blood collection agencies worldwide must meet ongoing and increasing medical demands for blood products. Regardless of whether donations are remunerated or charitable, an agency's success ultimately depends on the participation of local community members. Understanding the factors that motivate and deter blood donation is therefore essential for agencies to optimize their donor recruitment and retention with supporting marketing strategies.

Since the first published study we found in the 1950s<sup>1</sup>, many studies have investigated blood donation motivators and deterrents, typically focusing on a subset of factors of interest to the researchers. Consolidation of these studies has been problematic, because although they have examined factors that are conceptually similar, the labels used to describe these factors have been inconsistent. For example, a desire to help others has been variously referred to as “altruism”<sup>2</sup>, “humanitarianism”<sup>3</sup> and “charity”<sup>4</sup>. Such studies have also typically focused on a single donor population within a specific national context. Thus, it is unknown whether these factors remain consistent at different stages of a donor's career (e.g., first-time versus repeat donations), or type of donation (e.g., whole blood versus apheresis). Nor is it known which deterrents are prevalent among those who have donated versus those who never have.

While several literature reviews of these studies have been produced<sup>5-11</sup>, each has a number of inherent shortcomings. First, most of these reviews have not outlined their strategy for collecting primary studies, their selection criteria for including them in their synthesis, and their method for categorising conceptually similar factors. Second, although a comprehensive list of positive and negative motivators and their respective references have been provided<sup>6</sup>, this information does not allow any ordinal assessment of the propensity of each stated

motive. Furthermore, a small number of reviews have included only studies associated with a specific theoretical framework, such as the Theory of Planned Behavior<sup>8</sup> or Identity Theory<sup>11</sup>, and in doing so have not provided an exhaustive coverage of all factors investigated in the available literature. Moreover, most reviews have relied on unsystematic syntheses of empirical study results, possibly producing distorted conclusions about the true importance of each factor<sup>12</sup>. One exception is an early meta-analysis<sup>9</sup> that quantitatively aggregated previous study findings. However, this review focused on a relatively narrow range of possible motivators and deterrents, and did not attempt to estimate the prevalence of factors across donor populations.

Building on previous reviews, the purpose of the current study is to construct a taxonomy of factors influencing blood donation. This framework will be developed from a systematic review of the research that has investigated self-reported motivators and deterrents to donation. The study will integrate the assortment of factors identified in the individual studies into clearly defined categories with a consistent terminology. Once this taxonomy has been established, a second aim of the study is to quantify the prevalence of each factor by determining the proportion of people across all studies who endorsed it as a reason for their donation behavior. Further, motivators and deterrents of donation will be compared by donor career stage or status to uncover systematic differences between groups.

## **METHOD**

The process for collecting and analyzing data from primary studies comprised four phases. A flow diagram summarizing the entire process is depicted in Figure 1.

### **1. Literature Search**

We attempted to achieve a near-exhausting coverage of studies examining factors influencing blood donation. In addition to studies published in refereed journals, we collected books, doctoral dissertations, conference papers, and internal organisational reports. We opted to collect this additional literature to overcome any bias associated with the peer-review and publication process<sup>13</sup>. In order to ensure the quality of each study, we later applied our own stringent inclusion criteria (described in next section). This literature search was conducted from July to October 2009.

In the initial acquisition phase, we collected studies that appeared to be broadly relevant to blood donation motivators and deterrents. Our collection strategy comprised the following steps. First, we manually searched through the existing Australian Red Cross Blood Service electronic library of research papers, and collected articles that appeared relevant to the review. We then extracted articles from the *Web of Science*, *MEDLINE*, *PsycINFO*, and *Dissertations Abstracts* databases, using the following combination of keywords: (*blood OR aphaeresis OR apheresis*) *AND* (*donor OR donation*) *AND* (*psychology OR motivation OR intention OR attitude OR behavior OR behaviour OR recruitment OR retention OR antecedent OR predictor OR altruism*). Next, we examined previous published reviews of factors influencing blood donation<sup>5-11,14,15</sup>, and obtained relevant articles cited in each reference section. We then conducted a manual search of the journals *Transfusion* and *Vox Sanguinis* from their oldest to most recent editions to collect further articles. Finally, we then sent an email request for additional published or unpublished research to the author of each study who had been nominated as the point of contact. Our initial search generated 146 studies for possible inclusion.

## **2. Application of Inclusion Criteria**

Following this initial phase, we applied more rigorous inclusion criteria to each study. First, we assessed the relevance of each study; a study was included if it reported blood donation motivators and/or deterrents. We included data from each study only if it was derived from first-person self-reports. Responses to hypothetical situations (e.g., proposed incentives; non-donors' views on what motivates donors), or highly specific contexts (e.g., deferrals due to being a soldier in the Vietnam War<sup>3</sup>) were omitted. Second, we considered the study design, and included only quantitative studies that reported descriptive statistics about the number of people endorsing reasons for their donation behavior. We only included studies in which participants could endorse multiple reasons for their behavior; forced-choice studies in which only a single reason could be chosen were excluded. Third, we included studies that used samples of actual or potential donors who were eligible to make voluntary, homologous donations of whole blood, plasma or platelets. We excluded studies with samples consisting entirely of a special donor population, including permanently deferred, natal-cord blood, autologous and direct replacement donors. Studies were also excluded if they combined donors and non-donors in a single sample, and failed to report data from each group separately.

Information from each study selected for the analysis was recorded, including its sample size, demographic characteristics of the sample (i.e., age, gender, education, and nationality), the year of data collection, and the availability of remuneration for giving blood. We also recorded the donation experience of the donors (i.e., first-time, repeat, lapsed, never donated) and their donation type (i.e., whole blood, apheresis).

In total, 49 studies derived from 40 refereed journal articles, eight conference papers, and one edited book, were included in the analysis (prefaced by an asterisk in the reference list), with



92 samples of eligible donors, comprising 154,122 participants.

### **3. Development and Cross-Validation of Study Variable Categories**

In order to develop a cross-validated taxonomy of factors influencing donation, we employed the following procedure. First, we compiled lists of blood donation motivators and deterrents from each study, using the verbatim terms and definitions as they appeared in each paper. Two researchers then independently inspected the list of verbatim terms, developed a set of blood donation motivator and deterrent categories, and assigned each term to a single category. The researchers then met to compare and contrast the set of categories that each had created individually, and together produced a consensus-based set of categories. The names and definitions for each category were chosen based on established terminology from both the psychological<sup>16</sup> and marketing<sup>17</sup> literatures. After the verbatim terms had been assigned to the new categories, a third researcher then reviewed all of the terms assigned to each category. Together, with the first two researchers, agreement was reached about whether each disputed term should remain with its assigned category, be moved to a different category, or form a new category. The cross-validated categories, their definitions, and examples of verbatim terms are presented in Tables 1 and 2 respectively, as well as specific references for each category.

### **4. Calculation of Aggregated Percentage Scores**

Once the cross-validated taxonomy of donation motives and deterrents had been developed, data from each primary study was entered into a spreadsheet. We then calculated the percentage of participants who had endorsed a particular category out of all of the participants across each study containing that category.

A number of studies provided items relating to motivators or deterrents that were highly similar. For example, in one study<sup>54</sup>, 17% of participants reported they were deterred from donating because they disliked the finger prick blood test, and 15% because they disliked the feeling of the blood-drawing needle. If the coders agreed such items referred to the same factor (in this example, dislike of needles), we estimated the proportion of people who endorsed either or both reasons by taking the larger percentage score (in this example, 17%). As we assumed a high proportion of overlap in participants' responses to related items, this method was preferred to less conservative methods such as adding the percentages together (likely producing an overestimate of the percentage who endorsed either or both categories), or averaging the percentages (which would have underestimated the percentage). The same aggregation method was used to estimate the percentage of people who had endorsed one or more motivators or deterrents within a major category (e.g., prosocial motivation).

Some studies employed Likert scales to assess factors associated with blood donation, and reported the number of participants who had endorsed each point in the scale (e.g., "Strongly Agree"). For even-numbered bipolar scales, we interpreted scores in the top half of the scale as an endorsement for the listed reason. For odd-numbered bipolar scales – such as those with a mid-point "neither agree nor disagree"<sup>26</sup> – we interpreted scores above this mid-point as agreement. For unipolar scales (e.g., with scale points "No risk [of contracting HIV by donating]", "Low risk", "Moderate risk", "High risk"<sup>70</sup>), we interpreted scores above the initial point as indicating endorsement.

Each sample was classified according to the donation career stage the participants were asked to provide information about. Samples were classified as first-time donors if their

participants described factors associated with their initial donation, repeat donors if their answers referred to subsequent or ongoing donations, lapsed donors if they had had not donated anywhere after a fixed period of time, apheresis donors if their answers were related to plasma or platelet donations, or non-donors if they had never donated. For lapsed donors, we used each study's definition of "lapsed", which ranged from 18 to 24 months. In some studies, participants were asked the same set of questions about multiple phases of their donation careers, such as what prompted them to donate for the first time, and what motivated them to continue donating. For such studies, only responses associated with the current stage of their donation career were included in the analysis.

## **RESULTS**

Table 3 presents a summary of the characteristics of each sample. The majority of studies took place in North America and Europe, with most samples being drawn from the general population and university students. The gender split in the samples was typically even, and the average age in most samples was between 35-44 years. The median education level of the participants in most samples was "some university", owing to the dependence of some studies on student participants. Most of the samples comprised repeat whole blood donors, with a smaller number of samples consisting of first-time donors and non-donors. The most typical data collection method was direct (face-to-face) distribution of questionnaires to donors, followed by personally administered interviews and postal surveys. The majority of the samples were recruited within the past twenty years (1990-2009). The samples were most typically small-to-medium sized (i.e., ranging from 100 to 500 people), although some studies recruited large samples in excess of 1000 people.

## Blood Donation Motivators

Table 4 presents the cross-validated taxonomy of blood donation motivators for first-time, repeat, lapsed and apheresis donors. Goodness-of-fit chi-square tests are used to assess differences in the proportion of each type of donor endorsing each motivator. All differences described in text were found to be statistically significant (at  $p < .0001$ ). Categories of motivators for donation are presented in descending order of frequency.

As can be seen in Table 4, the presence of a conveniently located collection site was the most frequently cited motivator of donation behavior by both first-time and repeat donors. Prosocial motivations were also frequently endorsed, including a desire to help other people generally (altruism), and a desire to help members of a target group (collectivism), including the donor's community and friends/family. These prosocial motivations were cited frequently by first-time, repeat and apheresis donors, but less often by lapsed donors. Donors also referred to personal values as a source of motivation to donate, with the most common being a sense of obligation to donate (personal moral norms), and less often, religious beliefs. Motives related to personal values were expressed frequently by first-time, repeat and apheresis donors, but infrequently by lapsed donors.

Donors also indicated that the reputation of the collection agency encouraged them to donate. This motive was prevalent among first-time and lapsed donors; however, reputation was mentioned less often by repeat and apheresis donors. Many donors also indicated they had donated because they perceived a need for blood products, due to either catastrophic events or everyday medical demands. This motive was reported frequently by lapsed donors; in contrast, it

was reported less often by first-time, repeat and apheresis donors.

Reciprocity was also a commonly cited motivator of donation behavior. Some donors indicated they had donated out of gratitude (upstream reciprocity), after a friend, family member, or themselves personally had received a blood transfusion or other blood product. Alternatively, some donors indicated they donated in order to ensure an adequate blood supply, in the event that they needed a blood product in the future (downstream reciprocity). Reciprocity-related motives were reported most frequently by repeat donors, and less often by first-time, apheresis, and lapsed donors. Some donors indicated their donation behavior was encouraged by other sources of intrinsic motivation. In particular, they cited feeling good about themselves (i.e., to enhance their self-esteem), and satisfying their curiosity about the donation process. Such motives were cited most frequently by first-time and repeat donors, and less often by other types.

Various forms of marketing communications were also indicated as motivators of donation behavior, including direct marketing (i.e., face-to-face, telephone and mailed appeals to donate), mass-media advertising, and workplace blood drives. Direct marketing was cited most often by repeat donors as a trigger for their donation behavior, and less often by other donors. In contrast, advertising was mentioned most often by lapsed donors as a donation trigger, but infrequently by other types of donors. In general, blood drives were mentioned infrequently by all types of donor.

Donors also referred to various forms of incentives as motivating their donation. In descending order of frequency, these incentives included the receipt of a free health check, money, perceived health benefits, learning their blood type, time off work or school, gift items, infectious disease screening, and formal recognition from the collection agency. In

general, incentives were cited most often by apheresis donors as a motivation to donate, and less often by other types of donor. With regard to specific incentives, receiving a health check was mentioned most often by apheresis, lapsed and first-time donors, and slightly less often by repeat donors. Receiving money was mentioned frequently by apheresis donors; however, this motive was less common among other types of donor. All other incentives were mentioned relatively infrequently by donors.

A relatively small number of donors reported donating because of perceived social norms. Repeat donors were motivated to donate because the behavior was common among their friends and/or family (descriptive norms). Donors also indicated they were encouraged to donate by other people, or felt social pressure to donate (subjective norms). This latter motivation was mentioned most frequently by first-time and lapsed donors, and less often by other types of donors. Using Table 4 and applying a 50% cutoff, Table 5 provides a visual summary of the important motivators for each donor type.

### **Blood Donation Deterrents**

Table 6 presents the taxonomy of deterrents to blood donation for both donors and non-donors. In general, deterrents were cited much less frequently than motivators. For most of the categories, there were relatively few samples of donors within each career phase; thus, we elected to present data that had been aggregated across the four phases. As before, goodness-of-fit chi-square tests are used to assess differences in the proportions of donors and non-donors who referred to each deterrent. All differences described in text were found to be statistically significant at the  $p < .0001$  level.

Low self-efficacy towards donating was the most commonly reported deterrent. Specifically, donors (and to a lesser extent, non-donors) indicated that lifestyle barriers, such as work or family commitments, made it difficult for them to donate. Similarly, a large proportion of non-donors indicated they were discouraged from donating because they believed they would be unable to give a sufficient volume of blood, or that too much blood would be extracted.

Other common deterrents included low involvement, perceived inconvenience, and lack of marketing communications. In terms of low involvement, both donors and non-donors indicated that blood donation was not a “top-of-mind” issue for them, and that they seldom thought about donating. Both groups also referred to inconvenience as a deterrent, including restrictive opening hours and difficulty in accessing the nearest collection centre. With regard to marketing communications, both donors and non-donors indicated that they had failed to donate because of a lack of solicitations and reminders from collection agencies.

Respondents also indicated they had been discouraged from donating due to ineffective incentives, lack of knowledge about donating, and negative service experiences. With respect to incentives, donors indicated that particular incentives (e.g., money) were unwanted, or in the case of non-donors, inadequate to motivate them to donate. In terms of lack of knowledge, a number of donors and non-donors indicated they were unaware of the community’s need for blood, and some indicated they did not know where to donate. The negative service experiences were reported by a small proportion of donors, and included poor interactions with collection centre staff, and dissatisfaction with the physical environment and atmosphere (servicescape) of the collection site.

A range of fears associated with the actual process of donating were expressed by many respondents. The most common was a fear of needles, followed by concerns about physical injury (e.g., scarring), non-specific anxiety about donating, concerns about the impact of donating on general health, fears about contracting a contagious blood-borne disease, fears about feeling dizzy or fainting, dislike of the sight of blood, and concerns about discovering an illness through the health screening tests. In general, these fears were expressed more frequently by non-donors, with the exceptions of non-specific anxiety and discovering illness.

A relatively small proportion of donors and non-donors reported being deterred by negative attitudes towards donating, as well as personal values. With regard to negative attitudes, non-donors (and to a lesser extent, donors) indicated they had been discouraged by negative word-of-mouth, such as stories of friends' bad donation experiences. Some respondents also expressed cynicism towards blood collection agencies, believing that urgent appeals for blood were exaggerated. A minority of respondents also indicated they did not want their donation to go to particular groups, such as disliked ethnic groups. In terms of personal values, a small number of respondents indicated that donating was against their moral beliefs (personal moral norms), with some citing religious prohibitions against donating as a further barrier.

## **DISCUSSION**

The purpose of this study was to construct a taxonomy of blood donation motivators and deterrents, and to quantify the prevalence of each factor across the worldwide population of eligible donors. Across all career stages, the most frequently cited reason for donating was the presence of a conveniently located collection centre, followed by prosocial motivation, personal values, reputation of the collection agency, a perceived need for donation, reciprocity,



and intrinsic motivation to enhance self-esteem and satisfy curiosity. Conversely, the deterrent factors were reported much less often than the motivators of donation. The most frequently cited deterrents included low self-efficacy in donating, low involvement, inconvenience, lack of marketing communications, ineffective incentives, lack of knowledge about donating, negative service experiences, and fears associated with the donation process.

These high-level findings were consistent with the factors observed in other reviews of the donor motivation literature, which have identified altruism<sup>5,6,10</sup>, enhancing self-esteem<sup>5</sup>, perceived community need for blood<sup>5</sup>, and reciprocity<sup>10</sup> as common donation motivators. Similarly, these reviews have cited many of the deterrent factors identified in this meta-analysis, including low involvement<sup>10</sup>, lack of self-efficacy<sup>7</sup>, inconvenience<sup>5,6,7</sup> (especially in terms of waiting time), and fears associated with the donation process<sup>5,6,10</sup> (especially of needles). Differences between the findings of this meta-analysis and other studies are discussed where they occur in the following sections.

### **Segmenting first-time, repeat, lapsed and apheresis donors**

First-time and repeat donors appear to have common reported motivators of: convenience, prosocial motivation and personal values. Strategies for the recruitment of first-time donors and retention of existing donors should therefore focus on altruistic- and duty-themed messages and local donors who have easy access to a collection centre. Where first-time and repeat donors differed was in terms of the importance of reputation of the collection agency. This factor was more prevalent for first-time donors compared to repeat donors. The benefits of corporate reputation postulated in the literature are associated primarily with the reduction of uncertainty. High corporate reputation has been shown to strengthen customers' confidence and

reduce risk perceptions, enhancing customers' expectations of the organization's capability and integrity in providing an excellent service<sup>71</sup>. This is particularly important when there has been no previous exchange, as with first time customers<sup>72</sup>. Applying these findings to our context, given the intangible nature of the donation service, and the lack of physical evidence for prospective donors to evaluate, coupled with the degree of fear surrounding the service, organizational reputation is likely used as a strategic signal by prospective donors to form expectations of the quality and safety of the donation service. Thus, there is some value in investing in advertising and public relations to promote the values, mission and achievements of the collection agency to enhance its reputation. However, these communication efforts are likely to be wasted if the reputation has not been earned through consistent, satisfactory donor experiences.

Lapsed donors reported a rather different set of motivators, with reputation of the collection agency, marketing communications and perceived need for blood being highly cited. The difference in perceived need for blood between lapsed and current donors was not consistent with the findings of Germain et al.<sup>73</sup> Further, relative to the other donor segments, this segment responded most to incentives, in particular, money. The above findings may suggest an effect-cause relationship rather than true motives for lapsed donors. Namely, one would expect collection agencies to heavily target this cohort with marketing campaigns and incentives given that their details are held in the database and they have proven to be suitable donors. Lapsed donors may simply have recalled the repeated and largely ineffective direct pleas by the collection agency during the period when the donor lapsed. Notwithstanding this, even if the expressed motivators were not a result of the differential marketing practices of the collection agency, it would be very difficult and expensive for a collection agency to re-engage lapsed donors. This is because they would be very sensitive to the collection agency's

reputation, require regular mass media appeals (grounded in a national or local crisis), and monetary incentives to continue to donate.

For apheresis donors, personal values and prosocial motivation were expressed as important motivators. Thus, altruistic and duty-themed messages are likely to be effective in marketing communications to this segment. However, with only one exception<sup>2</sup>, all of the studies on apheresis donors were conducted in countries where remuneration for plasmapheresis and/or plateletpheresis is available. By offering remuneration, collection agencies attract apheresis donors whose ongoing donations are likely to depend on the continuing availability of payment. In the studies that specifically asked donors about remuneration, the majority of participants cited receiving money as an important motivator<sup>39,41,53</sup>, and many of these donors indicated they would stop donating if payments ceased<sup>39</sup>. Alternatively, remunerating donations may make this motive more salient, even for donors who were originally motivated to donate for other reasons.

The deterrent most frequently reported by donors was low self-efficacy to donate, particularly in relation to lifestyle barriers that donors believed prevented them from donating often. Other prominent deterrents included perceived inconvenience of accessing a blood collection centre, lack of knowledge about the need for blood and the location of a donation site, low involvement in blood donation as an activity, lack of marketing communications, and negative service experiences at past donations. Based on these findings, collection organizations wishing to improve retention rates would be advised to focus recruitment efforts on donors with available time, adopt strategies to facilitate donors' access to their nearest collection centre, make available information about blood donation and collection centre locations, provide reminders to low-involvement donors to return, and ensure a consistently high quality of customer service at

collection centers. In addition, collection agencies could build self-efficacy to donate by providing early mastery experiences (e.g., offering first-time donors smaller volume donations with shorter waiting times), vicarious experiences (e.g., watching a role model successfully donate), encouragement (e.g., providing helpers to offer support during initial donations), and promoting anxiety-management strategies for dealing with nervous tension<sup>52</sup>.

Contrasting non-donors with donors, it appears that non-donors have more fear of donation, especially regarding needles, physical injury, reduced health as a result of donating, and becoming infected with a contagious disease. They also show less general interest (involvement) in the activity, and perceive low self efficacy with regards to believing they are unable to give a sufficient volume of blood. Further, non-donors appear to be more sensitive to negative word-of-mouth about donation from others. Although these reasons may simply serve as justification for not giving blood, on face value these findings would suggest collection agencies should assist potential donors to overcome fears related to donating by educating them about the safety of the donation process, dispelling common misconceptions about donating, such as the belief that it is possible to contract an infectious disease or that too much volume is taken. They can also employ anxiety-reduction strategies to address the fear of needles.

### **Opportunities for further research**

As well as producing a comprehensive list of factor influences on blood donation using a common terminology, this research synthesis has revealed the extent to which each factor has been covered in the literature. As such, this synthesis highlights gaps in knowledge and research opportunities. Among the motivators, prosocial motivation, personal values, social influence, and incentives have been extensively researched. In contrast, few studies have investigated

the extent to which donors are encouraged by specific convenience-related factors, such as proximity to the collection centre, availability of transportation, suitability of opening hours and length of waiting times. In addition, while many studies have examined various forms of social pressure to donate (subjective norms), few have investigated the motivating effect of knowing other people who donate on a regular basis (descriptive norms). Given the high rate of endorsement among repeat donors for this motivator, and the willingness of some collection agencies to allow group donations, further research attention is warranted. In particular, prominent models of donor behavior, such as the Theory of Planned Behavior<sup>8</sup> could be expanded through the inclusion of factors identified in this study.

With respect to deterrents, the most extensively researched factors include those related to fear, especially concerns about needles, contagion and reduced health. In contrast, relatively few studies have examined other specific health concerns, including discovering an illness, physical injury and not having enough blood. This list is unlikely to be exhaustive; additional health concerns and misconceptions may be discovered through further exploratory research. In addition, the effects of some aspects of service quality – poor staff interactions, and an unattractive and uncomfortable collection site servicescape – have not been well explored. Further, while some studies have investigated the overall effectiveness of incentives in motivating donations for broad donor populations, there remains an opportunity for research to investigate whether particular incentives are more motivating to particular donor segments (e.g., based on age, donation history, and loyalty to the blood collection organization).

In general, deterrents were reported far less frequently than motivators across most of the populations studied. This lower rate of reporting may reflect differences in how factors influence

behavior: multiple motivators are likely to have additive effects on motivation (e.g., a person is more likely to donate if they are altruistic, have strong personal values, and are encouraged by friends), whereas a single deterrent may derail a donation attempt. This finding may also indicate deeper reflection<sup>74</sup> about reasons for donating, as opposed to factors that prevent it. That is, individuals who donate frequently are likely to reflect often on the experience and consider their reasons for engaging in the behavior, making such reasons easier to recall when asked. In contrast, infrequent and non-donors are less likely to consider activities they are not routinely involved in, leading to shallow or inconsistent responses. Future studies may wish to investigate deterrents in the context of specific phases of the donation process (e.g., travelling to the collection centre, being interviewed, having blood drawn), in order to encourage more thoughtful reflection about each phase and to identify the most prevalent deterrents associated with each type of service encounters.

In terms of donor populations, repeat donors have been most extensively studied. In contrast, less research has examined reasons for first-time donations. Lapsed and apheresis donors remain an under-studied population; many of the motivators reported by first-time and repeat donors have not been investigated. Thus, it is unclear whether lapsed and apheresis donors are influenced by the same set of motivators and deterrents as other types of donors. In particular, studies investigating the effects of social influences on apheresis donation have largely been absent. Given that plasma and platelet donors can donate more frequently and thus may have greater opportunities for social bonding with other donors and centre staff, this omission is regrettable. In addition, while many studies have examined factors associated with ongoing donations of a particular type, there has been little research into reasons why donors make a transition from one type of donation to another (e.g., from whole blood to

plasmapheresis or plateletpheresis). Finally, as most of the research into apheresis donors has taken place in countries in which payment is available, this enticement may have produced a different profile of motivations to voluntary, non-remunerated donors. As such, the motivations of such donors in non-remunerated systems are currently not well understood.

With respect to their demographics, the most common sources of donor samples have been from the general public and from university students, while some populations have remained under-studied. Comparatively few studies have specifically investigated donors from ethnic minorities and whether they face unique challenges to donating. In addition, although many samples have included more senior donors at the high end of their age spectrum, few studies have focused specifically on this population and their reasons for donating. This omission is notable, given the aging population in the United States<sup>75</sup> and other developed economies. Furthermore, some geographic regions were underrepresented in this meta-analysis, with the majority of studies being drawn from North America and Europe. In particular, we were only able to locate a single study from Africa<sup>76</sup> and Latin America<sup>77</sup> that met our inclusion criteria. Future studies should endeavor to focus on these regions, as differences in cultural beliefs about blood donation, such as preferences to give blood to family members and not strangers<sup>78</sup>, may give rise to differences in reported motivators and deterrents.

Many of the other inherent limitations of the primary studies also apply to this synthesis. First, all factors described are based on donors' self-reports, and as such, may be distorted by a recall bias or a desire to portray themselves positively by providing responses they think are expected. This social desirability bias would have inflated reporting of some factors (e.g., altruism) and reduced it for others (e.g., social pressure). Second, as found by some studies<sup>24,30</sup>

many donors do not know why they donate and when asked may guess at best. Third, as highlighted earlier, it is possible that some of the motivators given by donors were salient because of the differential treatment they received by the collection agency based on their donor status<sup>73</sup>, such as plasmapheresis donors receiving payment. Fourth, many studies have not addressed the issues of sample representativeness or selection bias, and have relied on non-random methods of sampling (e.g., convenience sampling of university students). Last, while the data shows the prevalence of reported motives and deterrents, it may not reflect the strength of each factor's influence over behavior. For example, the desire to donate after having personally received a blood donation was reported relatively infrequently, but it may be strongly motivating for the few donors in this situation. In order to develop a profile that might be used to effectively predict donor behavior, a meta-analysis of studies which have empirically investigated antecedents of donor intentions and return behavior is currently underway.

Many of the primary studies considered for this analysis were rejected because of a range of methodological problems or failure to report important aspects of the study design or findings. Based on these concerns, we make six recommendations for achieving a higher standard of research quality for future projects. First, we urge researchers to provide a full and detailed description of their study design, including the recruitment strategy of study participants, characteristics of the sample, the measures used, and the procedures followed for collecting and analyzing data. Second, we suggest researchers make available unpublished data for re-analysis or research synthesis, either by retaining it personally or distributing it through an online 'grey' literature database<sup>13</sup>. Third, when using a survey study design, we recommend that researchers adopt a random sampling strategy, or at the very least, address the issue of selection bias in their sample. Fourth, we suggest researchers work in partnership with blood collection



agencies, and attempt to link donor attitude and cognition with actual donation behavior and demographic information drawn from agency databases. Fifth, researchers should strive to use consistent terminology in labeling motivators and deterrents of blood donation behavior, and where possible, use psychometrically valid instruments to measure these factors. Last, in planning future studies to assess motivators and deterrents, we encourage researchers to make greater use of experimental designs to isolate cause and effect, ensuring a sound theoretical basis for the selected intervention.

## **Conclusion**

This synthesis of the many donor studies since the 1950s has revealed an abundance of blood donation motivators and deterrents. This paper reports the prevalence of each factor by donor career stage (first-time, repeat, lapsed and apheresis) and in addition to highlighting differences, it identifies gaps in knowledge. A key strength of this paper is that it has organized each motivator and deterrent into a clear framework, with consistent terminology and definitions drawn from the psychological and marketing literatures. It is hoped that future researchers of blood donor behavior will avail themselves of this taxonomy and adopt the labels and associated definitions to facilitate the consolidation and comparison of findings for the effective advancement of donor knowledge. It is this knowledge and its application that will ensure an adequate, safe supply of blood for our future.

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**TABLE 1.** Blood Donation Motivators, Definitions and Example Items

Motivators	Definition	Example Items
<u>Convenience of Collection Site</u>	Easy access to a blood collection site.	“Convenience of clinic” <sup>18</sup> “Convenient place to donate” <sup>18</sup>
<u>Prosocial Motivation</u> <sup>19</sup>	The desire to have a positive impact on other people or social collectives through blood donation.	
Altruism <sup>20</sup>	Motivation with the ultimate goal of increasing the welfare of one or more individuals (especially strangers) through blood donation without regard for social or material rewards.	“I enjoy helping others” <sup>21</sup> “Altruism / humanitarianism” <sup>3</sup>
Collectivism <sup>20</sup> (community)	Motivation with the ultimate goal of increasing the welfare of a group or collective through blood donation. (In this category, the target group is the donor’s community.)	“To help the community” <sup>22</sup> “As a public service” <sup>23</sup>
Collectivism <sup>20</sup> (friends and family)	As above. (In this category, the target group is the donor’s friends and family.)	“For a relative / friend” <sup>24</sup> “Help acquaintances needing blood” <sup>4</sup>

<u>Personal Values</u> <sup>16</sup>	Set of ideals that an individual deems worthwhile and that encourages donation behavior.	
Personal moral norms <sup>25</sup>	Feelings of moral obligation to perform specific helping behaviors such as blood donation.	“Moral obligation” <sup>14</sup> “Donating is a duty” <sup>26</sup>
Religiosity <sup>27</sup>	Motivation arising from personal religious affiliation or spiritual commitment.	“Religious convictions” <sup>18</sup> “Religious reasons” <sup>28</sup>
<u>Reputation of Collection Agency</u> <sup>29</sup>	The extent to which the collection agency is regarded as efficient in its assistance to beneficiaries and the deployment of its resources.	“It is a good cause” <sup>23</sup> “Support for work of Red Cross” <sup>18</sup>
<u>Perceived Need for Donation</u> <sup>30</sup>	An awareness that blood donation is necessary for helping people.	
Following catastrophic events	An awareness of the need for blood in the aftermath of a disaster.	“Help in community or national crisis” <sup>21</sup>
Everyday	An awareness of the ongoing need for blood.	“Because blood is needed” <sup>31</sup>
<u>Indirect Reciprocity</u> <sup>32</sup>	Engaging in blood donation, in response to or in anticipation of an	

act in kind by a third party.

Upstream<sup>33</sup> (friends or family)

A motivation to help someone else, prompted by a friend or a family member receiving a blood product in the past.

“Knew someone who needed blood”<sup>28</sup>

“Friend or a relative needed blood”<sup>34</sup>

Downstream<sup>33</sup>

A belief that if a person helps, they have a greater chance of receiving help in the future if needed.

“I can get blood when I need it”<sup>35</sup>

“Build up credit if I need blood myself”<sup>36</sup>

Upstream<sup>33</sup> (self)

A motivation to help someone else, after having personally received a blood product in the past.

“Feelings of repayment for transfusion”<sup>34</sup>

“As return for a transfusion”<sup>37</sup>

Intrinsic Motivation<sup>16</sup>

Need or desire which arises from within the individual and causes action toward some goal.

Self-esteem<sup>38</sup>

A desire to enhance attitudes of self-acceptance, self-approval, and self-respect.

“Feel good about self”<sup>26</sup>

“Overcome . . . fears”<sup>39</sup>

Curiosity<sup>38</sup>

An impulse to investigate, observe, or gather information, particularly when the experience is novel or interesting

“Curiosity”<sup>14,18</sup>

### Marketing Communications<sup>17</sup>

The use of promotional tools such as advertising, public relations, personal selling, sales promotion, and direct and online marketing to recruit and/or retain donors.

#### Direct marketing<sup>17</sup>

Non-personal and personal communications aimed at gaining a direct response, such as a blood donation.

“Reminders mailed to donate”<sup>22</sup>

#### Advertising<sup>17</sup>

Any paid form of non-personal presentation and promotion of blood donation by an identified sponsor.

“An advertising campaign”<sup>40</sup>

“Heard an appeal on the TV, radio, or newspaper.”<sup>21</sup>

#### Blood drives

A blood collection agency and an external organization collaborate to promote and/or facilitate blood donation with employees or customers.

“I belong to an organization that had blood drives.”<sup>36</sup>

### Incentives<sup>16</sup>

Events or objects which increase or induce drives or determination.

#### Health check

A health screening that is provided as part of the donation process.

“Free health screening”<sup>22</sup>

“Medical check-up”<sup>41</sup>

Money	Financial rewards offered for donating blood components.	<p>“Financial compensation”<sup>42</sup></p> <p>“Financial incentives”<sup>39</sup></p>
Perceived health benefits	A belief that blood donation will provide positive health effects.	<p>“Healthy to give blood”<sup>43</sup></p> <p>“Good for my health”<sup>26</sup></p>
Learn blood type	Information provided about blood type.	<p>“Get to know the blood group”<sup>39</sup></p> <p>“Get to know their blood group”<sup>44</sup></p>
Time off work or school	Time off from work, school or other commitments for donating blood.	<p>“I wanted time off work”<sup>21</sup></p> <p>“To get two free days from school”<sup>44</sup></p>
Gift item	Receipt of items in exchange for donating, such as t-shirts, key rings, coffee mugs, etc.	<p>“Receive an item or gift”<sup>45</sup></p> <p>“Receive a gift”<sup>26</sup></p>
Infectious disease screening	Tests performed on donated blood to screen for infectious diseases, such as AIDS or hepatitis.	<p>“To be tested for infectious diseases”<sup>31</sup></p> <p>“HIV test seeking”<sup>46</sup></p>

Recognition

Formal acknowledgement of contribution from the collection agency.

“For special recognition or reward”<sup>31</sup>

“To receive a certificate or badge”<sup>37</sup>

Social Norms<sup>47</sup>

Expectations, obligations, and sanctions currently anchored in social groups.

Descriptive norms<sup>48</sup>

Perceptions of how significant others typically behave in a given situation.

“Many of my friends donate blood”<sup>49</sup>

“Know donors in their environment / family”<sup>50</sup>

Subjective norms<sup>51</sup>

A perceived social pressure to perform a behavior from significant others

“Encouraged by friends”<sup>28</sup>

“Asked to donate by a religious organization or social or civic group”<sup>21</sup>

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**TABLE 2.** Blood Donation Deterrents, Definitions and Example Items

Deterrents	Definitions	Example Items
<u>Low Self-Efficacy</u> <sup>52</sup>	Donors believe they lack control over events that affect their lives and their own functioning, making donating seem too difficult.	
Lifestyle barriers	The donor has other commitments (e.g., work, family) they believe makes it too difficult for them to donate.	<p>“Too busy; no time”<sup>18</sup></p> <p>“Work schedule conflict”<sup>53</sup></p>
Not enough blood	The donor believes that their body size or total blood volume is too small for them to donate.	<p>“Not having enough blood”<sup>54</sup></p> <p>“I'm afraid the nurse will take too much of my blood”<sup>49</sup></p>
<u>Low Involvement</u> <sup>55,56</sup>	A lack of general interest in the activity, or the lack of perceived relevance of the activity based on inherent needs, values and interests.	<p>“Because I never thought of it”<sup>35</sup></p> <p>“Rarely think about it”<sup>31</sup></p>
<u>Inconvenience</u> <sup>57</sup>	The location and/or opening hours of the collection centre make it difficult to donate.	<p>“Sessions held at inconvenient times”<sup>37</sup></p> <p>“Donation location is inconvenient”<sup>49</sup></p>
<u>Lack of Marketing Communications</u> <sup>17</sup>	An absence of promotional tools such as advertising, public	“Never been asked to give” <sup>58</sup>

	relations, personal selling, sales promotion, and direct and online marketing to recruit and/or retain donors.	<p>“Not telephoned by the Red Cross”<sup>18</sup></p> <p>“Not know what Red Cross does”<sup>28</sup></p>
<u>Ineffective Incentives</u> <sup>16</sup>	Events or objects offered as rewards fail to increase motivation to donate.	
Unwanted	The rewards offered are not wanted.	“Do not need money” <sup>53</sup>
Inadequate	The rewards offered are considered insufficient, or lacking in quality or quantity.	<p>“Want compensation”<sup>28</sup></p> <p>“No tangible reward”<sup>3</sup></p>
<u>Lack of Knowledge</u> <sup>16</sup>	Lack of information and understanding about the need and process of blood donation.	
Need for blood	Unaware of the need for blood.	<p>“Unaware of need, ignorance”<sup>3</sup></p> <p>“Did not know it was important to donate”<sup>31</sup></p>
Donation site	Lack of knowledge as to where to donate.	<p>“Do not know when/where to go”<sup>43</sup></p> <p>“Don't know where to donate blood”<sup>54</sup></p>



Negative Service Experience<sup>59</sup>

Dissatisfaction with the service performance of the collection organization.

Staff

Dissatisfaction with interactions with employees of the blood collection agency.

“Rude staff at the clinic”<sup>18</sup>

Servicescape<sup>60</sup>

Dissatisfaction with the design and atmosphere of the donation site.

“Unpleasant clinic setting”<sup>18</sup>

Fear<sup>61</sup>

An unpleasant emotion aroused by impending danger, pain etc., whether the threat is real or imagined.

Needles

A dislike of needles and the pain associated with them.

“Afraid of needles, pain or discomfort”<sup>31</sup>

“Sight of needle”<sup>34</sup>

Physical injury

A fear of being injured by the needle in the donation process.

“Fear of permanent injury”<sup>28</sup>

“Concern about bruising / sore arm”<sup>62</sup>

Non-specific

A general apprehension about donating, which is not directed to a

“Fear, apprehension”<sup>3</sup>

	specific aspect of the process.	“General nervousness” <sup>34</sup>
Reduced health	A fear that giving blood will have a negative impact on energy levels, resistance to disease, or health in general.	“Weakens health, vitality or overall immunity” <sup>49</sup> “Long-term consequences to my health” <sup>49</sup>
Contagion	A fear of the risk of contracting an infectious disease from non-sterile equipment.	“Suspicion about sterility of equipment” <sup>54</sup> “Risk of getting AIDS from donating” <sup>63</sup>
Fainting / dizziness	A fear of fainting (a vasovagal syncope), as well as prodromal symptoms such as nausea and dizziness.	“Afraid of feeling faint, dizzy or unwell” <sup>31</sup> “Vertigo / dizziness” <sup>64</sup>
Blood	A dislike of the sight of blood.	“Fear related to seeing blood” <sup>24</sup> “Sight of blood” <sup>18</sup>
Discovering illness	A concern that the screening tests associated with the blood donation process will reveal illness.	“Fear of discovering illness” <sup>42</sup> “Detection of disease” <sup>54</sup>
<u>Negative Attitudes</u> <sup>16</sup>	A mental position or feeling toward certain ideas, facts, or persons.	

Negative word-of-mouth <sup>17</sup>	Negative comments about the donation experience made by an individual (usually a current or former donor) to another.	<p>“Put off by someone else”<sup>37</sup></p> <p>“Friend had bad experience”<sup>43</sup></p>
Cynicism <sup>65</sup>	An attitude characterized by frustration and disillusionment as well as negative feelings toward and distrust of a person, group, ideology, social convention, or institution.	“Appeals for blood are never really urgent” <sup>58</sup>
Outgroup prejudice <sup>66</sup>	Negative attitudes towards specific groups that discourage prosocial behavior towards those groups.	“Don't want [blood] to go to certain groups.” <sup>28</sup>
<u>Personal Values</u> <sup>16</sup>	Set of ideals that an individual deems worthwhile and that discourages donation behavior.	
Personal moral norms <sup>25</sup>	Feelings of moral obligation to avoid specific behaviors such as blood donation.	<p>“Donating is against beliefs”<sup>67</sup></p> <p>“It is immoral to give blood”<sup>68</sup></p>
Religiosity <sup>27</sup>	Discouragement arising from personal religious affiliation or spiritual commitment.	<p>“Religious reasons”<sup>18</sup></p> <p>“Religious beliefs”<sup>69</sup></p>

**TABLE 3.** Profile of samples included in this study

Study Population	<i>k</i> *	Average Age	<i>k</i> *	Type of Donor	<i>k</i> *
General public	70	< 25	18	Non-donor	18
University students	12	25-34	15	First-time donor	10
Ethnic minority	4	35-44	26	Repeat donors	51
High school students	3	45-54	7	Lapsed donors	6
Military personnel	1	Not specified	26	Plasma / platelet donors	7
Geographic Region		Median Education Level		Data Collection Finished	
North America	51	Less than high school	6	1960-1969	5
Europe	29	High school graduate	13	1970-1979	14
Asia	5	Some university	21	1980-1989	10
Middle East	3	University degree	7	1990-1999	24
Asia-Pacific	2	Vocational certificate	2	2000-2009	39
South America	1	Not specified	43		
Africa	1			Sample size	
		Type of Study		< 100	9
Gender		Interview (telephone)	11	100-249	26
< 25% male / > 75% female	3	Interview (face-to-face)	20	250-499	18

25-34% male / 66-75% female	3	Survey (postal)	15	500-999	15
35-44% male / 56-65% female	9	Survey (directly distributed)	36	1000-2499	14
45-55% male / 45-55% female	32	Survey (multi-method)	4	> 2500	10
56-65% male / 35-44% female	12	Survey (online)	2		
66-75% male / 25-34% female	7	Survey (type not specified)	4		
> 75% male / < 25% female	7				
Not specified	17				

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\* *k* denotes the number of samples (out of 92) in each descriptive category.

**TABLE 4.** Blood Donation Motivators

Motivators	All Donation Types			First-Time Donation			Repeat / Ongoing Donation			Apheresis (Plasma / Platelet) Donation			Previous Donation (Lapsed Donors)			$\chi^2$
	<i>k</i> *	<i>N</i> †	%‡	<i>k</i>	<i>N</i>	%	<i>k</i>	<i>N</i>	%	<i>k</i>	<i>N</i>	%	<i>k</i>	<i>N</i>	%	<i>p</i>
<b><u>Convenience of Collection Site</u></b>	<b>3</b>	<b>2,123</b>	<b>80.5%</b>	<b>2</b>	<b>1,945</b>	<b>79.9%</b>	<b>1</b>	<b>178</b>	<b>87.1%</b>	<b>0</b>	<b>0</b>	<b>n/a</b>	<b>0</b>	<b>0</b>	<b>n/a</b>	<b>.0749</b>
<b><u>Prosocial Motivation</u></b>	<b>52</b>	<b>32,365</b>	<b>79.7%</b>	<b>7</b>	<b>6,449</b>	<b>83.5%</b>	<b>37</b>	<b>24,128</b>	<b>80.2%</b>	<b>6</b>	<b>1,190</b>	<b>66.6%</b>	<b>2</b>	<b>598</b>	<b>45.2%</b>	<b>.0000</b>
Altruism	47	31,365	78.3%	7	6,449	83.5%	32	23,128	78.9%	6	1,190	53.9%	2	598	45.2%	.0000
Collectivism (community)	26	7,765	57.6%	3	903	55.0%	21	6,152	60.3%	1	300	81.0%	1	410	6.1%	.0000
Collectivism (friends and family)	9	7,639	43.4%	0	0	n/a	9	7,639	43.4%	0	0	n/a	0	0	n/a	n/a
<b><u>Personal Values</u></b>	<b>35</b>	<b>71,004</b>	<b>74.5%</b>	<b>7</b>	<b>12,167</b>	<b>73.5%</b>	<b>24</b>	<b>54,821</b>	<b>76.2%</b>	<b>2</b>	<b>2,328</b>	<b>80.6%</b>	<b>2</b>	<b>1,688</b>	<b>17.4%</b>	<b>.0000</b>
Personal moral norms	32	69,134	76.2%	7	12,167	73.5%	22	54,229	77.0%	2	2,328	80.6%	1	410	29.0%	.0000
Religiosity	5	3,815	9.9%	2	1,945	7.6%	2	592	9.6%	0	0	n/a	1	1,278	13.6%	.0000
<b><u>Reputation of Collection Agency</u></b>	<b>9</b>	<b>5,027</b>	<b>59.6%</b>	<b>2</b>	<b>1,945</b>	<b>76.8%</b>	<b>5</b>	<b>1,658</b>	<b>39.9%</b>	<b>1</b>	<b>146</b>	<b>4.1%</b>	<b>1</b>	<b>1,278</b>	<b>65.3%</b>	<b>.0000</b>
<b><u>Perceived Need for Donation</u></b>	<b>16</b>	<b>66,964</b>	<b>45.0%</b>	<b>4</b>	<b>11,264</b>	<b>46.6%</b>	<b>8</b>	<b>51,838</b>	<b>44.4%</b>	<b>2</b>	<b>2,174</b>	<b>29.2%</b>	<b>2</b>	<b>1,688</b>	<b>73.6%</b>	<b>.0000</b>

Following catastrophic events	3	13,503	57.3%	1	2,615	73.0%	2	10,888	53.5%	0	0	n/a	0	0	n/a	.0000
Everyday	13	53,461	42.0%	3	8,649	38.6%	6	40,950	42.0%	2	2,174	29.2%	2	1,688	73.6%	.0000
<b><u>Indirect Reciprocity</u></b>	<b>21</b>	<b>12,993</b>	<b>40.8%</b>	<b>2</b>	<b>1,945</b>	<b>22.3%</b>	<b>14</b>	<b>8,637</b>	<b>48.5%</b>	<b>2</b>	<b>535</b>	<b>32.0%</b>	<b>3</b>	<b>1,876</b>	<b>27.2%</b>	<b>.0000</b>
Upstream (friends and family)	8	8,461	47.9%	0	0	n/a	4	6,460	54.2%	2	535	20.7%	2	1,466	30.4%	.0000
Downstream	15	8,818	37.3%	0	0	n/a	13	8,108	38.4%	1	300	35.0%	1	410	16.1%	.0000
Upstream (self)	6	4,782	18.3%	2	1,945	22.3%	2	1,149	13.7%	0	0	n/a	2	1,688	17.0%	.0000
<b><u>Intrinsic Motivation</u></b>	<b>27</b>	<b>13,614</b>	<b>38.0%</b>	<b>6</b>	<b>3,834</b>	<b>43.9%</b>	<b>16</b>	<b>8,501</b>	<b>39.0%</b>	<b>3</b>	<b>681</b>	<b>21.7%</b>	<b>2</b>	<b>598</b>	<b>3.5%</b>	<b>.0000</b>
Self-esteem	23	11,639	41.0%	3	2,159	65.3%	16	8,501	39.0%	2	381	6.6%	2	598	3.5%	.0000
Curiosity	6	3,920	22.9%	5	3,620	21.4%	0	0	n/a	1	300	41.0%	0	0	n/a	.0000
<b><u>Marketing Communications</u></b>	<b>30</b>	<b>70,945</b>	<b>25.5%</b>	<b>5</b>	<b>11,367</b>	<b>19.7%</b>	<b>20</b>	<b>55,549</b>	<b>26.3%</b>	<b>3</b>	<b>2,563</b>	<b>12.8%</b>	<b>2</b>	<b>1,466</b>	<b>62.3%</b>	<b>.0000</b>
Direct marketing	10	15,696	48.6%	2	2,718	32.5%	7	12,678	52.6%	1	300	22.0%	0	0	n/a	.0000
Advertising	14	14,367	23.2%	3	4,560	17.9%	8	8,106	19.6%	1	235	7.7%	2	1,466	62.3%	.0000
Blood drives	12	50,344	17.3%	1	6,704	13.5%	10	41,612	18.2%	1	2,028	12.0%	0	0	n/a	.0000
<b><u>Incentives</u></b>	<b>36</b>	<b>118,468</b>	<b>12.3%</b>	<b>4</b>	<b>11,544</b>	<b>15.4%</b>	<b>24</b>	<b>103,254</b>	<b>11.5%</b>	<b>6</b>	<b>3,072</b>	<b>25.7%</b>	<b>2</b>	<b>598</b>	<b>15.6%</b>	<b>.0000</b>

Health check	11	10,951	33.1%	1	2,615	37.4%	5	7,513	30.7%	4	635	42.7%	1	188	39.4%	.0000
Money	8	7,160	19.2%	0	0	n/a	3	6,228	11.5%	4	744	76.6%	1	188	47.3%	.0000
Perceived health benefits	16	60,600	15.1%	2	9,319	13.2%	12	48,843	15.9%	1	2,028	8.0%	1	410	1.0%	.0000
Learn blood type	3	1,409	11.6%	1	986	11.1%	0	0	n/a	1	235	14.5%	1	188	11.2%	.3286
Time off work or school	4	9,408	9.4%	2	3,601	13.9%	2	5,807	6.6%	0	0	n/a	0	0	n/a	.0000
Gift item	8	57,147	6.4%	2	9,319	7.1%	5	45,800	6.4%	1	2,028	4.0%	0	0	n/a	.0000
Infectious disease screening	18	97,513	4.3%	2	7,943	3.6%	11	87,019	4.5%	4	2,363	3.0%	1	188	5.3%	.0000
Recognition	13	59,762	2.7%	2	9,319	2.5%	9	48,115	2.8%	2	2,328	1.5%	0	0	n/a	.0000
<b><u>Social Norms</u></b>	<b>41</b>	<b>76,077</b>	<b>11.4%</b>	<b>8</b>	<b>12,270</b>	<b>20.2%</b>	<b>28</b>	<b>60,647</b>	<b>9.7%</b>	<b>4</b>	<b>2,972</b>	<b>8.7%</b>	<b>1</b>	<b>188</b>	<b>36.2%</b>	<b>.0000</b>
Descriptive norms	3	1,080	62.6%	0	0	n/a	3	1,080	62.6%	0	0	n/a	0	0	n/a	n/a
Subjective norms	41	76,077	11.2%	8	12,270	20.2%	28	60,647	9.4%	4	2,972	8.7%	1	188	36.2%	.0000

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\*  $k$  represents the number of samples that were asked about each motivator

†  $N$  represents the total number of participants in the  $k$  samples

‡ % indicates the percentage of  $N$  who reported the motivator as a reason for donating



**TABLE 5. Donor Segmentation by Donation Motivator**

Donation Motivators	Donor Segments			
	First-time	Repeat	Apheresis	Lapsed
Convenience	✓	✓	-	-
Prosocial	✓	✓	✓	-
Personal values	✓	✓	✓	-
Reputation of collection agency	✓	-	-	✓
Perceived need for blood	-	-	-	✓
Marketing communications	-	-	-	✓

**TABLE 6.** Blood Donation Deterrents

Deterrents	All Participants			Donors			Non-Donors			$\chi^2$
	$k^*$	$N^\dagger$	$\%^\ddagger$	$k$	$N$	$\%$	$k$	$N$	$\%$	$p$
<b><u>Low Self-Efficacy</u></b>	<b>18</b>	<b>10662</b>	<b>27.4%</b>	<b>10</b>	<b>5306</b>	<b>35.6%</b>	<b>8</b>	<b>5356</b>	<b>19.2%</b>	<b>.0000</b>
Lifestyle barriers	17	10494	27.1%	10	5306	35.6%	7	5188	18.3%	.0000
Not enough blood	3	1126	15.0%	2	958	9.3%	1	168	47.6%	.0000
<b><u>Low Involvement</u></b>	<b>13</b>	<b>9481</b>	<b>27.2%</b>	<b>6</b>	<b>3968</b>	<b>23.5%</b>	<b>7</b>	<b>5513</b>	<b>29.8%</b>	<b>.0000</b>
<b><u>Inconvenience</u></b>	<b>16</b>	<b>12853</b>	<b>26.1%</b>	<b>8</b>	<b>9861</b>	<b>26.2%</b>	<b>8</b>	<b>2992</b>	<b>25.6%</b>	<b>.4668</b>
<b><u>Lack of Marketing</u></b>										
<b><u>Communications</u></b>	<b>11</b>	<b>6693</b>	<b>21.8%</b>	<b>4</b>	<b>2566</b>	<b>22.4%</b>	<b>7</b>	<b>4127</b>	<b>21.4%</b>	<b>.3749</b>
<b><u>Ineffective Incentives</u></b>	<b>3</b>	<b>490</b>	<b>20.0%</b>	<b>2</b>	<b>472</b>	<b>20.1%</b>	<b>1</b>	<b>18</b>	<b>16.7%</b>	<b>.3911</b>
Unwanted	1	409	22.2%	1	409	22.2%	0	0	n/a	n/a
Inadequate	3	490	4.1%	2	472	3.6%	1	18	16.7%	.0000
<b><u>Lack of Knowledge</u></b>	<b>7</b>	<b>1467</b>	<b>19.7%</b>	<b>2</b>	<b>621</b>	<b>23.8%</b>	<b>5</b>	<b>846</b>	<b>16.7%</b>	<b>.0025</b>

Need for blood	2	81	22.2%	1	63	23.8%	1	18	16.7%	.4552
Donation site	5	1386	19.6%	1	558	23.8%	4	828	16.7%	.0029
<b><u>Negative Service</u></b>										
<b><u>Experience</u></b>	<b>4</b>	<b>2674</b>	<b>21.1%</b>	<b>4</b>	<b>2674</b>	<b>21.1%</b>	<b>0</b>	<b>0</b>	<b>n/a</b>	<b>n/a</b>
Staff	3	2513	22.1%	3	2513	22.1%	0	0	n/a	n/a
Servicescape	2	1945	20.2%	2	1945	20.2%	0	0	n/a	n/a
<b><u>Fear</u></b>										
	<b>44</b>	<b>77653</b>	<b>13.1%</b>	<b>26</b>	<b>65234</b>	<b>9.3%</b>	<b>18</b>	<b>12419</b>	<b>33.3%</b>	<b>.0000</b>
Needles	25	17639	24.6%	13	11661	20.1%	12	5978	33.3%	.0000
Physical injury	6	1023	19.6%	3	651	10.6%	3	372	35.5%	.0000
Non-specific	14	13935	16.4%	8	9861	18.4%	6	4074	11.5%	.0000
Reduced health	17	12665	16.0%	9	9804	12.5%	8	2861	27.9%	.0000
Contagion	26	65990	10.1%	16	55470	7.0%	10	10520	26.8%	.0000
Fainting/dizziness	12	10932	9.4%	6	7783	7.8%	6	3149	13.3%	.0000
Blood	9	8948	8.6%	4	8054	7.8%	5	894	16.2%	.0000
Discovering illness	5	3988	5.9%	2	1086	8.4%	3	2902	4.9%	.0000
<b><u>Negative Attitudes</u></b>	<b>11</b>	<b>3149</b>	<b>10.1%</b>	<b>5</b>	<b>1850</b>	<b>11.7%</b>	<b>6</b>	<b>1299</b>	<b>7.9%</b>	<b>.0006</b>

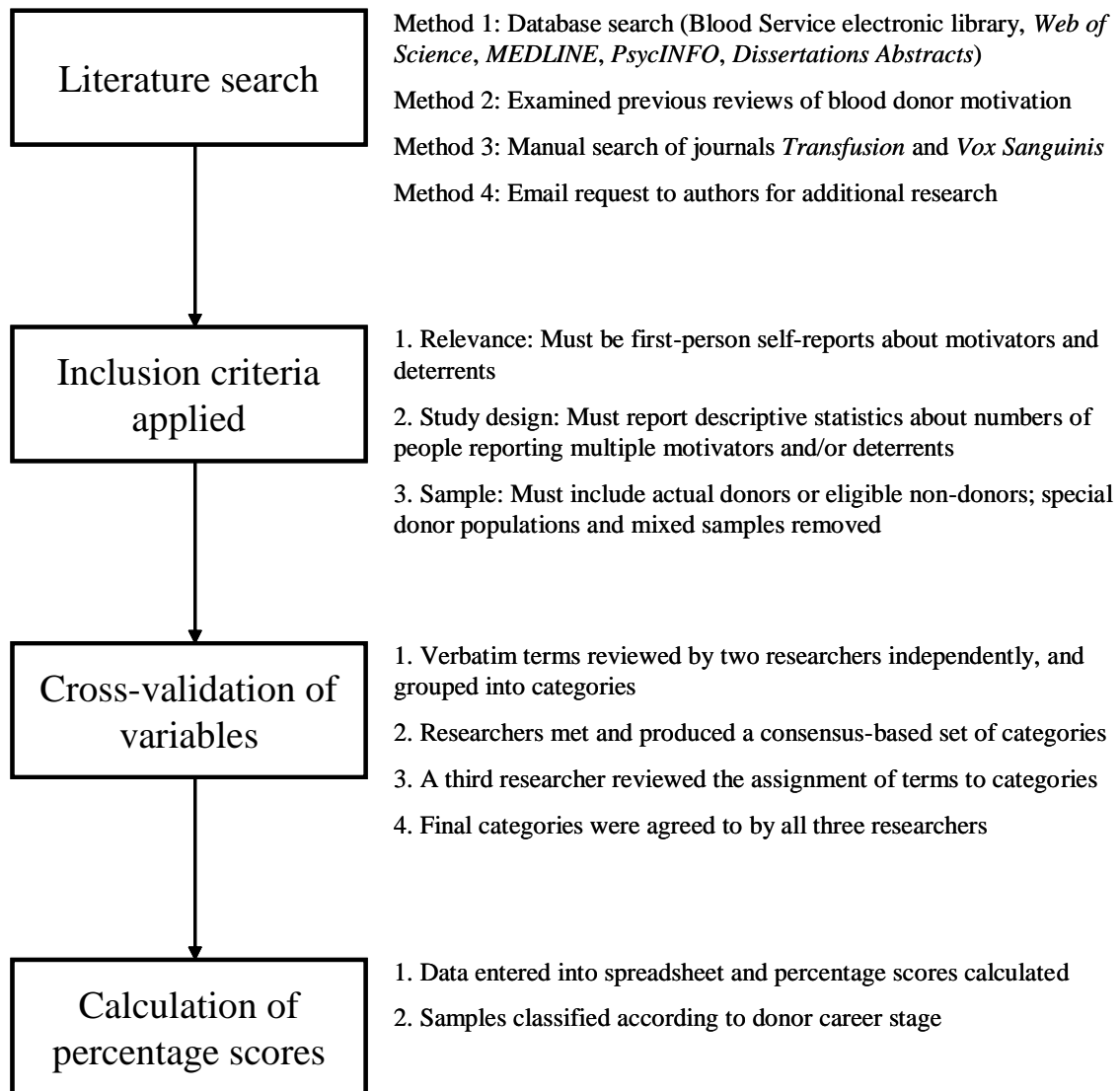
Negative word-of-										
mouth	3	773	13.5%	2	587	7.5%	1	186	32.3%	.0000
Cynicism	6	2295	9.2%	2	1200	14.2%	4	1095	3.7%	.0000
Outgroup prejudice	2	81	4.9%	1	63	3.2%	1	18	11.1%	.0943
<b><u>Personal Values</u></b>	<b>12</b>	<b>8507</b>	<b>5.4%</b>	<b>5</b>	<b>3125</b>	<b>4.6%</b>	<b>7</b>	<b>5382</b>	<b>5.8%</b>	<b>.0199</b>
Personal moral norms	5	2487	12.3%	3	1278	5.9%	2	1209	18.9%	.0000
Religiosity	7	6020	2.5%	2	1847	3.7%	5	4173	2.0%	.0001

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\*  $k$  represents the number of samples that were asked about each deterrent

†  $N$  represents the total number of participants in the  $k$  samples

‡ % indicates the percentage of  $N$  who reported the deterrent as a barrier to donating



**Figure 1. Flowchart of entire process of collection and analysis of data from primary studies**