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Blood Donor Incentives across 63 Countries: The BEST Collaborative Study

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ABSTRACT

Incentives for blood donors are a much-debated strategy intended to ensure a sufficient supply of blood. Yet, there is a fundamental lack of knowledge about which incentives are offered by different blood collectors. We provide a comprehensive description of incentive policies for whole blood donors across 63 countries and 50 states of the United States. We collected data on incentive policies by conducting 2 surveys among representatives of blood collection establishments. Additionally, we integrated incentive data from an existing study and the World Health Organization (WHO). Lastly, we performed a web content analysis of blood collector websites and news releases to extend incentive data for the United States as well as underrepresented regions. We present descriptive analyses illustrating the type and value of incentives and their geographical distribution around the globe. Approximately half of the countries in our sample employ financial incentives, which include cash and tax benefits, but also less conventional incentives, such as healthcare supplements and raffles. Time off work is also commonly offered to blood donors and varies across blood collection establishments in duration and whether it is granted to all donors or only to those whose employer allows it. There is a geographical clustering of incentives, such that neighboring countries are more likely to employ similar incentives. This study provides insights into the strategies used for incentivizing blood donation and highlights the global diversity of incentive policies for whole blood donors. In stark contrast to WHO guidelines, half of the countries surveyed employ some kind of high-value incentive for blood donors. More realistic guidelines that are adapted to the local cultural and institutional context may be needed to maintain an adequate blood supply.

Introduction

Blood donations are essential for providing life-saving treatments and drugs for patients in need. In fact, the World Health Organization (WHO) designates whole blood and its products as essential medicine [1]. Blood collection establishments (BCEs) must thus continuously motivate individuals to become (and remain) blood donors. One strategy to encourage blood donation is the provision of *incentives*. We follow Chell et al [2] and define donor incentives as extrinsically motivated rewards, which can be monetary or nonmonetary and are used to motivate blood donation. There is a long-standing and ongoing debate as to whether BCEs should provide incentives, and if so, what kind of incentive and what value of incentive is appropriate [3,4]. Some argue that altruism alone may not suffice to meet demand and that incentives could solve this problem by increasing blood donation rates [5,6]. Others assert that incentives undermine individuals' intrinsic motivation or jeopardize the donor identity, thereby not having any effect on the blood supply or even backfiring [7–11]. The scientific literature has found mixed results regarding the effectiveness of different kinds of incentives. Recent studies emphasize the importance of context for the effectiveness of incentives in encouraging blood donation [2,12,13]. In particular, incentives may have different effects on blood donation behavior depending on

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the type of incentive (eg, lottery tickets and time off work had positive effects on blood donation behavior, but movie tickets did not [14–16]), the cultural context (eg, coupons encouraged donor recruitment in the U.S, but no such effect was found for vouchers offered to Argentinians [17,18]) and donor characteristics (eg, age and donation history [19]). However, this debate is mostly informed by single-country observational or experimental case studies, and little is known about the incentive policies of different BCEs. Despite the substantial amount of attention that the question of *effectiveness* of blood donor incentives has received [2,12], there is a fundamental lack of knowledge about the incentive policies of different BCEs, to begin with.

Importantly, Zeller et al [20] did make a first attempt at providing an overview of incentive policies across 17 countries. The authors found that the majority of countries employed nonmonetary donor incentives such as small gifts or health check-up. A small set of countries also provided monetary incentives, most commonly cash incentives. While Zeller and colleagues offer important first insights regarding the global distribution of donor incentives, they did not examine the value of incentives. Low-value gifts such as T-shirts or medals likely fulfill a different function with respect to motivation than higher-value incentives such as cash incentives or a full day off work. While the former can certainly be an effective incentive by increasing the donor's feeling of appreciation, strengthening the donor's blood donor identity, or acting as a virtue signal [21], the latter are more typical *extrinsic* incentives, ie, external rewards that are motivating on their own [8]. Here we focus specifically on high-value financial or nonfinancial incentives (ie, not including small symbolic gifts, such as mugs or pens, or donor recognition items such as medals and pins). Examples of high-value incentives are cash payment, tax relief, vouchers or gift cards, extensive health checks (other than the predonation screening), high-value gifts, and time off work. Moreover, we extend the geographical reach of the analysis: Our analysis includes 63 countries. In addition, we collected incentive data from 48 BCEs in the United States, regarding which Zeller et al. [20] mentioned that "Response was notably absent [and] where donor incentivization is variable." (p. 339). We also explicitly describe the geographical patterns underlying the distribution of incentive policies.

The ongoing debate on blood donor incentives is based on a very limited understanding of which incentives are used by BCEs around the world. This problem is exacerbated by varying conceptualizations of donor incentives, often resulting in conflicting claims about the presence or absence of incentives in particular BCEs or countries. As a result, there is little exchange of incentive strategies, although this would be useful in the face of inconsistent empirical evidence on the effectiveness of incentives and frequent moralizing on the topic. In this study, we present a comprehensive analysis of the type and value of blood donor incentives and their geographical distribution around the globe. Our aim is to offer insights about BCEs' strategies and potentially creative solutions for incentivizing blood donation.

Materials and Methods

Participants and Procedure

We employed a mixed-methods approach complementing observations from 2 expert surveys with additional data obtained from a previous study, the World Health Organization, and by performing a web content analysis of BCEs' websites and news feeds. As a first step, we carried out an expert survey of donor incentives across Europe (henceforth referred to as "wave 1" of the expert survey). We targeted experts (ie, donor health and management specialists) at BCEs in the 28 countries of the European Union (EU) (prior to the United Kingdom leaving the EU). Since 3 EU countries were already surveyed by Zeller et al [20], we collected data from 25 countries. Many experts were members of the authors' personal networks of donor management specialists, who were contacted by email or phone, resulting in a high response rate. Missing responses were completed by following up with phone calls to the BCEs. Experts were asked to share information on the type and value of incentives offered in their country (see Appendix A for the survey questionnaire). Specifically, we requested that experts avoid mentioning low-value incentives (such as T-shirts or mugs, which are frequently given to donors), as our focus is on high-value (nonsymbolic) incentives, which we consider as having a value of at least 10 Euro/USD (this is an approximate cut-off that is adjusted to purchasing power in countries with a different currency than Euro or USD; in some cases, incentive value is unknown and assumed to be of high value, such as for "paid donations" reported by the WHO). Data from wave 1 was collected in 2020, and have also been used in [13].

In the second step, we aimed to move beyond Europe to get a broader picture of blood donor incentives around the globe. To this end, we worked within the Biomedical Excellence for Safer Transfusion (BEST) Collaborative (http://bestcollaborative.org/) to enhance and disseminate our survey questionnaire on incentives among its health and donor management specialists from 21 countries (henceforth referred to as "wave 2" of the expert survey). The survey was programmed in REDCap and BEST members received an email invitation with a link to participate in the online survey. Respondents could be affiliated with any BCE or country around the globe. We have no data on the survey response rate. The wave 2 survey was similar in content to wave 1, but included some additional questions (eg, incentives for plasma and platelet donation). In this paper, we focus on the types and value of incentives for *whole blood* donors (see section 2.2). As in wave 1, we also asked participants to specifically report on high-value incentives, such as cash, gift cards, tax benefits, high-value gifts, or time off work (see Appendix B for the survey questionnaire). Data was collected between Summer 2022 and Spring 2023.

Next, we integrated incentive data from Zeller et al [20] and the WHO Global Status Report on Blood Safety and Availability [22]. Zeller et al conducted a survey among representatives of BCEs in 17 countries, 11 of which were not yet included in our 2 expert surveys. While the survey responses did not include information on incentive value, they did provide detailed information on the type of incentive offered (see Appendix C for question-wording). We do not include low-value incentives such as travel compensation, gifts, food or drinks, or donor recognition items. The year of data collection was 2019. Moreover, we employ data from the most recent WHO report on blood donation rates [22]. Specifically, the report distinguishes between (1) voluntary nonremunerated blood donation (VNRD), (2) family replacement, (3) paid, or (4) "other" donations. If a country reports a number of paid whole blood donations between 2014 to 2018 greater than 0, we deduce that financial incentives for whole blood donors exist in this country.

Lastly, we complemented the expert surveys and existing data sources with a web content analysis. Firstly, we examined the incentive policies for underrepresented regions in Africa, Asia, and Central and South America. On account of the very large search space of countries, as well as limited resources, we constrained our search to a set of countries from diverse regions with relatively large populations. In particular, we performed the search for Bolivia, Chile, China, Colombia, Guatemala, India, Iran, Mexico, Myanmar, Nigeria, Saudi Arabia, Singapore, South Africa and Thailand. However, due to low data quality (ie, lack of BCE websites and/or no mentioning of incentives or lack of incentives in many countries), we report only the countries for which BCEs list some form of high-value incentive. We initially searched which BCEs operate in each country by translating the Wikipedia page on blood dona-

tion into the local language and using Google. Next, we reviewed the website(s) of the BCE(s) in search of information on donor incentives (eg, in descriptions of the "donation process" or "reasons to donate"). Alternatively, we sought information on donor incentives on government websites or newspaper articles. Our simple coding framework comprised the incentive categories described in our section on variables of interest (see section 2.2 below). The search terms were given by the categories (eg, "financial incentives"), related terms (eg, "reward"), and examples of the category values (eg, "cash," "gift card"). The search was conducted in March-April 2023. The reliability of the coding was checked by 2 independent raters, who had discussions in case of disagreements to ensure that there was a common understanding of the coding framework. Secondly, we examined the incentives of U.S. BCEs described on their public websites and/or newsfeeds. This analysis was conducted for each nonhospital-based BCE in July-August 2023. Paid plasma centers incidentally collecting whole blood were not included. Due to wider availability of online information and no language barriers, we applied a more fine-grained categorization of incentives for the U.S. analysis. This coding was based on the following specific types of incentives: "gift cards," "raffles" (eg, for very high-value gift cards, appliances, cars), "loyalty programs" (eg, for apparel), and "other" incentives (eg, scholarships, event tickets). Two independent coders searched the internet for 48 BCE's web pages and news feeds for incentive policies across every U.S. state using search terms (eg, "gift," "store," "loyalty," "pay," "raffle," "voucher," "win," "winner," "prize," "benefits," "give-away"). Some BCEs operated in single states (eg, Mississippi Blood Services in Mississippi) and others across many states (eg, American Red Cross Blood Services operates across 38 states and Vitalant across 20). Some states had multiple operators (eg, 7 in California and ten in Texas) and others had single operators (eg, Maine). Accuracy of the data coding for the U.S. web analysis was ensured by the 2 coders sharing their coding of the BCEs and where there were any perceived discrepancies or need for further clarification, conferring to resolve these.

Variables of Interest

For the survey data analysis and web content analysis, where data is available, we report specific incentive types (e.g., cash, tax benefits, gift cards, gifts, raffles, time off work independent of employer, time off work dependent on employer). In the global incentive analysis, we distinguish between 2 key variables of interest: (1) *financial* incentives (ie, incentives of a monetary value of at least 10 Euro/USD or equivalent, such as cash, tax benefits, vouchers, and gift cards) and (2) *time* incentives (ie, paid time off work for donating blood), because most high-value incentives fall into one of these 2 categories. We differentiate between incentives that are offered to all donors (ie, offered by all BCEs) or that merely exist in at least one BCE in a given country.

Descriptive Analysis

Firstly, we analyze the detailed survey data from waves 1 and 2 of the expert survey, which together offer a comprehensive overview of both the frequency of specific types of incentives and the typical value of the incentive. Next, we homogenize all datasets according to the variables of interest and report country-level incentive policies in a cross-tabulation. Based on the full dataset, we perform a descriptive analysis of the geographical distribution of high-value financial and time incentives. As the web content analysis provided high-resolution data for the U.S. specifically, we also take a detailed view of incentive policies across U.S. states. We used R version 4.3.0 for performing analyses and producing the plots [23].

Results

Sample Characteristics

Overall, our sample comprised 63 countries from 6 continents. We collected data from 25 countries in wave 1 of the expert survey (all within Europe; 1 BCE per country). Wave 2 comprised responses from 20 BCEs from 12 different countries (from Asia, Australia, Europe, North America, and South America). Two BCEs had already been included in wave 1 and were excluded from further analysis; another 2 BCEs were from countries that were included in wave 1, whose responses were thus aggregated for the country-level analyses. Data from Zeller et al [20] contributed observations from another 12 BCEs and countries; data from the WHO [22] yielded data from an additional 15 countries. The web content analysis provided data for 5 countries (3 countries were not included in the other datasets) and for all 48 nongovernmental U.S. BCEs not affiliated with a hospital or laboratory across 50 U.S. states. The full dataset and analysis code can be found in our Open Science Framework repository (www.osf.io/39pc5/).

Expert Survey: Incentive Type and Value

Based on data from waves 1 and 2 of the expert survey, Figure 1 illustrates the frequency with which experts from 43 BCEs mentioned a specific type of incentive, and which value the incentive typically has. The most frequently reported incentive is time of work *dependent on the employer*, which is a strategy that 12 out of 43 BCEs employ. Typically, time off work is provided only for the duration of the donation (1 hour). Time off work *independent of employer* (ie, a national policy that grants all blood donors time off work independent of their employer) is also relatively common (8 of 43 BCEs). Time off work *independent of employer* usually grants donors a full day off work or even more. Vouchers or gift cards were reported by 6 BCEs and were typically of relatively low to medium value (between 10 and 15 Euro/USD). Moreover, several respondents mentioned using raffles of high-value items such as cars and electronics (> 20 Euro/USD; 4 of 43 BCEs). Cash and tax benefits are offered to blood donors relatively seldomly. Yet, if they are offered, they typically have a high value (> 15 Euro/USD). One BCE reported using COVID-19 antibody testing (> 20 Euro/USD). 17 of 43 BCEs do not make use of any high-value incentives.

Blood donor incentives around the globe

Table 1 provides an overview of whole blood donor incentives across the 63 countries in the full dataset (aggregated at the country-level from all data sources). Figure 2 depicts the geographical distribution of financial and time incentives. Around the globe, 28 of 63 countries offer high-value *financial* incentives to whole blood donors (Figure 2A and B, red). These are African countries such as Nigeria and the Democratic Republic of the Congo, Asian countries such as China and Indonesia, European countries such as Albania and Poland, and North American countries such as Panama and the U.S. Within Europe, Central and Eastern European countries (eg, the Czech Republic and Romania) are more likely to offer financial incentives than other parts of Europe (see Figure 2B, red). Financial incentives include cash incentives and tax benefits, but also less traditional incentives such as pension and healthcare supplements, vouchers (eg, for local stores and restaurants, entries to amusement parks), or raffles (eg, to win a car or trip; see Table 1). On the other hand, South American countries, as well as Australia and New Zealand, generally do not employ any high-value financial incentives (Figure 2A, green). In some countries, multiple BCEs operate within the same jurisdiction and employ different incentives (eg, Germany and the U.S., see section 3.4 for incentive policies in

Table 1
Incentive policies for whole blood donors across 63 countries.

Country	World region	Financial incentives	Value	Time incentives	Value	Source
Albania	Europe	Paid blood donations[a,b]	Unknown			WHO [22]
Armenia	Asia	Paid blood donations[a,b]	Unknown			WHO [22]
Australia	Oceania			Time off work[b]	Unknown	Zeller et al [20] ; personal correspondence
Austria	Europe					Survey (wave 1)
Belgium	Europe			Time off work[b]	< 1 d	Survey (wave 1)
Brazil	Americas					Survey (wave 2)
Bulgaria	Europe			Time off work	2 d	Survey (wave 1)
Cameroon	Africa	Paid blood donations[a,b]	Unknown			WHO [22]
Canada	Americas					Survey (wave 2)
China	Asia	Exemption from paying fees; others[b]	Unknown			Web content analysis
Congo (Dem. Rep.)	Africa	Paid blood donations[a,b]	Unknown			WHO [22]
Croatia	Europe			Time off work[b]	1 h	Survey (wave 1)
Cyprus	Europe			Time off work[b]	1 h	Survey (wave 1)
Czech Republic	Europe	Tax relief	17-18 Euro	Time off work[b]	2-3 h	Zeller et al [20]
Denmark	Europe					Survey (wave 1; wave 2)
Dominican Republic	Americas	Paid blood donations[a,b]	Unknown			WHO [22]
Estonia	Europe					Survey (wave 1)
Finland	Europe					Survey (wave 1)
France	Europe					Survey (wave 2)
Germany	Europe	Cash; voucher[b]	25 Euro; ≈ 10 Euro	Time off work[b]	2-3 h	Survey (wave 1; wave 2)
Greece	Europe			Time off work[b]	< 2 d	Survey (wave 1)
Guyana	Americas					Zeller et al [20]
Honduras	Americas	Paid blood donations[a,b]	Unknown			WHO [22]
Hungary	Europe					Survey (wave 1)
India	Asia	Cash (illegal)[b]	Unknown	Time off work[b]	1 d	Web content analysis
Indonesia	Asia	Paid blood donations[a,b]	Unknown			WHO [22]
Ireland	Europe					Survey (wave 1; wave 2)
Italy	Europe			Time off work	Unknown	Survey (wave 1)
Japan	Asia			Time off work[b]	1 h	Survey (wave 2)
Kazakhstan	Asia	Cash	Unknown			Zeller et al [20]
Kyrgyzstan	Asia	Paid blood donations[a,b]	Unknown			WHO [22]
Latvia	Europe			Time off work	1 d	Survey (wave 1)
Lithuania	Europe					Survey (wave 1)
Luxembourg	Europe			Time off work[b]	1 h	Survey (wave 1)
Malaysia	Asia	Provision of healthcare services[b]	Unknown			Zeller et al [20]; Web content analysis
Maldives	Asia	Paid blood donations[a,b]	Unknown			WHO [22]
Malta	Europe					Survey (wave 1)
Netherlands	Europe					Survey (wave 2)
New Zealand	Oceania					Survey (wave 2)
Nigeria	Africa	Paid blood donations[a,b]	Unknown			WHO [22]
Norway	Europe			Time off work[b]	Unknown	Survey (wave 2)
Panama	Americas	Paid blood donations[a,b]	Unknown			WHO [22]
Peru	Americas			Time off work[b]	Unknown	Zeller et al [20]
Philippines	Asia	Paid blood donations[a,b]	Unknown			WHO [22]

(*continued on next page*)

Table 1 (*continued*)

Country	World region	Financial incentives	Value	Time incentives	Value	Source
Poland	Europe	Tax relief	15 Euro	Time off work	1 d	Survey (wave 1)
Portugal	Europe	Tax relief	Unknown	Time off work	1 h	Survey (wave 1)
Romania	Europe	Voucher	13 Euro	Time off work	1 d	Survey (wave 1)
Russia	Europe	Cash; voucher or gift card	Unknown	Time off work	2 d	Zeller et al [20]
Saudi Arabia	Asia					Zeller et al [20]
Slovakia	Europe			Time off work	< 1 d	Survey (wave 1)
Slovenia	Europe			Time off work	1 d	Survey (wave 1)
South Africa	Africa	Voucher or gift card; gifts (raffles)[b]	Unknown			Web content analysis
Spain	Europe					Survey (wave 1)
Sri Lanka	Asia					Zeller et al [20]
Sweden	Europe			Time off work[b]	Unknown	Survey (wave 1)
Tajikistan	Asia	Paid blood donations[a,b]	Unknown			WHO [22]
Turkey	Asia					Zeller et al [20]
Uganda	Africa					Zeller et al [20]
Ukraine	Europe	Cash; pension supplement	Unknown			Zeller et al [20]
United Arab Emirates	Asia	Paid blood donations[a,b]	Unknown			WHO [22]
United Kingdom	Europe			Time off work[b]	< 1 d	Survey (wave 1; wave 2)
United States	Americas	Voucher or gift card; gifts; tickets/activities; raffles[b]	Up to $100 (for single donation); $10,000 or more (raffles)	Time off work[b]		Survey (wave 2); web content analysis
Viet Nam	Asia	Paid blood donations[a,b]	Unknown			WHO [22]

Country-level summaries are based on the full dataset, including waves 1 and 2 of the expert survey, Zeller et al [20], WHO [22] and the web content analysis. The year of data collection was 2020, 2022-2023, 2019, 2014-2018, and 2023 for survey wave 1, survey wave 2, Zeller et al [20], WHO [22] and the web content analysis, respectively. World regions are classified according to the United Nations geoscheme classification of world regions.

[a] Denotes paid blood donations within 2014-2018 according to WHO [22].

[b] Denotes that the incentive is offered only by some BCEs or only to some donors.

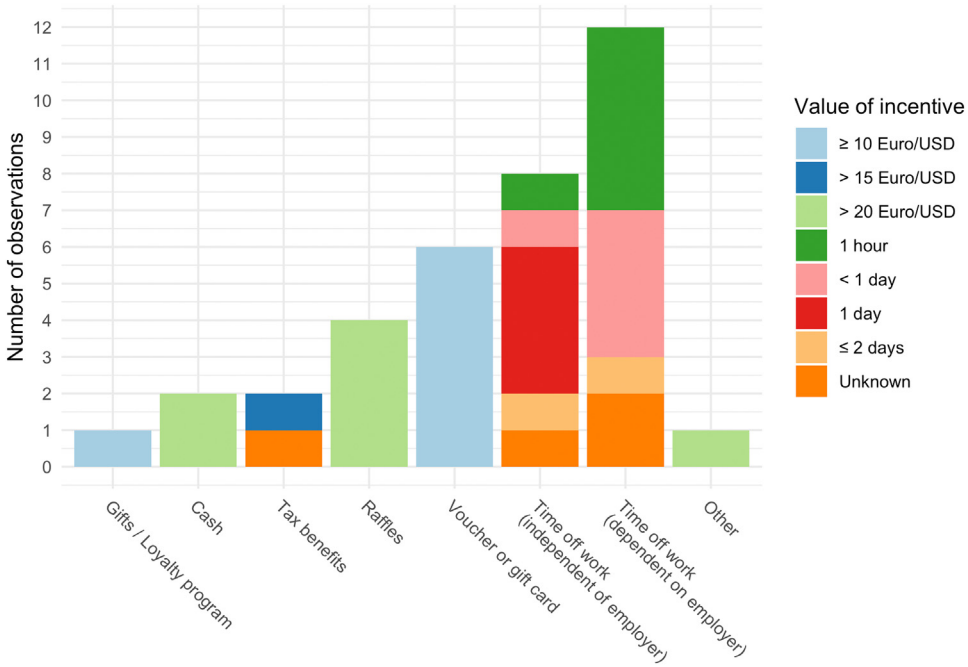

Fig. 1. Frequency of reporting a specific incentive type across waves 1 and 2 of the expert survey (N = 43 BCEs). Duplicate responses from the same BCE are excluded. The mentioning of multiple incentive types per BCE is possible.

the U.S.). The data did not always reveal whether incentive policies were universal (see Table 1). Countries are likely to differ with respect to the proportion of blood donors who receive a given incentive (eg, in some of the countries with paid donations according to the WHO, only 10% of blood donors are volunteer donors but this may differ across countries). Nonetheless, Figure 2A and B illustrate that high-value financial incentives exist in many countries.

Out of 46 countries for which data on *time* incentives was available, 23 countries offered paid time off work to whole blood donors. It is a common practice among BCEs in many countries to offer blood donors time off work conditional on the donor's employer allowing it (n = 14; Figure 2C, light blue). For example, government employees or donors whose employer takes part in a mobile blood drive may receive time off work to donate blood. Typically, time off work *dependent on the donor's employer* lasts only for the duration of the donation (see Table 1). This is the case in Peru, in some Asian countries such as Japan and India, as well as in most regions of the U.S. Zooming in on Europe, paid time off work dependent on the employer is especially prevalent in Northern, Central and Eastern European countries (Figure 2D, light blue). Moreover, some countries (n = 9) have a national policy granting time off work to blood donors *independent of the employer*. Such policies are only found in Europe and Russia (Figure 2C and D, dark blue) and they are especially common in Southern Europe (eg, Italy, Slovenia, and Portugal) and Eastern Europe (eg, Slovakia and Bulgaria). In most of these European countries (including Latvia, Poland, Slovenia, Romania, and Bulgaria), donors receive a whole day or more off work (see Table 1).

Blood Donor Incentives in the U.S

An overview of blood donor incentives offered by 48 BCEs across 50 U.S. states is provided in Supplementary Table S1. Several U.S. BCEs operate across multiple U.S. states and many states have more than 1 BCE (see Supplementary Figure S1A). In particular, 3 organizations (American Red Cross (ARC) Blood Services, Vitalant, and New York Blood Center Enterprises, NYBCE) collect blood across 12 or more states each, covering almost all U.S. states (see Supplementary Figure S1B). Therefore, we present results both at the organizational and the geographical level (ie, aggregated at the U.S. state level).

Most organizations offer high-value incentives for whole blood donation, which may be provided after an individual donation, by collecting points from multiple donations (ie, loyalty programs), or probabilistically (ie, raffles). The most commonly used incentive employed after an individual donation is gift cards (n = 16 organizations). Other types of incentives commonly provided after an individual donation are tickets (eg, sports event tickets; n = 8 organizations) and educational scholarships (eg, enabling student blood donors to apply for scholarships; n = 5 organizations). Sixteen organizations have loyalty programs for whole blood donors, in which donors can choose incentives by redeeming points they have collected across multiple donations. Sometimes the donor stores offer the option to donate money to charity. Raffles are the most commonly employed incentive overall (n = 28 organizations), in which donors take part in a lottery to win a large prize. Incentives include high-value gift cards, gifts (eg, television or car), tickets (eg, sports events), and activities (eg, luxury vacation). Four organizations do not mention any high-value incentives for whole blood donors.

Figure 3 illustrates the geographical distribution of different types of incentives, aggregated at the U.S. state level. Figure 3A shows the types of incentives offered after an individual donation. While gift cards are employed in almost all states (n = 48), gifts are somewhat more commonly employed alongside gift cards in the Western U.S. states. In the central U.S. states, a mixed incentives approach is frequently employed, which combines gift cards, gifts, tickets, and other types of incentives. Only 1 state (Hawaii) does not offer any high-value incentives for an individual blood donation. Panel B depicts the types of raffle incentives used across states. All 50 states offer raffles to blood donors, which mostly employ a mix of different types of high-value prizes (including gift cards, gifts, tickets, and activities). Loyalty programs are in place in 34 U.S. states (Figure 3C), and are especially common in Central and Western U.S. states. Finally, Supplementary Figure S2 illustrates the value of incentives across U.S. states. Overall, incentive

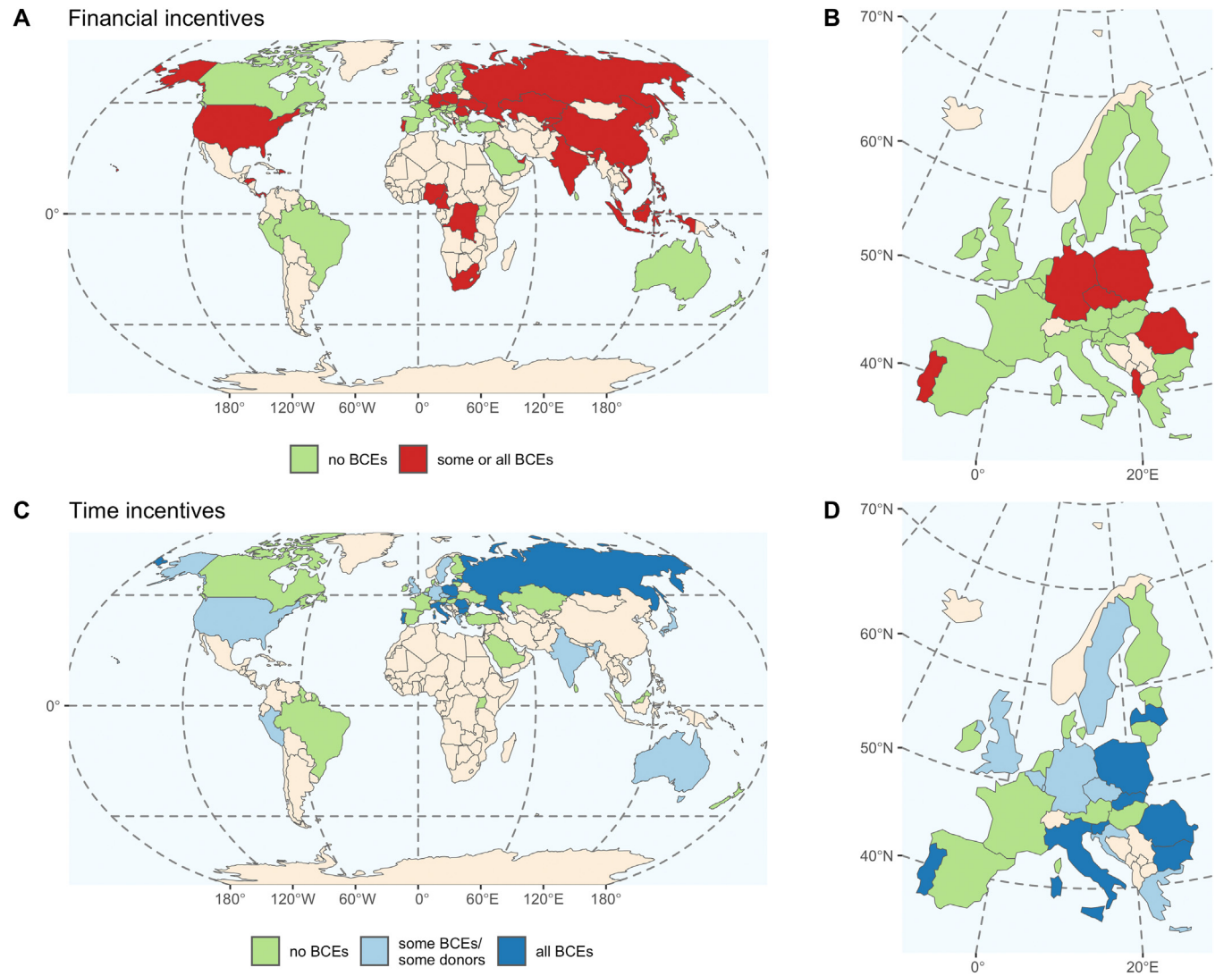

Fig. 2. High-value blood donor incentives around the globe. (A and B) Financial incentives (eg, cash, tax benefits) and (C and D) time off work. (B) and (D) depict a detailed view of Europe, where we have high coverage of incentive policies. Country-level summaries are based on the full dataset.

value is similar in all states, but varies according to the type of incentive. Incentives employed after an individual donation typically have a value between $10 and $15 USD, but can be up to $100 USD, depending on organization and location (Supplementary Figure S2A and Supplementary Table S1). Raffle incentives can have a very high value, often more than USD 1000 (Supplementary Figure S2B and Supplementary Table S1).

Discussion

In this paper, we provide a comprehensive description of whole blood donor incentives across 63 countries and 50 U.S. states. In a first step, 2 expert surveys revealed the incentive policies, including estimates of incentive value, across 43 BCEs. The most frequently used incentive reported by respondents was time off work. While these time incentives are often only available to donors whose employer allows it and typically last for the duration of the donation (eg, during a mobile blood drive hosted by the employer), some countries have a national policy that grants blood donors paid time off work independent of their employer (usually a full day). Moreover, several BCEs reported offering donors vouchers or gift cards of medium value (10-15 Euro/USD). Some BCEs mentioned cash and tax benefits, as well as other high-value incentives, such as COVID-19 antibody testing and raffles of high-value items (> 15 Euro/USD). Interestingly, the expert surveys revealed that high-value incentives cut across different categories of incentives. For example, there are both high-value raffles (which are categorized as “deal promotions” according to Chell et al. [24]) and high-value gifts (often part of a loyalty program, which constitutes a different category of incentive in Chell et al. [24]), as well as time off work and the more traditional cash incentive. In a second step, we integrated the survey data with 2 existing datasets and data obtained through a web content analysis to get a broader overview of incentive policies across 63 countries. We found that approximately half of the countries examined employ high-value financial incentives, which include cash and tax benefits, but also less conventional incentives such as pension and healthcare supplements or raffles. Time off work is also commonly offered to blood donors, and varies across BCEs in duration and whether it is granted to all donors or only to those whose employer allows it. There is a geographical clustering of incentives, such that neighboring countries are more likely to employ similar incentives. For example, national policies granting donors a day off work exist only in Europe and in Russia. Zooming in on the U.S., in which a multitude of BCEs operate, we find that many BCEs employ high-value incentives. The large multi-state BCEs offer the same high-value items as raffles in

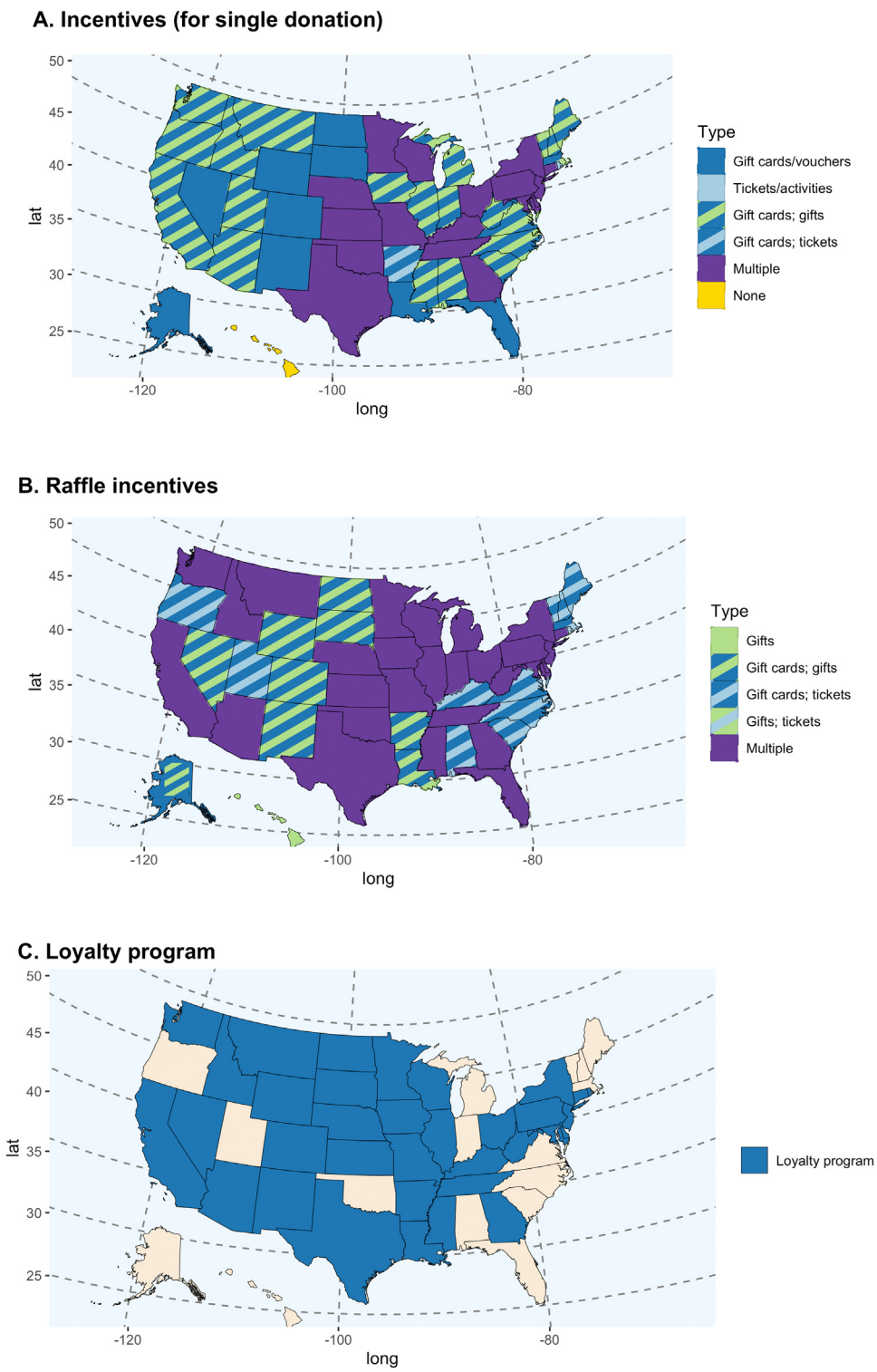

Fig. 3. High-value whole blood donor incentives in the U.S. (A) Type of incentives offered after a single donation. (B) Type of incentives offered in raffles. (C) Loyalty programs.

all states (greater than USD 1000), often have point-based loyalty clubs, and frequently offer smaller items for individual donations (eg, $10-50 Visa gift cards).

Through our multi-method approach we aimed to obtain data on incentive policies from as many countries as possible. The final sample includes many Western countries, but has fewer observations from the Global South, especially from African countries. Countries in the Global South are more likely to have inadequate blood availability [25,26], and are less likely to be part of global alliances of BCEs, such as the BEST collaborative. As Custer et al [25] have emphasized, systematic collection of data in Low and Middle Income Countries (LMIC) is crucial for designing effective evidence-based interventions. Zanin et al. [27] have furthermore highlighted the role of cultural attitudes and beliefs in blood dona-

tion behavior in sub-Saharan Africa (SSA), but our understanding of the motivators and barriers to donating in SSA is still limited. We encourage future studies to collect more data from countries in the Global South and increase opportunities to share information and expertise.

Since incentive policies are often not institutionalized, our analysis strongly relies on the information provided by experts, as well as publicly available information. This has the limitation that some incentive data may be incomplete, for example because informal incentive policies (eg, time off work dependent on the employer) may be forgotten or not considered. Moreover, detailed data on the value of incentives was only available from the 2 waves of the expert survey and (partially) for the U.S. web content analysis, but not for the other datasets, and is particularly sparse in countries across the Global South. Moreover, the web content analysis only informs us about the existence of advertised incentives at the time of the survey and cannot reveal past incentives like COVID-19 antibody testing, which was no longer offered by the large BCEs. We do not know if there were any informal incentives offered that were advertised locally and not on the webpages or news releases. We also lack information about the universality of the policy. The global web content analysis was further complicated by language barriers and the use of different communication channels across countries (eg, in some cases there was no professional blood collector website), which likely contributed to the small amount of data that was additionally uncovered. Hence, the results of the web content analysis may not be complete and should be interpreted with caution. Nonetheless, it presents the best solution to compiling a more comprehensive dataset, since the 2 expert surveys and other existing datasets yielded only a limited picture of global incentive policies. Lastly, this study focused on high-value (extrinsic) incentives for whole blood donors. We encourage future research to investigate incentives for other types of blood donation (eg, plasma) and other types of incentives (eg, donor recognition items such as medals and other widely used low-value gifts such as blood donor-branded T-shirts).

More generally, the objective of this paper was to present regional prevalence of blood donor incentives, the origins and consequences of which should be examined further in future studies. Our analysis of blood donor incentives is intentionally at the descriptive level because it has the purpose to inform BCEs about the diversity of incentive policies employed by different blood collectors. While it is interesting to examine the relationship between the provision of certain incentives and country-level blood donation rates and other characteristics, these correlations cannot reveal causal patterns. Indeed, the causal relationship between incentives and blood donation rates at the country level is likely complex. Incentives may be able to effectively produce high levels of blood donation, but countries with low blood donation rates may also be more likely to use incentives to boost blood donations. A recent meta-analysis by Bruers [4] found that financial incentives increase the number of blood units collected, but that there exists large heterogeneity across studies. Similarly, a review by Chell et al [2] found that there is mixed empirical evidence for the effectiveness of incentives for blood donation. Graf et al. [13] argue that these inconsistent effects of incentives may be, at least in part, due to cultural differences in social norms (ie, attitudes towards the specific incentive). Incentives may be more effective if they align with existing social norms [13]. To determine the causal effects of different types of incentives on blood donation behavior, multicountry experimental studies are necessary, which are ideally informed by the social norms in the local population. In the more immediate term, BCEs could conduct surveys to gather information on the incentives that people consider acceptable and desirable. Moreover, BCEs could pilot different types of incentives to test which incentives are most effective for their specific donor population.

Finally, the widespread global use of high-value donor incentives uncovered in this study is in stark contrast to the WHO guidelines for blood donor incentivization. The WHO both champions and recommends that blood is collected on a voluntary and nonremunerated basis [28]. Receiving cash or in-kind gifts, including time off work, is not considered a voluntary nonremunerated donation (VNRD) [28]. The high degree of incentivization observed globally raises the question whether the WHO's appeal for strictly voluntary donors should be reevaluated. Our dataset includes particularly good coverage of incentive policies in the Global North, where incentives are embedded in a norm of voluntary donation. Even in these high-income countries, high-value donor incentives are common (albeit rarely in the form of cash, but rather as vouchers, time off work, etc.). However, the WHO guidelines may be even more consequential in LMICs, which are far more likely to experience large shortfalls in blood donations [25]. By prescribing VNRD universally, the WHO impedes a potentially effective strategy for donor recruitment and retention. Importantly, people from different cultural backgrounds also perceive different types of incentives differently [13]. Hence, a specific type of incentive may be perceived positively in one country but not in another, and in turn this incentive may be effective in increasing blood donations only in the former country. The WHO policy, however, does not take this heterogeneity into account. In addition, the framing of the incentive likely plays an important role for effectiveness. For example, incentives framed as a gift-exchange (ie, "you help us, we thank you") may be more effective than those framed as a financial-transaction (ie, "we pay you for your blood" [29]). Lastly, the notion of double-altruism (ie, offering blood donors the option to gain cash to give to a charity) may also be a potential strategy that deserves further consideration [10,30]. Given the widespread use of high-value incentives worldwide, it may be useful for the WHO to reconsider its stance on donor incentives. While the WHO guidelines in their current state can serve as an aspiration, they would benefit from taking into account the de facto practices of BCEs, as well as the social, economic, and political context of each country.

The overview of blood donor incentives presented in this paper can serve as a resource for informing BCEs as to what kind of incentives are used around the globe. Our analysis elucidated several creative approaches to incentivization taken by blood collectors, for example by collaborating with local sponsors to offer donors restaurant vouchers, by providing health insurance supplements, and funding wellness testing. It may be useful for BCEs to acknowledge that donors' motivations to give blood are variable and complex, and may vary within and across (cultural) groups. The traditional dichotomy between "paid donors" and "altruistic donors" fails to acknowledge this diversity in donor motivations [3,31]. Instead, it is important to consider different types of incentivization and how donors perceive these incentives. The goal of ensuring a sufficient supply of blood is shared among all BCEs and policymakers, but the strategies towards achieving this goal may vary according to the local contexts in which blood collectors operate.

Declaration of competing interest

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and incentives for blood donation in the EU, which has included a collation of the types of incentives and rewards offered by the 27 EU member states for blood donation. The data in this paper pertaining to the EU member states was collected independently by EMM and CG and no data gathered as part of the EU review has been used in this paper.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.tmrv.2023.150809.

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