



# **A proposal for a research collaboration on the Odisha blood center system**

Jonathan Old

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## Introducing myself



- ▶ B.A. in International Relations from **TU Dresden**, Germany. M.Sc. in Economics from **London School of Economics**, UK. Currently Ph.D. student in Economics at **UC Berkeley**, California, US.
  - ▶ Peer-reviewed publications on how political cycles affect forest fires in Indonesia, how democratic change affects repression in the neighborhood of a country, and on measuring improved aging in England.
  - ▶ Read more: [jonathanold.github.io](https://jonathanold.github.io)

Currently in India for a research project studying blood donor motivation

## Overview of research projects

- ▶ **Funding:** Pilot grant by the Center For Effective Global Action (Travel grant and initial survey)
  - ▶ **Future funding:** Possible through various organizations (IGC, CEGA, Weiss Fund, J-PAL, etc.)
  - ▶ **Role of funding:** Can cover cost for material, data collection, cost to run surveys, campaigns (e.g. non-monetary incentives for blood donors, incentives for blood center staff), etc.
  - ▶ **Ethics:** PI completed Human Subjects training. All surveys including human subjects, as well as all interventions that potentially affect individual behavior or well-being will go through **IRB approval** at UC Berkeley and at Indian Institution. All interventions will comply with local laws and regulations.



CEGA

Center for Effective Global Action



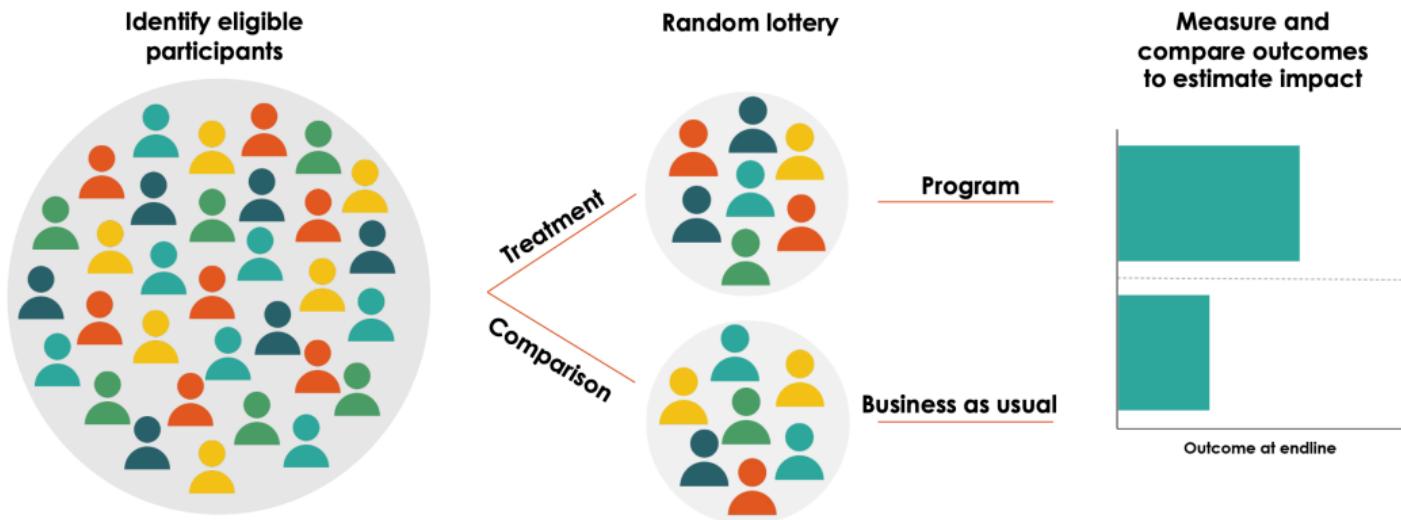
Berkeley  
UNIVERSITY OF CALIFORNIA

# Research methodology in development economics

- ▶ Economists support the work of policymakers by helping to **design and evaluate public policies** using randomized controlled trials (**RCTs**) and other methods
- ▶ Pioneered by Abhijeet Banerjee and Esther Duflo (2019 Nobel Prize)
- ▶ Examples of influential development economics RCTs in India:
  - Karthik Muralidharan, Paul Niehaus and Sandeep Sukhtankar: Aadhaar card roll-out
  - Ester Duflo, Michael Greenstone, Rohini Pande, and Nicholas Ryan: Pollution audits

**The success of such studies depends on productive research partnerships!**

# Method overview: Randomized Controlled Trials



By randomizing units into a treatment and a control group, we make sure that we can attribute differences in outcomes to the program we want to evaluate, and not to pre-existing differences.

# Why RCTs?

RCTs not only help us evaluate the effect of a policy, but can also help:

- ▶ Finding what is the most effective policy among a group of alternatives
- ▶ Illuminating the mechanisms how a policy works
- ▶ Studying how the policy interacts with pre-existing conditions
- ▶ Judging whether a policy will be successful if it is scaled up

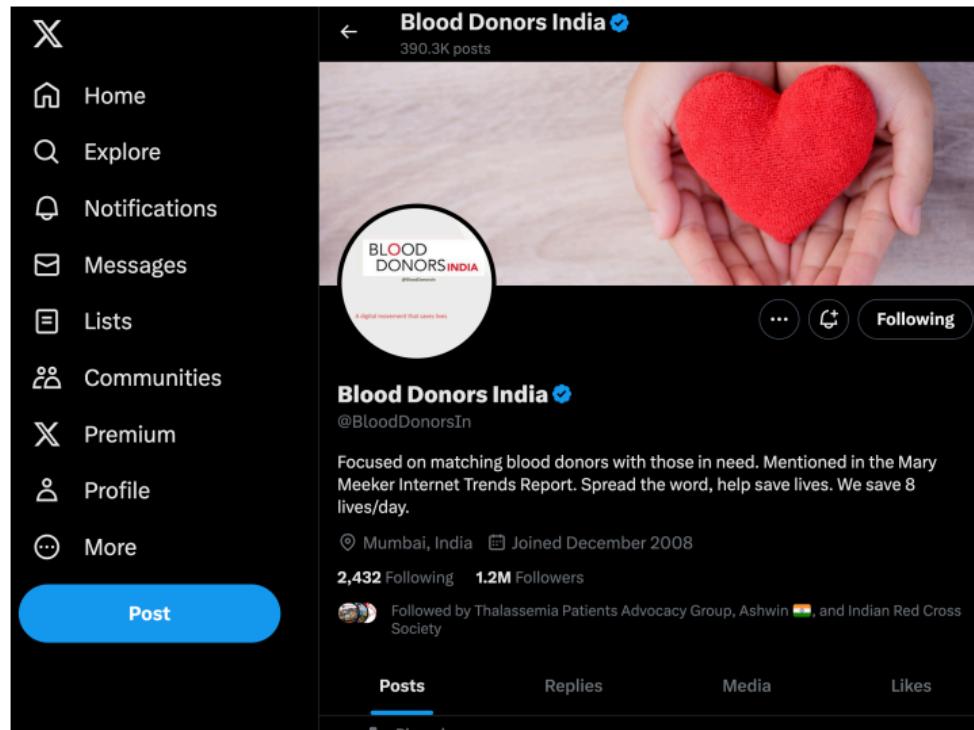
# Blood donations – important development topic

- ▶ Steady blood supply crucial for surgery, pregnancies, cancer treatment, etc.
- ▶ 79 (62) countries collect more than 90% (99%) of their blood supply from voluntary unpaid blood donations (38 high-income countries, 33 middle-income countries and eight low-income countries).
- ▶ The average blood donation rate is more than **six times greater** in high-income countries than in low-income countries. [Map](#)
- ▶ High-income countries have much higher rates of **voluntary** blood donation than low-income countries. [Map](#)
- ▶ Leads to acute blood supply shortage. If procedures are not scheduled because of blood availability, the shortage may be even greater than estimated
- ▶ Research question: **Which interventions can increase blood donation rates?**

## 22 semi-structured interviews with Indian blood centers

- ▶ Carried out September-November 2023. Large geographic coverage (MH, DL, UP, PB, OD, KN, TN). Several private, NGO, hospital-associated and government blood banks
- ▶ Difficult **transition from replacement donation to voluntary donation** – especially in rural areas
- ▶ **Seasonality** of blood donations
  - Better availability after World Blood Donor Day (June 14), Indian National Voluntary Blood Donation Day (October 1), big religious festivals
  - Worse availability (and higher demand) in the summer
- ▶ Significant **disparities**: Geographic (Rural-urban , North-South). Blood centers communicate, but often difficult to procure rarer blood groups in rural areas. Differences between private and public blood banks.
- ▶ Successful blood banks have a **pool of regular donors**, but many blood banks have difficulties finding new regular donors
- ▶ Misinformation and fear of blood donations are key challenges for many blood banks

# Analyzing twitter requests for blood donations



**Blood Donors India**  390.3K posts

**BLOOD DONORS INDIA**  
@BloodDonorsIn

A digital movement that saves lives

**Blood Donors India**  @BloodDonorsIn

Focused on matching blood donors with those in need. Mentioned in the Mary Meeker Internet Trends Report. Spread the word, help save lives. We save 8 lives/day.

📍 Mumbai, India 📅 Joined December 2008

2,432 Following 1.2M Followers

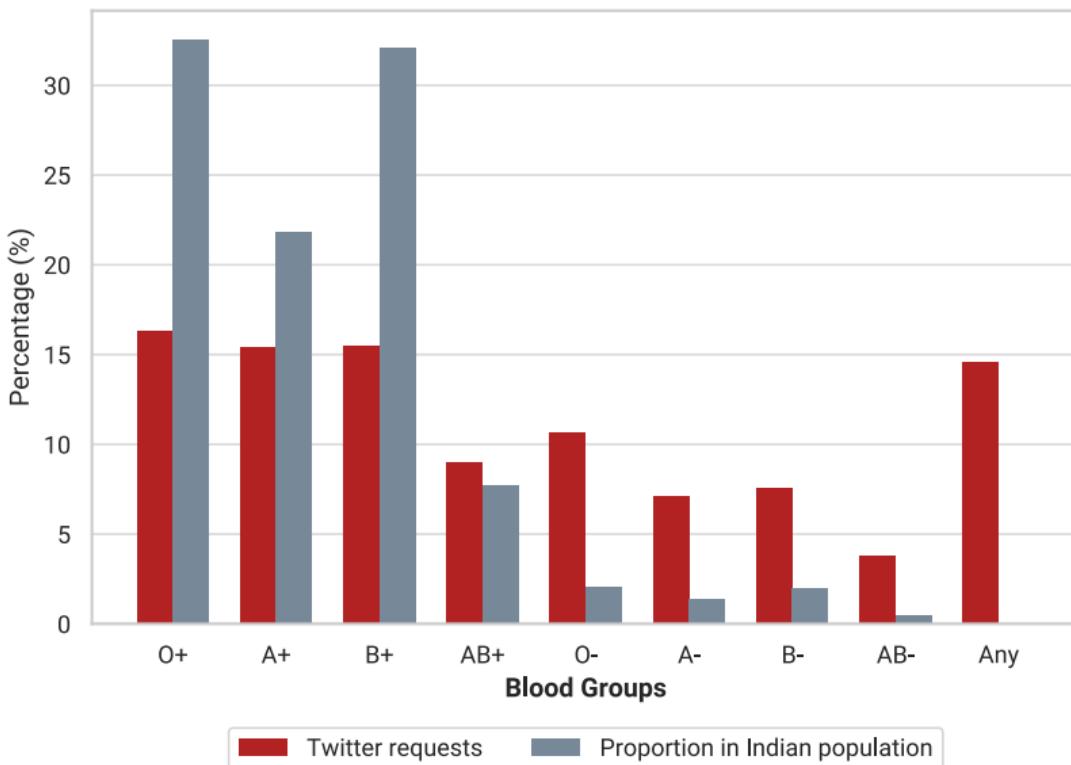
Followed by Thalassemia Patients Advocacy Group, Ashwin , and Indian Red Cross Society

**Posts** **Replies** **Media** **Likes**

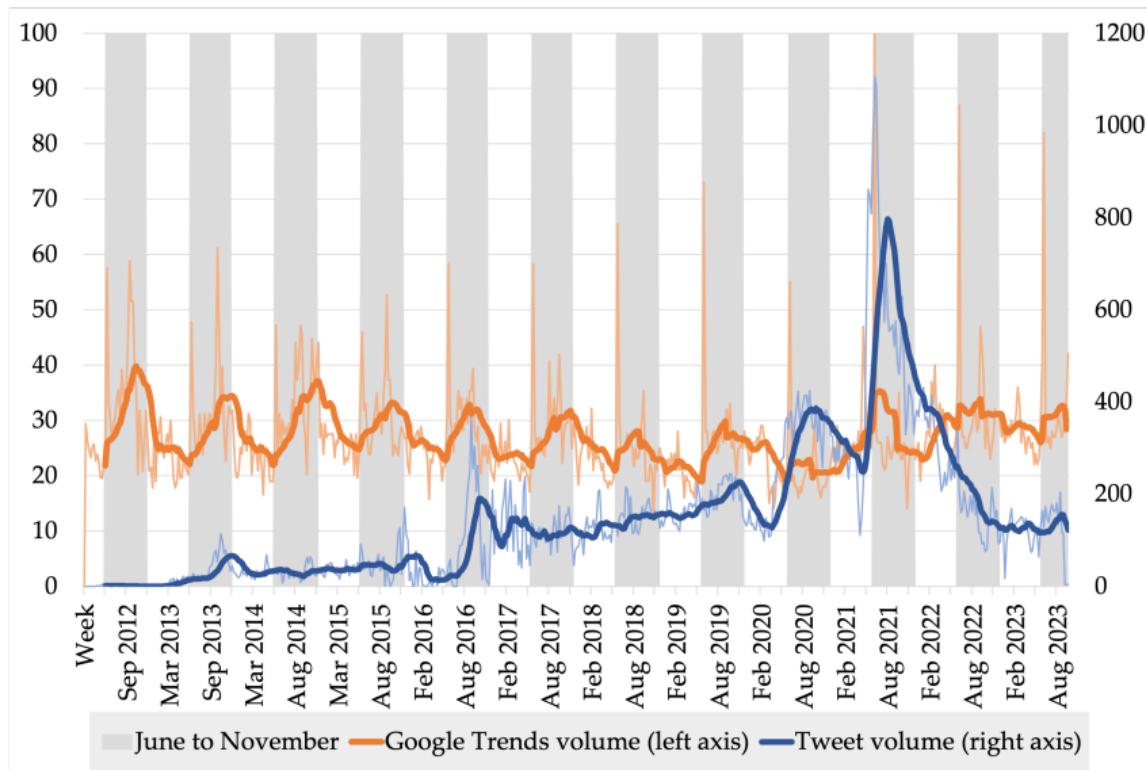
**Live on X**

**You might like**

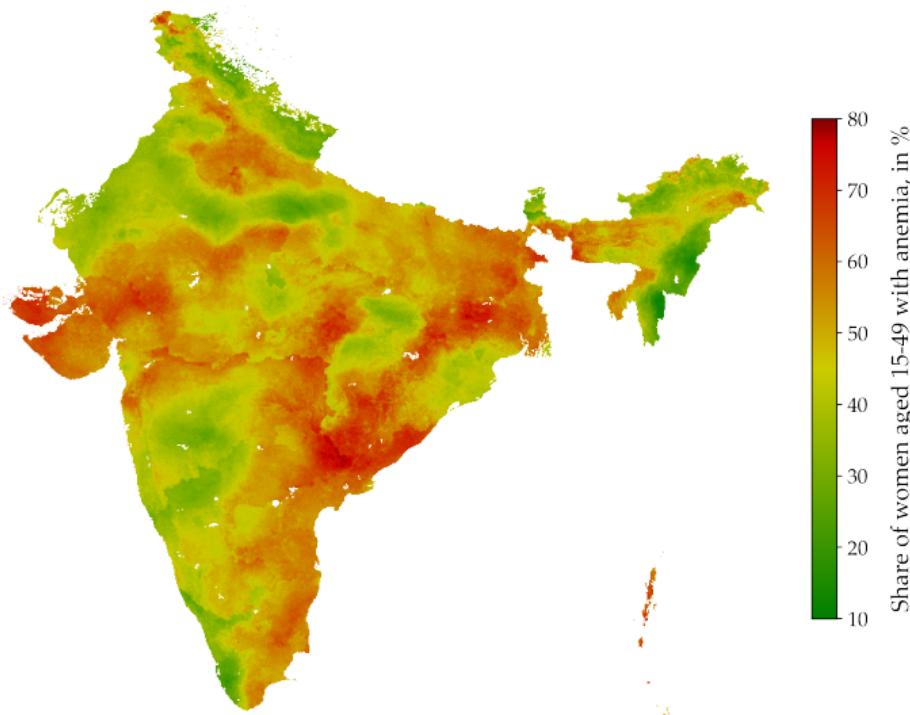
# Twitter requests for blood donations since 2018



# Tweets and Google Trends for search query "Blood Donations"

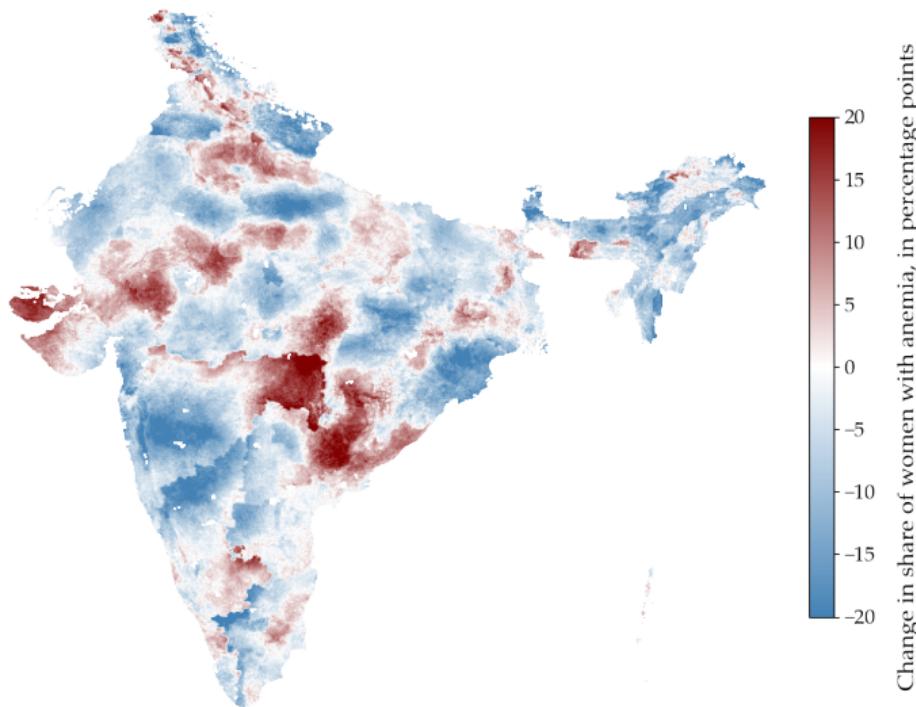


# Distribution of anemia among women in India, 2019



Data Source: IHME Global Anemia Prevalence Geospatial Estimates 2000-2019. Own visualization. Map does not reflect political boundaries of India.

# Change in anemia, 2000-2019



Data Source: IHME Global Anemia Prevalence Geospatial Estimates 2000-2019. Own visualization. Map does not reflect political boundaries of India.

# State of the literature: Incentivizing blood donations

- ▶ **Monetary incentives** (in the form of vouchers, lottery tickets): Increased blood donation rates across a variety of contexts (US, Switzerland, Argentina), but reduced donations in certain subgroups (women/long-time donors) in Sweden
- ▶ **Social incentives** (News paper rewards, medals) had only small effects, but not rigorously tested
- ▶ **Other individual incentives** (free health checks, paid day off) were successful
- ▶ **Information provision** (about blood shortage) was ineffective in Argentina (high levels of replacement donation, but less misinformation)

## Search systematic evidence on effects of programs to increase blood donations

- ▶ in the context of lower-middle income countries
- ▶ in the context of a country with high prevalence of misinformation or lack of information around blood donations
- ▶ in the context of a country transitioning from replacement-based to fully voluntary non-renumerated system of blood donations (exception: Argentina)

# Study proposal: Social signalling and motivations

- ▶ Understanding the motivations and incentives that potential blood donors face is important for their recruitment
- ▶ Previous studies have focused on distinguishing whether providing monetary incentives reduce turnout (motivation) or increase unusable donations.
- ▶ Results of these studies: Earlier survey-based studies hypothesized crowd-out of established donors. More recent and rigorous studies empirically disproved this, but they suffer from conceptual problems
- ▶ Donating blood certainly has altruistic (want to do good), reputational/social (want to look good) and individual-incentive (responsive to incentives and perceived cost of donation) components
- ▶ Our study could look at these components and try to see which are most important

# Social signalling: Anne Karing (2022)

- ▶ **Context:** Childhood vaccinations in Sierra Leone
- ▶ **Intervention:** Parents receive a yellow bracelet when child completes their first vaccination. They receive a green bracelet when child completes their fourth (control) or fifth (treatment) vaccination.
- ▶ **Results:** Getting the green bracelet after completion of vaccination cycle is an effective signal: Parents increase vaccination rates by 9 percentage points
- ▶ **Relevance in this context:** When donation blood (an altruistic action), individuals signal to others that they care about their community. In this context, we can experimentally vary how blood donations may be perceived in a community. This allows us to estimate how important reputation is when people decide whether to donate blood.

# Study proposal: Social signalling and motivations

**Donate Blood!**

**Blood Donation Camp**  
**December 15, 2023, 1-4pm**  
AG Square,  
Bhubaneswar

*Did you know?*

One blood donation can help  
save up to three lives in Odisha!

**Donate blood – save lifes!**

**Donate Blood!**

**Blood Donation Camp**  
**December 15, 2023, 1-4pm**  
AG Square,  
Bhubaneswar

*Did you know?*

Your blood donation can help  
save the life of someone from  
your family and community!

**Donate blood – protect  
your close ones!**

**Donate Blood!**

**Blood Donation Camp**  
**December 15, 2023, 1-4pm**  
AG Square,  
Bhubaneswar

*Did you know?*

When you donate blood, you are  
eligible for an additional leave  
and get blood in case of need  
without replacement!

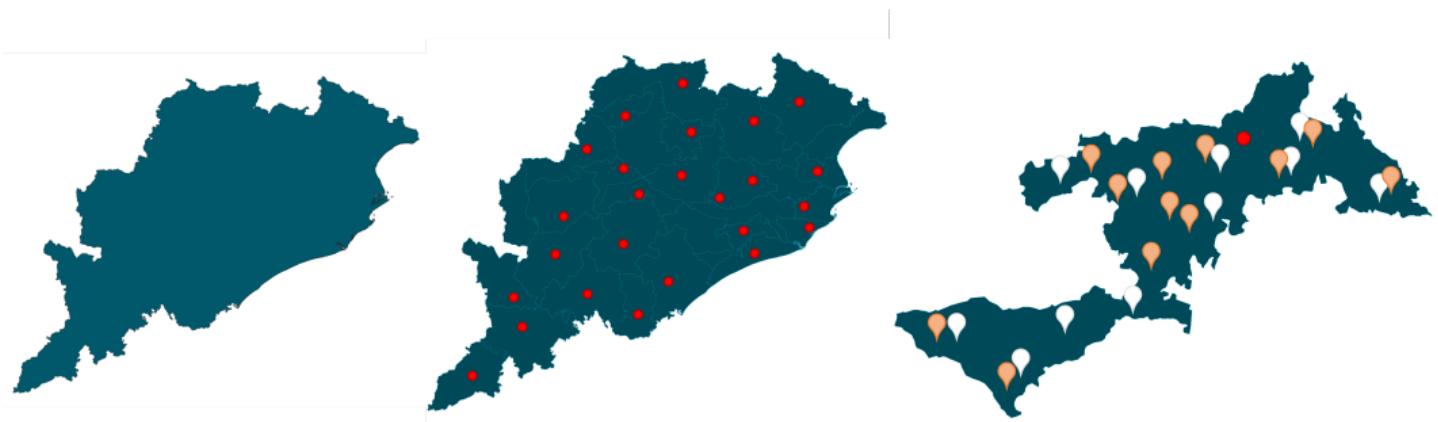
**Donate blood – and  
protect yourself!**

# Details of potential study

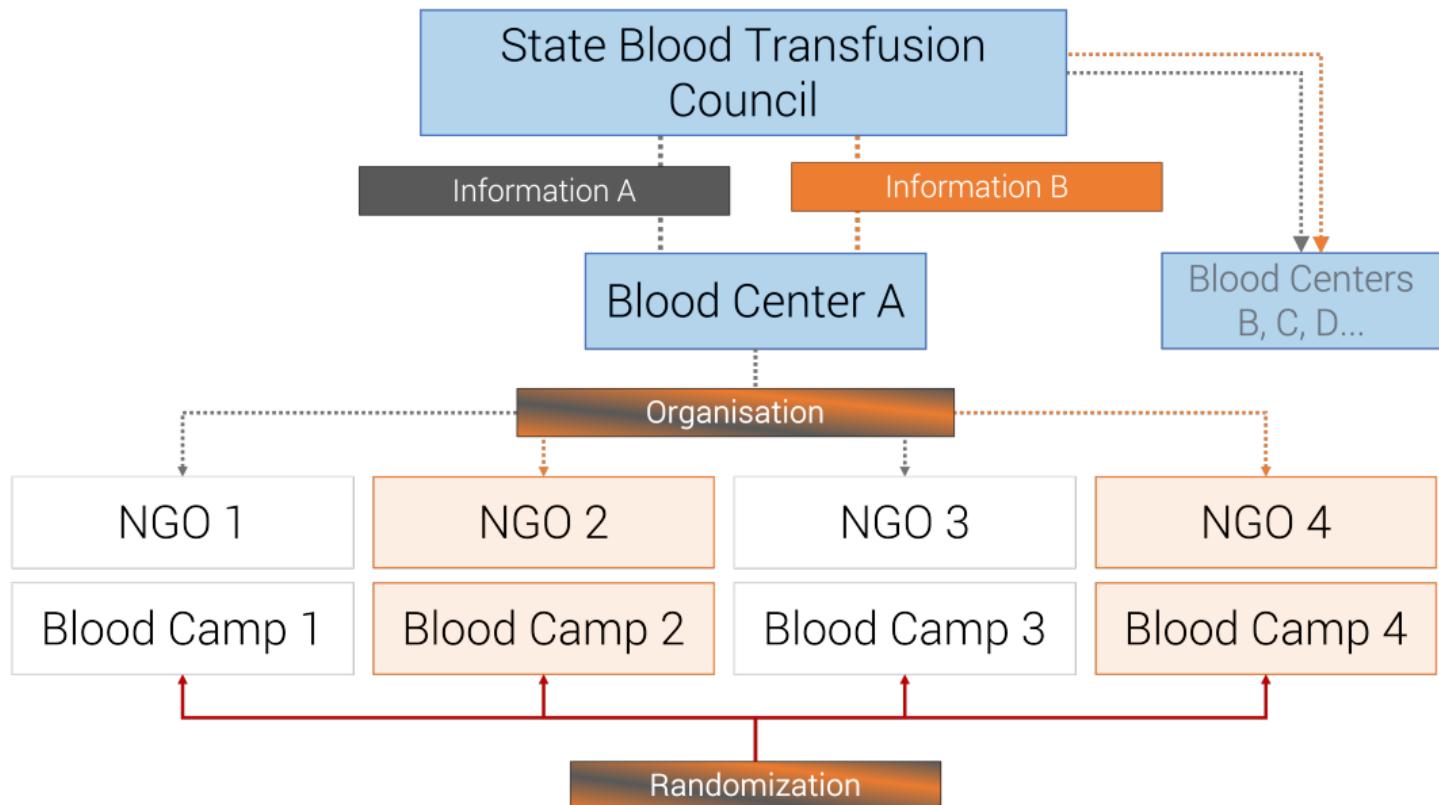
- ▶ **Implementation:** Information has to be given at the right time. Posters could be provided to the individuals/NGOs organizing the blood donation camps.
- ▶ **Assignment into treatment arms:** Randomization at the level of the blood camp ideal: community-level intervention with sufficient statistical power
- ▶ **Required data:** Baseline blood center and community survey. Data on blood donations: Ideally at **individual, but anonymized** level (to also track repeat donations). Data on blood donors: Tablet-based survey before blood donation camp. Besides socio-economic data, elicit data on altruistic motivation
- ▶ **Research support:** Additional surveys could be run by PI together with data collection officers (e.g., through J-PAL)

**The more detailed the collected data, the better we can study effects of the intervention and gain insights on blood donor motivation. A big part of my work would be to support logistics on this!**

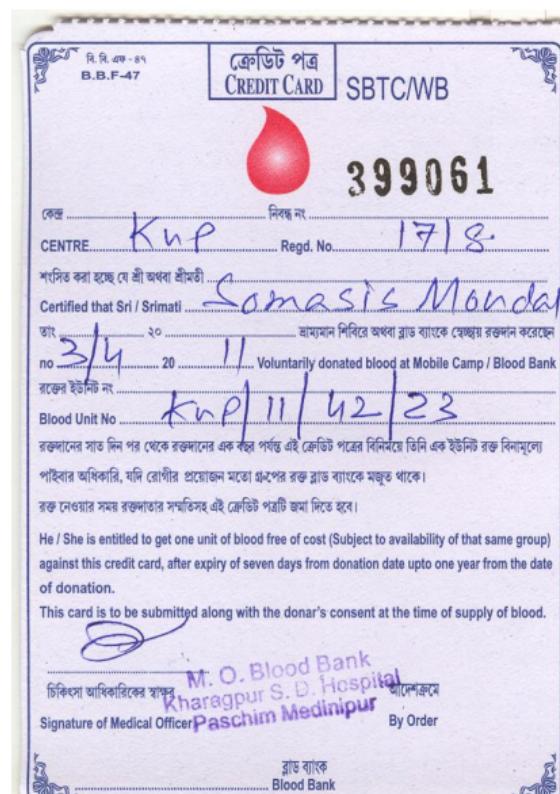
# Sketch of study design I



## Sketch of study design II



# Example of "voucher"/insurance contract



## Additional idea: Insurance contract/blood credit

1-year free-of-cost blood for donors is the strongest incentive that government blood centers provide to donors. Odisha is unique because many other places do not systematically use this policy. It would be very interesting to study the effects of providing information about this. If feasible, we could gain a lot of insights!

- ▶ **More than half** of non-donors say they would **only** donate blood if it directly benefitted their relatives/friends (Dubey et al. 2014).
- ▶ The blood donation system in India misses an insurance system – the credit is like an insurance!
- ▶ Potential policies to study:
  - Does advertising this information attract more donors?
  - What are the effects of increasing duration (e.g., to two years) and coverage (e.g., to family members)
  - High awareness of need of blood transfusion can spur this initiative
  - Transferrable coupons for donation camp organizers are also very interesting!

# Other ideas

- ▶ Anaemia and low hemoglobin as major cause of blood deferral. Only 6% of donations by women (lowest share in the world).  
**Bundle blood camps with hemoglobin tests and other health services especially for women.**
- ▶ Increase access to blood donation centers: **Bring blood donation camps close to people – apartment welfare associations, large corporations, college campuses**
- ▶ Address seasonality: **target blood camps in high-demand-low-supply part of the year**

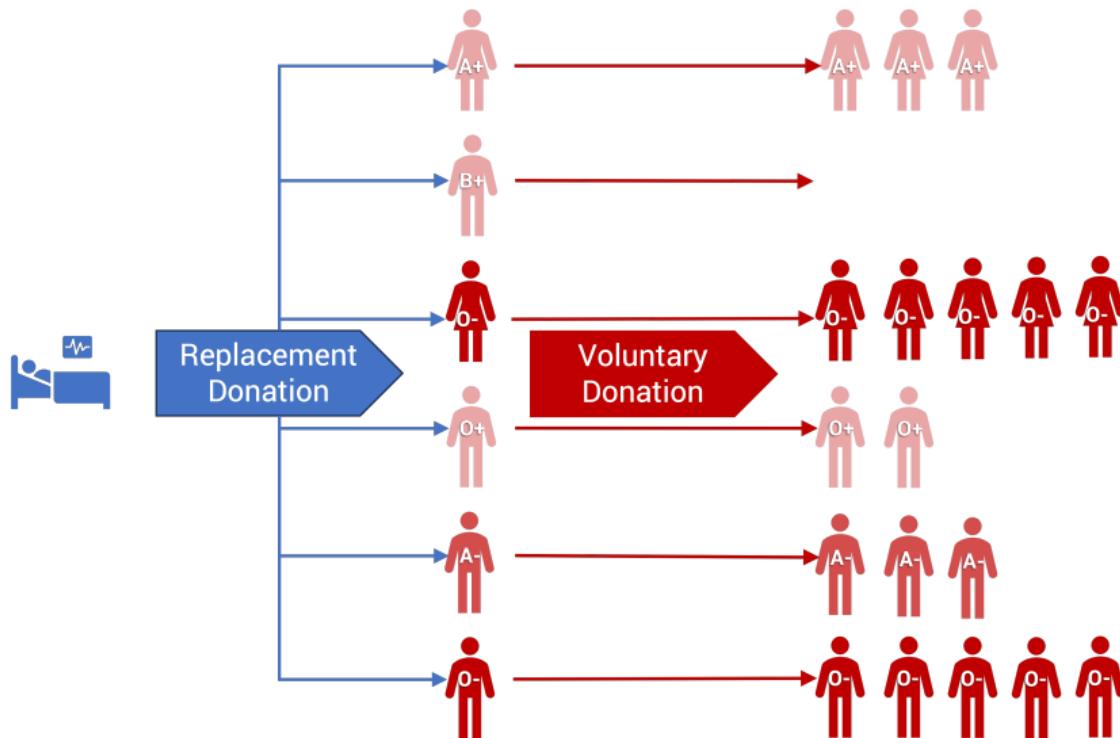
# Why micro-data is important

- ▶ Dashboards typically publish aggregated data: How many people of blood type A+ donated blood in Cuttack district in May 2023?
- ▶ Many questions about blood donor motivation **can not be answered** with this type of data
- ▶ But: blood centers and eBloodBank Odisha collect what we call **micro-data**: This is the raw data at the origin – at the level of a single blood donation
- ▶ With this micro-data, we can answer deeper questions, e.g:
  - When a given person donates once as a replacement donor, how likely are they to come back as a voluntary donor (this is different than: What is the share of voluntary donors!)
  - Are individuals who had a family member in need of blood more likely to become blood donors?
  - Etc.
- ▶ **Important:** We can always aggregate micro-data to macro-data, but the other way is impossible

# Ethical usage of micro-data

- ▶ When using micro-data, protection of personally identifiable information is important: One should not publish (or use) phone numbers, addresses, and names, as these can potentially be misused
- ▶ For my research, I would like to use **micro-data**, but **without personally identifiable information**
- ▶ For this, blood donor IDs, patient IDs, and blood bag IDs can be used: These numbers only make sense within the database system and cannot be misused
- ▶ A challenge we could figure out together: Sometimes, the same person does not have the same blood donor ID. But they could be matched using their name and phone number. I could supply code that you could run to create IDs so that I do not need to see the names of individuals

eBloodBank Odisha



# Matching data: eBloodBank Odisha

Blood Bag ID	Donor ID	Blood Group	Date of donation	Voluntary or Replacement
A1B1C1	12345	O-	01.01.2023	Replace
D2E2F2	45363	A+	03.05.2023	Voluntary
G3H3I3	09877	B+	02.04.2023	Replace
J4K4L4	51435	AB+	05.06.2023	Replace
L1N1O2	12345	O-	04.05.2023	Voluntary

Blood Bag ID	Patient ID	Blood Group	Date of requisition	Replacement requested?
A1B1C1	23478	AB-	31.12.2022	Yes
Q2I3U7	24562	B+	01.01.2023	No
W5I8R1	78923	B+	02.02.2023	No
T3Y7U1	54809	B-	28.03.2023	Yes
P9O8I7	09983	O+	14.06.2023	No

- ▶ Donor IDs (and other information) allow to track individuals over time and study:
  - Are blood donations habit forming?
  - What are characteristics of frequent donors?
  - Are "rare" donors more frequent donors?
  - Which donors donate in rare months (May to September)?
- ▶ Blood Bag IDs allow to match patients and replacement donors and study
  - How likely are first-time replacement donors to return as voluntary donors?
  - Is the return rate different for rare blood groups?

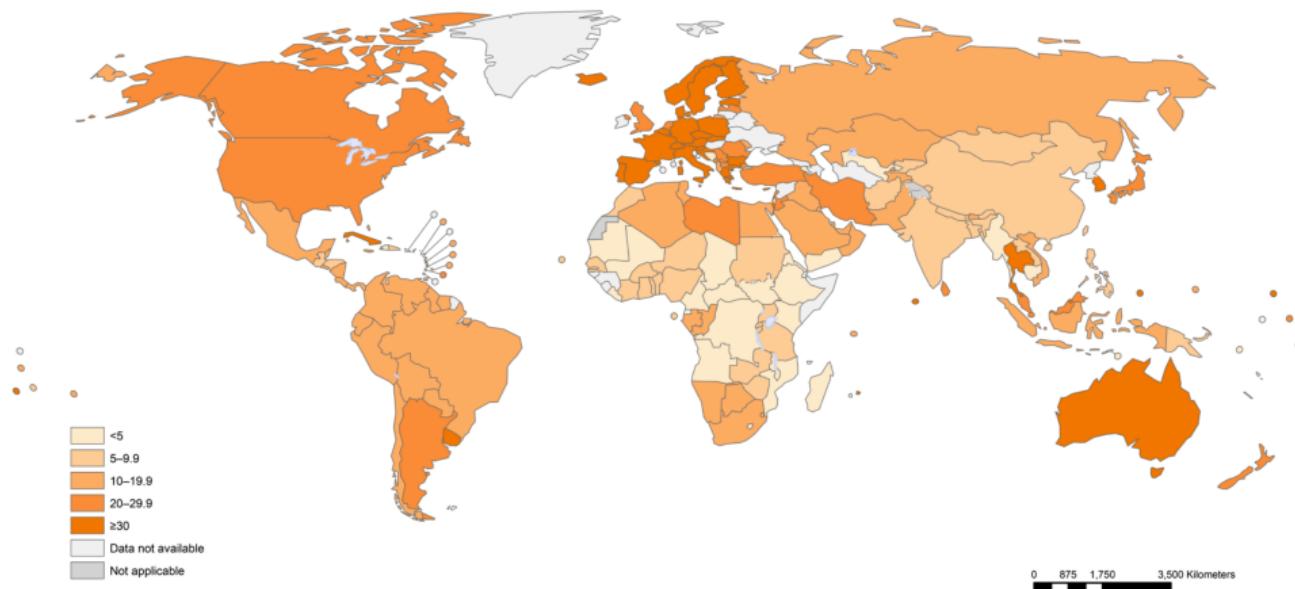
# Blood donations and citizen engagement



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- Dubey, Anju, Atul Sonker, Rahul Chaurasia, and Rajendra Chaudhary (2014). "Knowledge, Attitude and Beliefs of People in North India Regarding Blood Donation". In: *Blood Transfusion* 12 (Suppl 1), s21–s27. DOI: [10.2450/2012.0058-12](https://doi.org/10.2450/2012.0058-12). pmid: 23245709.



# Whole blood donations per 1,000 (2018)



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Data Source: World Health Organization  
Map Production: Blood and other products of human origin  
World Health Organization

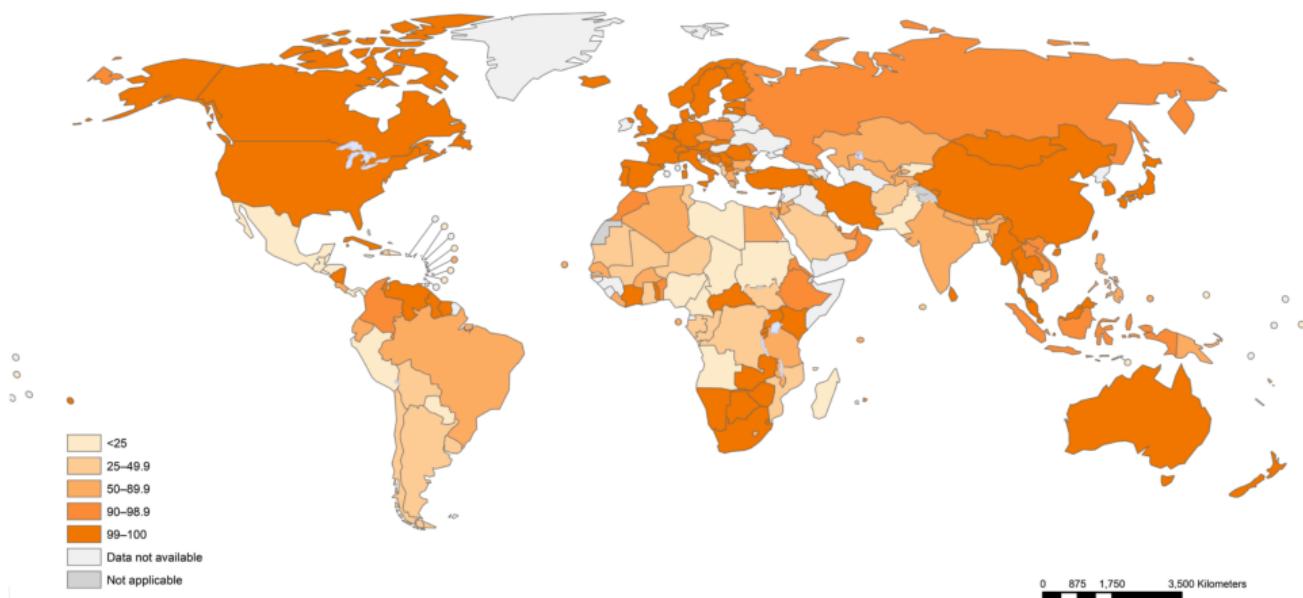


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# Share of voluntary blood donations (2018)



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