Lessons from The Field: Threat Modeling for the Everyday Use of Digital Currency

GiveDirectly

2022
Why are we here at Devcon?

GiveDirectly
GiveDirectly sends cash to those living in poverty with no strings attached

We’re one of the fastest-growing NGOs focused on international issues

1.2M+ Recipients reached to date

$800M Funds raised for recipients

11 Countries in which we’ve operated

15 Randomized controlled trials completed or ongoing

We’re backed by institutions, governments, corporates, and individuals working to end poverty

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Our approach

GiveDirectly
Daily Life in Extreme Poverty

Liz Auma
Kibera, Kenya
We leverage technology to target, enroll, pay, and monitor cash delivery

**Targeting models:**
- Machine learning algorithms
- Government and CBO databases
- In-person field censuses
- Telco data

**Digital enrollment tools:**
- Smartphone applications for in-person operations
- Self-enrollment websites
- SMS surveys

**Payments system:**
- Integrated with local mobile money providers
- Fully digital payments processes and trail of all transactions

**Monitoring methods:**
- Inbounds to GD hotline, managed by call center
- Digital follow-up surveys
- Ops and data team dashboards to flag areas for improvement
Fraud Prevention

GiveDirectly
$241,633 was lost to fraud in 2021 — that’s about what we expect

From $106.3M transferred to 431K people in poverty we estimate 0.23% of those funds were lost to theft, bribes, and imposters

Loss as percent of total money transferred, past 2 yrs

- Theft (Unrecovered)
- Theft (Recovered)
- Imposters (Unrecovered)
- Bribes (Unrecovered)
- Bribes (Recovered)

2021 (as of Dec 1)
- 0.228%

2020
- 0.182%

Totals are for money transferred for Africa-based programs
GD has robust measures to reduce fraud

- Our **standard approach** includes many steps designed to protect recipients including training, hotline, and follow ups
- Our **Recipient Advocacy** team investigates fraud with **firewalled** and **local** employees
- We perform risk assessments and increase **precautionary measures** in higher risk settings
  - Randomizing when and where to send staff
  - Concealing participation by registering recipients in private
  - Staggering payments across different days; avoiding group cash-out events
Poverty Alleviation and Web3

GiveDirectly
Web3 Cash Flow Through GD

● Funds In
  ○ GD has accepted direct crypto donations since 2014
  ○ Raised ~50M in direct crypto donations, nearly 5% of our total revenue

● Funds Out
  ○ Feasibility of world's poor using blockchain greatly enhanced by (A) Interfaces for feature phones (B) stablecoins
  ○ GD is evaluating the potential benefits of paying recipients directly in Web3 wallets:

<table>
<thead>
<tr>
<th>Centralized</th>
<th>Decentralized</th>
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<tbody>
<tr>
<td>Opaque Transactions</td>
<td>Fully Transparent</td>
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<tr>
<td>Localized to Each Telco</td>
<td>Global</td>
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<tr>
<td>Limiting Terms of Service</td>
<td>Censorship Resistant</td>
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Privacy Threats for Everyday Use

● What privacy threats exist under a model with a public ledger?
  ○ De-anonymization should be assumed
  ○ Theft
  ○ Bribery
  ○ Phishing
  ○ Scams
  ○ Social Pressure

● Mitigations
  ○ Balance and Transaction Privacy
  ○ Enabled by default to protect the most vulnerable
  ○ Fees need to remain low to drive usage (extreme poverty is $2.15/day)
Privacy and Government

- Censorship resistance as a feature, not a strategy
  - Bad: “The Permissionless Route” does not work in hybrid settings
  - Good: Refugee resettlement

- Assuming a cryptographically private financial system, Selective Disclosure is required
  - Democratic processes arrive at Legal Recourse, Regulations, Taxation
  - Data Minimization maximizes privacy
    - Good: View Keys
    - Better: ZK Proofs
Takeaways

- Ethereum is for every person
- Each person exists in their own ecosystem, including in real life
- Today’s EIP is tomorrow’s family tree (e.g. EIP 4844)
Thank you!

Support EIP-4844 and The Surge

Reach out if you need an poverty alleviation, UBI or humanitarian aid implementation partner.

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Donate to GiveDirectly at these addresses