GiveDirectly

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

2022

Why are we <u>here</u> 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
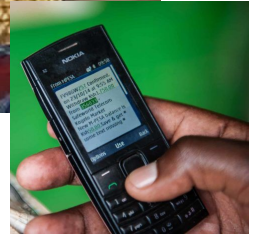
Our approach
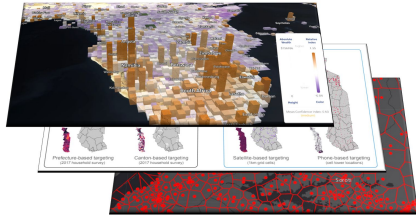
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Daily Life in Extreme Poverty

Liz Auma
Kibera, Kenya

We leverage technology to target, enroll, pay, and monitor cash delivery

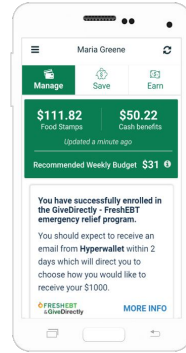## Target

Targeting models:

- Machine learning algorithms
- Government and CBO databases
- In-person field censuses
- Telco data

Enroll

Digital enrollment tools:

- Smartphone applications for in-person operations
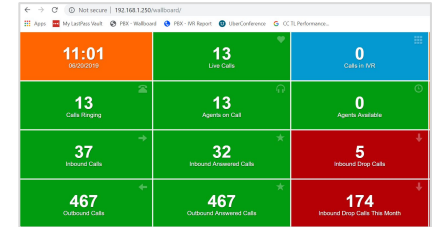- Self-enrollment websites
- SMS surveys

Transfer

Payments system:

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

Monitor

Monitoring methods:

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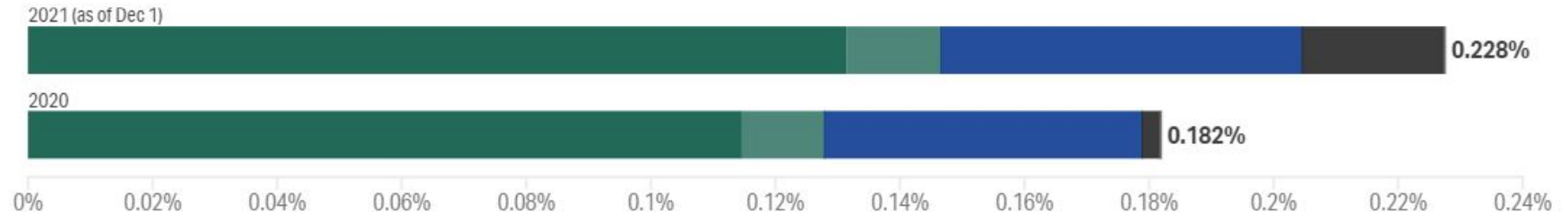
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Fraud Prevention

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$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

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■ Theft (Unrecovered) ■ Theft (Recovered) ■ Imposters (Unrecovered) ■ Bribes (Unrecovered) ■ Bribes (Recovered)

2021 (as of Dec 1) — 0.228%

2020 — 0.182%

0%   0.02%   0.04%   0.06%   0.08%   0.1%   0.12%   0.14%   0.16%   0.18%   0.2%   0.22%   0.24%

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

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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:

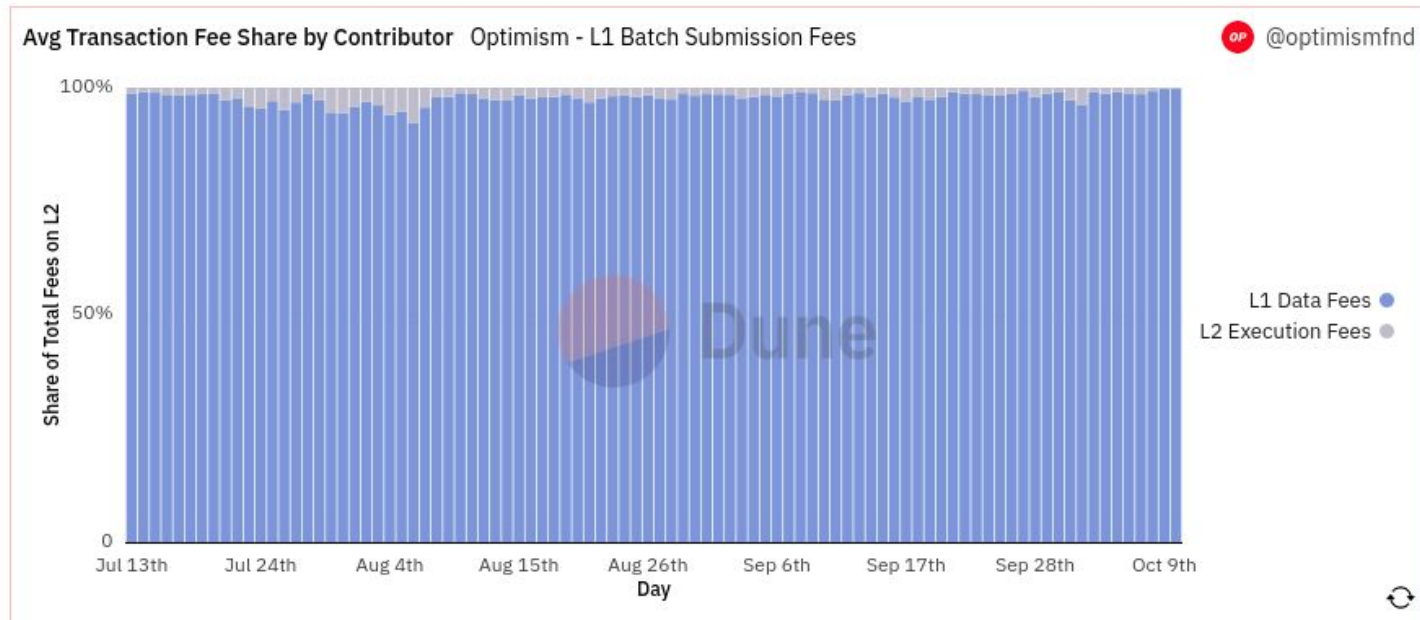| Centralized	Decentralized
Opaque Transactions	Fully Transparent
Localized to Each Telco	Global
Limiting Terms of Service	Censorship Resistant

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)

Avg Transaction Fee Share by Contributor Optimism - L1 Batch Submission Fees

OP @optimismfnd

L1 Data Fees
L2 Execution Fees

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