Novissi cash transfer targeting in Togo, with GiveDirectly

IMPLEMENTED 2020–2022 · GOVERNMENT AND PUBLIC SERVICES · TOGO · BAND C · PARTLY PROVED
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Togo's government used machine learning on mobile phone data and satellite-based wealth estimates to choose who received emergency cash in the rural expansion of its Novissi programme, carried out with GiveDirectly. A peer-reviewed evaluation measured the targeting errors.

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AT A GLANCE

AI used: Machine learning on mobile phone data and satellite-based wealth estimates to choose cash transfer recipients.

Implemented: 2020–2022. Grade: band C, Process change, Partly proved.

Headline result, as reported: Machine learning cut exclusion errors by 4 to 21% against geographic targeting in Togo, but raised them by 9 to 35% against a hypothetical social registry, Nature, 2022

1 · The case

The facts, as reported by the 2 sources listed at the end. Where a source is silent, the field says "Not reported".

Organisation

Government of Togo (Novissi programme), with GiveDirectly. Togo's government launched Novissi, a digital emergency cash programme, in April 2020. Its rural expansion was carried out in partnership with the non-governmental organisation GiveDirectly, which distributed payments. Researchers working with CEGA and IPA helped the government target the transfers. Headcount and turnover: Not reported. Canvas block: 4. Operations and process. Also 3. Customers and proposition, 6. Data and technology.

Business challenge

The challenge. The Nature paper says targeting is a central challenge in social assistance: it is difficult to rapidly identify those with the greatest need with the data available. Togo has no comprehensive social registry, and the government wanted to reach the rural poor after the first phase in Greater Lomé had ended.

How it was addressed. Researchers working with the government trained machine-learning models on phone survey data to recognise patterns of poverty in mobile phone metadata from Togo's two mobile phone operators. They combined this with public satellite-based wealth estimates for 2.4 km by 2.4 km areas. The government's mandate was to prioritise Togo's 100 poorest cantons and the poorest people in them. Payments went by mobile money, with GiveDirectly distributing them. [1] [2]

Who implemented it

In-house (In-house): Ran Novissi and set the eligibility policy..
GiveDirectly (Industry partner): Non-governmental partner that implemented the rural expansion and distributed payments..
Researchers working with CEGA and IPA (UC Berkeley, Northwestern University and others) (University or research lab): Designed and evaluated the machine-learning targeting approach..
Google.org and others funded the research, per the paper.

Technology (SEAM pillar E)

SEAM types: T8 Predictive / ML models. Deployment: Not reported. Vendors and products: Not reported.

Where it was built in: Models trained on a phone survey and call detail records from Togo's two mobile operators, combined with satellite-based wealth estimates; eligibility fed into a fully digital registration and mobile money payment system.

What changed

Before: the government was considering geographic targeting, since no social registry existed.
After: eligibility in the rural expansion was set by an algorithm using phone and satellite data.
Measured results, per the peer-reviewed paper: exclusion errors fell by 4-21% against the geographic options and rose by 9-35% against a hypothetical registry-based approach. [1] [2]

What it cost

Not reported. CEGA says over 140,000 Togolese received $10 million in cash; the cost of building and running the model is not given. The paper acknowledges financial support from Google.org and others.

What it saved

Not reported. The authors call the method a rapid and cost-effective supplement for crisis settings; the sources give no cost comparison. [1] [2]

Governance and control

The authors say phone records were pseudonymised, held on secure university servers under an approved data management plan, and used with informed consent from survey respondents. They audited fairness across groups. The Government of Togo set the policy mandate. Appeals and complaints handling: Not reported.

S2 · Accountable owner · Claimed
Per the peer-reviewed paper, the Government of Togo launched Novissi and set the policy mandate for the rural expansion; the paper's authors supported the programme. [1]

A1 · Safe use · Claimed
The authors say phone records were pseudonymised, stored on secure university servers and matched to survey data with informed consent. [1]

A2 · Human in the loop · Not reported
Not reported whether people excluded by the model could appeal or be reviewed by a person.

A3 · Monitoring and assurance · Evidenced
A peer-reviewed evaluation in Nature, by researchers who supported the programme, measured exclusion and inclusion errors and audited fairness across groups. [1]

A4 · Vendor AI · Not reported
Not reported.

A5 · Agent controls · Not reported
Not reported.

A6 · Standards and regulation · Not reported
Not reported.

What worked, what did not, what is unproven

WORKED

– The phone-based method reduced exclusion errors against the geographic options the government considered.

– The paper reports no systematic extra exclusion of women, and no significant extra exclusion for ethnic groups, religions, age groups or types of household, with small differences in accuracy between groups.

– The programme was delivered digitally, with registration and payment by phone.

DID NOT

– Against a hypothetical comprehensive social registry the method raised exclusion errors by 9-35%.

– The authors say it may lead to important errors of both exclusion and inclusion and does not replace proxy means tests or community-based targeting.

– People without a mobile phone could not receive Novissi payments, which were made by mobile money, per the paper.

UNPROVEN

– Whether the method works as well outside a crisis, or where a registry exists.

– Data access and privacy risks the authors list as practical limits.

– Cost against other targeting methods.

Timeline

Apr 2020 Government of Togo launches Novissi, a digital emergency cash programme [1]

Jul 2021 CEGA and IPA researchers release a working paper with the targeting results [2]

Mar 2022 Targeting evaluation published in Nature [1]

2 · Grade and SEAM assessment

MarLuc's opinion, made on the evidence above. How cases are graded: marluc.co.uk/case-studies/how-we-rate

Level of change and impact

Claimed: Not applicable. Grade: C, Process change. Proof: Partly proved. Level of change: Process change.

Process change (Level 2, band C). Eligibility in one programme phase was set by a model, with a peer-reviewed evaluation of its accuracy. Marked partly proved because the authors worked on the programme and the benefit depends on the comparison used.

The SEAM view and lessons learnt

The result comes from a purpose-built model with an unusually open evaluation, so the AI's contribution can be separated from the funding and delivery, which stayed with the government and GiveDirectly. The gain is real against geographic targeting and a loss against a registry that did not exist. Before copying it, a leadership team should ask what its comparison method is, how it would handle people wrongly excluded or without a phone, and the privacy risks of phone data.

1. Compare a model against the options actually available, not only the ideal one.
2. Audit fairness across groups before payments go out.
3. Test whether a model good at prediction is also good at measuring impact.

Evidence

Score 3 of 4. Peer-reviewed: a paper in Nature by researchers who designed the targeting and supported the programme, so not independent of it.

Evaluation method. Peer-reviewed evaluation (Nature, 2022) comparing targeting errors under several counterfactual methods, with a fairness audit. Authors include researchers who supported the programme.

Sources disagree. No direct disagreement. The paper evaluates the September 2020 scenario of 60,000 beneficiaries; CEGA reports over 140,000 recipients and $10 million paid by July 2021.

Status. Published evaluation (Nature, 2022); current use of the method by the Government of Togo or GiveDirectly: Not reported in the sources.

3 · Original sources

Read these in full. To challenge a fact or a grade, use the contact form at marluc.co.uk or the link on https://marluc.co.uk/case-studies/givedirectly-togo-novissi-targeting

[1] Nature: Machine learning and phone data can improve targeting of humanitarian aid
https://www.nature.com/articles/s41586-022-04484-9

[2] CEGA: Machine Learning and Mobile Data Improves Aid Delivery in Togo
https://cega.berkeley.edu/article/machine-learning-and-mobile-data-improves-aid-delivery-in-togo/

Government of Togo (Novissi programme), with GiveDirectly website: https://www.givedirectly.org

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