

Malawi - Using Remote Tracking to Detect and Deter Medications Theft, Impact Evaluation 2022

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Identification

SURVEY ID NUMBER

MWI_2022_URTDMMT-IE_v01_M

TITLE

Using Remote Tracking to Detect and Deter Medications Theft, Impact Evaluation 2022

COUNTRY/ECONOMY

Name	Country code
Malawi	MWI

STUDY TYPE

Administrative Records, Health (ad/hea]

SERIES INFORMATION

The study documented here is part of a larger project and the baseline and endline surveys are not related to this evaluation.

ABSTRACT

Medicine theft is likely one of the leading causes of preventable disease in low income countries. In Malawi, where our evaluation takes place, Ministry of Health officials estimate that 29% of spending on medicines and medical supplies disappears due to theft alone (Mphande, 2017). Our survey work indicated that 75% of all communities in Malawi have experienced the theft of medical supplies (author surveys). Malawi is a particularly extreme outlier, but these estimates are not far off from estimates in other countries (Bate et al., 2010; Bouchard et al., 2012; Savedoff, 2007; Hope Sr, 2015; Ferrinho and Van Lerberghe, 2002; Lewis, 2006). Additionally, medicine theft costs governments and donors many millions each year between lost medications and spending on supplemental procurement procedures (Vian, 2006; Garc'ia, 2019; Bruckner, 2019; Ferrinho and Van Lerberghe, 2002; Jones and Jing, 2011).

Documenting and mitigating procurement and corruption challenges is particularly vital amidst the COVID-19 pandemic. Estimates from previous health crises suggest that ineffective health service delivery explains much regional variation in mortality rates and subsequent poverty in poorly institutionalized health settings (Christensen et al., 2020; Maffioli, 2018). Moreover, the rapid expansion of global health aid has created opportunities for higher rates of theft and corruption (Schipani et al., 2020; Thorp, 2020; Gallego et al., 2020; Eze et al., 2022).

One goal of this research was to evaluate how advances in electronic tracking technology might improve the ability of health providers and researchers to measure patterns of medicine diversion and audit procurement networks, particularly in environments where procurement capacity and investment are low (Lewis, 2006; Bruckner, 2019). A second goal of this research was to experimentally identify the deterrent effect of procurement oversight.

KIND OF DATA

Administrative records data [adm]

Version

VERSION DESCRIPTION

v01: Edited, anonymized dataset

VERSION DATE

2022-05-01

Scope

NOTES

This study focuses on the use of remote tracking to detect and deter medications theft, with data on intended destination facilities and different types of medications.

KEYWORDS

Keyword
Medications theft
Remote tracking
Medicine
Malawi

Producers and sponsors

PRIMARY INVESTIGATORS

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FUNDING AGENCY/SPONSOR

Name	Abbreviation
Strategic Impact Evaluation Fund	SIEF

Sampling

SAMPLING PROCEDURE

Details on sampling procedure for this project can be found in the "Using Remote Tracking to Detect and Deter Medications Theft in Malawi (P170615) World Bank Strategic Impact Evaluation Fund (SIEF) Final Report," available to download.

Data collection

DATES OF DATA COLLECTION

Start	End	Cycle
2022-03-01	2022-04-30	Endline administrative

DATA COLLECTION MODE

Other [oth]

DATA COLLECTION NOTES

Details on data collection for this project can be found in the "Using Remote Tracking to Detect and Deter Medications Theft in Malawi (P170615) World Bank Strategic Impact Evaluation Fund (SIEF) Final Report," available to download.

Questionnaires

QUESTIONNAIRES

The dataset only includes administrative data, so no survey instrument was used for this study.

Access policy

CONTACTS

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Strategic Impact Evaluation Fund	The World Bank	siefimpact@worldbank.org	Link

CONFIDENTIALITY

ACCESS CONDITIONS

Licensed Access

CITATION REQUIREMENTS

Use of the dataset must be acknowledged using a citation which would include:

- the identification of the Primary Investigator
- the title of the survey (including country, acronym and year of implementation)
- the survey reference number
- the source and date of download

Example:

Ryan Jablonski (London School of Economics and Political Science), Brigitte Seim (University of North Carolina, Chapel Hi), Mariana Carvalho (University of California, San Diego), and Clark Gibson (University of California, San Diego). Malawi - Using Remote Tracking to Detect and Deter Medications Theft, Impact Evaluation 2022. Ref: MWI_2022_URTDDMT-IE_v01_M. Dataset downloaded from [URL] on [date].

ACCESS AUTHORITY

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LOCATION OF DATA COLLECTION

World Bank Microdata Library

Disclaimer and copyrights

DISCLAIMER

The user of the data acknowledges that the original collector of the data, the authorized distributor of the data, and the relevant funding agency bear no responsibility for use of the data or for interpretations or inferences based upon such uses.

Metadata production

DDI DOCUMENT ID

DDI_MWI_2022_URTDDMT-IE_v01_M_WB

PRODUCERS

Name	Abbreviation	Affiliation	Role
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Development Economics Data Group	DECDG	The World Bank	Documentation of the study
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DATE OF METADATA PRODUCTION

2025-07-23T04:00:00.000Z

DDI DOCUMENT VERSION

Version 01 (July 2025)

Data Dictionary

Data file	Cases	Variables
sentinel_file_anonymized_updated This dataset includes the endline administrative data for this study.	2331	27

Data file: sentinel_file_anonymized_updated

This dataset includes the endline administrative data for this study.

Cases: 2331

Variables: 27

Variables

ID	Name	Label	Question
V1	fac_id	Anonymized facility ID number for the intended destination facility	
V2	scansticker	SENTINEL identification sticker (SENXXXX)	
V3	med_type	Medication description	
V4	med_type_amox	Binary indicator variables for the different types of medicines...amox	
V5	med_type_asp	Binary indicator variables for the different types of medicines...asp	
V6	med_type_ibu	Binary indicator variables for the different types of medicines...ibu	
V7	med_type_methyd	Binary indicator variables for the different types of medicines...methyd	
V8	med_type_parac	Binary indicator variables for the different types of medicines...parac	
V9	med_type_pheno	Binary indicator variables for the different types of medicines...pheno	
V10	med_type_ins	Binary indicator variables for the different types of medicines...ins	
V11	med_type_inszinc	Binary indicator variables for the different types of medicines...inszinc	
V12	med_type_syr	Binary indicator variables for the different types of medicines...syr	
V13	med_type_syrluer	Binary indicator variables for the different types of medicines...syrluer	
V14	med_type_insulin	Binary indicator variables for the different types of medicines...insulin	
V15	med_type_syringe	Binary indicator variables for the different types of medicines...syringe	
V16	med_type_pain	Binary indicator variables for the different types of medicines...pain	
V17	med_type_gloves	Binary indicator variables for the different types of medicines...gloves	
V18	med_code	Medicine identification sticker that goes on the bottom of medicine boxes	
V19	batch_number	Medicine box batch number	
V20	fac_district	District of the intended destination facility	
V21	fac_mga	Management structure of the intended destination facility: CHAM, company,	
V22	fac_location	Rural or urban location of the intended destination facility	
V23	last_delivery_sighting_sentry	The ID number for the SENTRY that located the SENTINEL at its	
V24	nottrace_any_sighting	Binary indicator for whether the SENTINEL was found during the	
V25	missed_delivery	Binary indicator for whether the SENTINEL was located at its intended	
V26	dist_cmst	Distance from Central Medical Stores Trust warehouse in Blantyre in km	
V27	treatment	Binary indicator for whether the SENTINEL was in the box with a monitoring	

Total: 27

FAC_ID: Anonymized facility ID number for the intended destination facility**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2306 var_freq: 74

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_INS: Binary indicator variables for the different types of medicines...ins**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2307

Type: Discrete Width: 9 Range: - Format: character

SCANSTICKER: SENTINEL identification sticker (SENXXXX)**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2306 var_freq: 1

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE: Medication description**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 760

Type: Discrete Width: 47 Range: - Format: character

MED_TYPE_AMOX: Binary indicator variables for the different types of medicines...amox**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2223

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_ASP: Binary indicator variables for the different types of medicines...asp**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 1917

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_IBU: Binary indicator variables for the different types of medicines...ibu**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 1547

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_METHYD: Binary indicator variables for the different types of medicines...methyd**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2307

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_PARAC: Binary indicator variables for the different types of medicines...parac**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 1798

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_PHENO: Binary indicator variables for the different types of medicines...pheno**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2143

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_INSZINC: Binary indicator variables for the different types of medicines...inszinc**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2304

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_SYR: Binary indicator variables for the different types of medicines...syr**Data file:** sentinel_file_anonymized_updated

Overview

Valid: 2307 var_freq: 2139

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_SYRLUER: Binary indicator variables for the different types of medicines...syrler**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2078

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_INSULIN: Binary indicator variables for the different types of medicines...insulin**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 2304

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_SYRINGE: Binary indicator variables for the different types of medicines...syringe**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 1910

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_PAIN: Binary indicator variables for the different types of medicines...pain**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 1659

Type: Discrete Width: 9 Range: - Format: character

MED_TYPE_GLOVES: Binary indicator variables for the different types of medicines...gloves**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2331 var_freq: 2256

Type: Discrete Width: 9 Range: - Format: character

MED_CODE: Medicine identification sticker that goes on the bottom of medicine boxes

Data file: sentinel_file_anonymized_updated

Overview

Valid: 2307 var_freq: 1
Type: Discrete Width: 9 Range: - Format: character

BATCH_NUMBER: Medicine box batch number

Data file: sentinel_file_anonymized_updated

Overview

Valid: 2306 var_freq: 270
Type: Discrete Width: 15 Range: - Format: character

FAC_DISTRICT: District of the intended destination facility

Data file: sentinel_file_anonymized_updated

Overview

Valid: 2251 var_freq: 509
Type: Discrete Width: 9 Range: - Format: character

FAC_MGA: Management structure of the intended destination facility: CHAM, company,

Data file: sentinel_file_anonymized_updated

Overview

Valid: 2038 var_freq: 1983
Type: Discrete Width: 45 Range: - Format: character

FAC_LOCATION: Rural or urban location of the intended destination facility

Data file: sentinel_file_anonymized_updated

Overview

Valid: 2038 var_freq: 1505
Type: Discrete Width: 9 Range: - Format: character

LAST_DELIVERY_SIGHTING_SENTRY: The ID number for the SENTRY that located the SENTINEL at its

Data file: sentinel_file_anonymized_updated

Overview

Valid: 2300 var_freq: 1188
Type: Discrete Width: 9 Range: - Format: character

NOTTRACE_ANY_SIGHTING: Binary indicator for whether the SENTINEL was found during the**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 1629 var_freq: 883

Type: Discrete Width: 9 Range: - Format: character

MISSED_DELIVERY: Binary indicator for whether the SENTINEL was located at its intended**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2299 var_freq: 2168

Type: Discrete Width: 9 Range: - Format: character

DIST_CMST: Distance from Central Medical Stores Trust warehouse in Blantyre in km**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2229 var_freq: 79

Type: Discrete Width: 17 Range: - Format: character

TREATMENT: Binary indicator for whether the SENTINEL was in the box with a monitoring**Data file:** sentinel_file_anonymized_updated**Overview**

Valid: 2307 var_freq: 1220

Type: Discrete Width: 9 Range: - Format: character

Documentation

Reports

Using Remote Tracking to Detect and Deter Medications Theft in Malawi (P170615), World Bank Strategic Impact Evaluation Fund (SIEF) Final Report

Title	Using Remote Tracking to Detect and Deter Medications Theft in Malawi (P170615), World Bank Strategic Impact Evaluation Fund (SIEF) Final Report
Author(s)	Ryan Jablonski; Brigitte Seim; Mariana Carvalho; Clark Gibson
Country	Malawi
Description	This report relates to the larger project, which includes the evaluation documented here as well as the other rounds of data collection.
Table of contents	1. Introduction 2. Theory and Hypothesis 3. Experimental Intervention 4. Survey and Administrative Data 5. Variables and Measurement 6. Analysis Details 7. Results 8. Discussion of Challenges and Limitations 9. Policy Implications and Lessons Learned
Filename	sief_nimble_seim_finalreport_v2.pdf

Technical documents

Codebook Kobo Survey Data - Medicine Tracking Experiment

Title	Codebook Kobo Survey Data - Medicine Tracking Experiment
Country	Malawi
Description	This file includes descriptions for all of the variables in the survey dataset.
Filename	sentinel_file_codebook.pdf
