Introduction to Online Experiments Using Facebook

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Stanford University

Political Methodology Lab & Political Experiments Research Lab Workshop
MIT
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Overview

Part I

1. Using Facebook ads to recruit respondents: a few examples
2. Recruiting diverse samples using quota sampling with Facebook ads

Part II

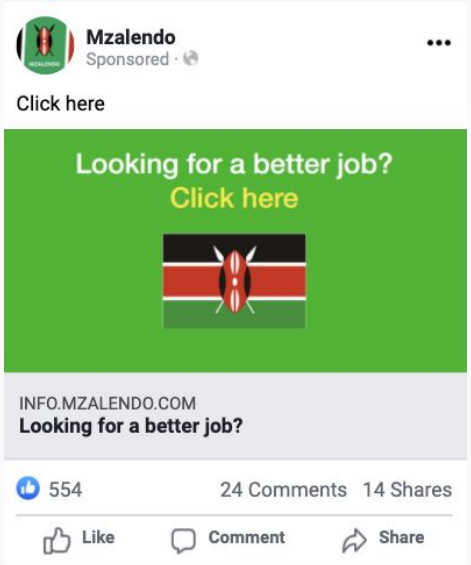
1. How to set up Facebook ads:
   - Ad creative
   - Targeting
   - Optimizing for “conversions”
2. FAQs
   - Estimating costs
   - Survey mode: Qualtrics vs. Chatbot
   - To incentivize or not?

Part I

Using Facebook advertisements to recruit respondents

Facebook “field” experiment

Research design: Online field experiment (A/B test)
Page: Partner’s Facebook page (@MzalendoWatch)
Target population: Kenyans on FB 18+
Ad targets: 18-34/35+, m/f
Dates: July 2-5, 2015
Budget: $3,000
Clicks: 31,136 unique visitor to the Mzalendo page
Cost per click: $0.10



Outcomes of interest

	# of Actions
Comment	671
Share on Facebook	535
Read the bill	1105
Share on Twitter	150
Total	2461

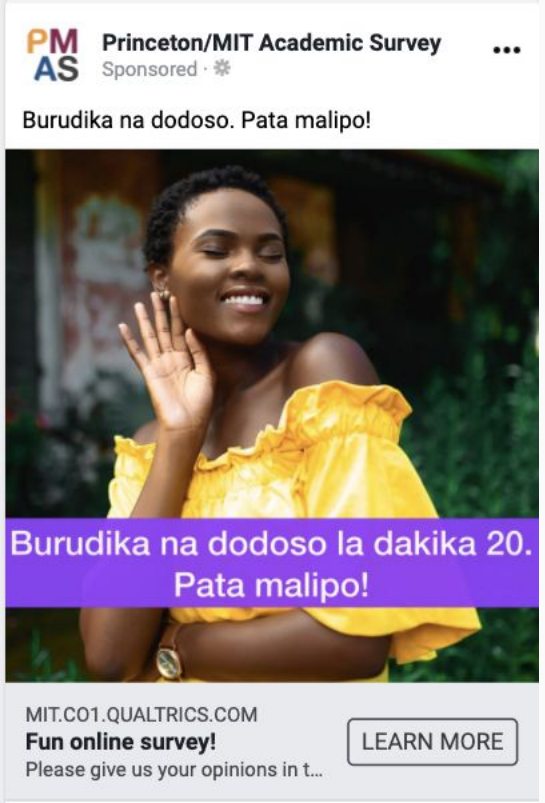
Team and Nation: Sports, Nationalism, and Attitudes Toward Refugees

L. Rosenzweig & YY. Zhou (*Comparative Political Studies*, 2021)

Mode: Qualtrics survey (23 min)
Page: Princeton/MIT Academic Survey (@PrincetonMITSurvey)
Target population: Kenyans and Tanzanians on FB 18+
Ad targets: country-wide and location-based
Dates: June 12-26, 2019
Budget: $1,960
Sample size: 2,647 respondents
Cost per completed survey: $0.05 - $5.38 (mean = $0.74)
Incentives: $0.50 baseline, $1 endline

Table S1: Descriptive statistics of all study respondents

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Female	2,647	0.26	0.44	0	0	0	1	1
Age	2,645	27.00	6.20	18.00	23.00	26.00	30.00	68.00
Education Level	2,645	6.00	1.30	0.00	6.00	6.00	7.00	8.00
Urban	2,644	0.73	0.44	0.00	0.00	1.00	1.00	1.00
Lived Out Length	2,610	0.26	0.67	0.00	0.00	0.00	0.00	4.00
Knows Refugee	2,606	0.49	0.50	0.00	0.00	0.00	1.00	1.00
Employment	2,608	1.60	0.80	0.00	1.00	1.00	2.00	3.00
Household Wealth	2,647	3.70	2.20	0	1	4	6	7
Voted	2,647	0.71	0.45	0	0	1	1	1
Political	2,607	0.44	0.50	0.00	0.00	0.00	1.00	1.00
Religion	2,333	1.20	0.78	1.00	1.00	1.00	1.00	6.00
Religiosity	2,301	3.30	1.50	0.00	3.00	3.00	4.00	6.00



Paper: https://journals.sagepub.com/doi/pdf/10.1177/0010414021997498
Podcast: https://anchor.fm/nicolas-wittstock/episodes/Beautiful-game--troubling-results----with-Leah-Rosenzweig-and-Yang-Yang-Zhou-euc8nd

Happiness and Surprise are Associated with Worse Truth Discernment Of Covid-19 Headlines Among Social Media Users in Nigeria.

L. Rosenzweig, B. Bago, A. Berinsky & D. Rand (*Working Paper)*

Mode: Qualtrics survey (22 min)
Page: Princeton/MIT Academic Survey (@PrincetonMITSurvey)
Target population: Nigerians on FB 18+
Ad targets: m/f
Budget: $203
Dates: April 1-3, 2020
Clicks: 2,698 clicks → 1,341 completed surveys
Cost per completed survey: $0.15
Incentives: 500 NGN ~ $1.30

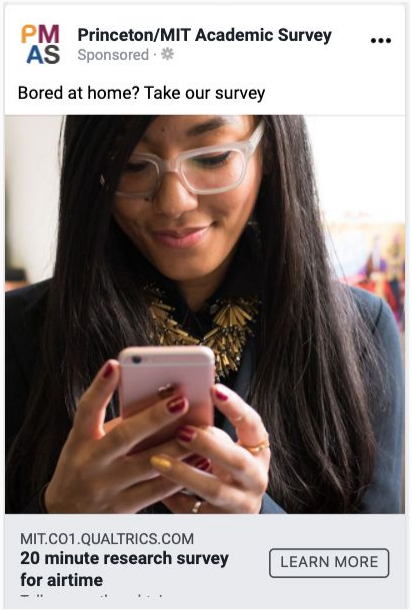
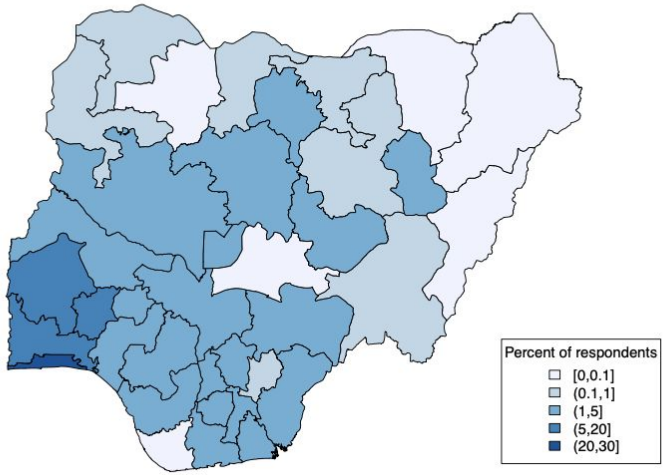


Table A1: Descriptive statistics of study respondents

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Female	1,325	0.32	0.47	0.00	0.00	0.00	1.00	1.00
Age	1,321	28.00	7.00	18.00	22.00	26.00	31.00	62.00
Some university	1,321	0.76	0.43	0.00	1.00	1.00	1.00	1.00
Urban	1,297	0.80	0.40	0.00	1.00	1.00	1.00	1.00
Employed	1,316	0.49	0.50	0.00	0.00	0.00	1.00	1.00
Christian	1,316	0.76	0.43	0.00	1.00	1.00	1.00	1.00
Religiosity	1,298	3.20	0.99	0.00	3.00	4.00	4.00	4.00
Voted	1,318	0.45	0.50	0.00	0.00	0.00	1.00	1.00
APC supporter	1,341	0.11	0.31	0	0	0	0	1
Daily FB user	1,314	0.74	0.44	0.00	0.00	1.00	1.00	1.00

Percent of Respondents from each State in Nigeria

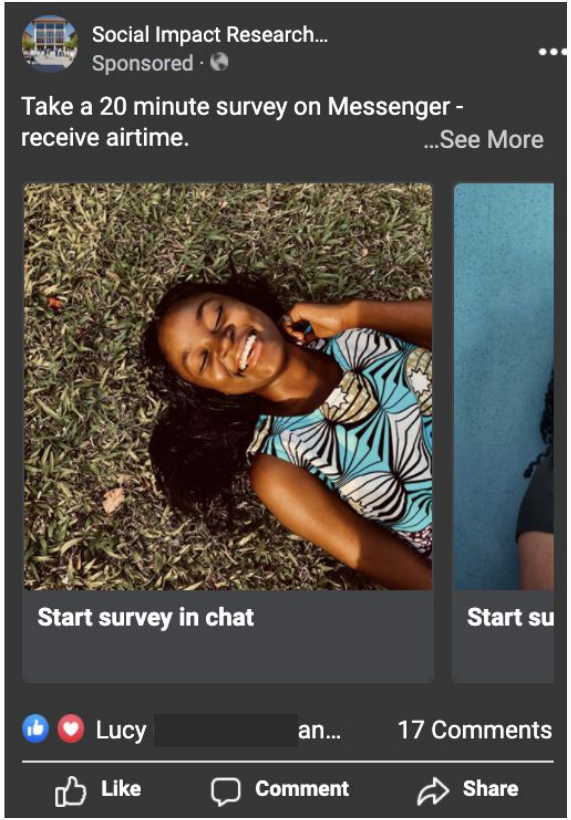


Optimal Policies to Battle the Coronavirus "Infodemic" Among Social Media Users in Sub-Saharan Africa

M. Offer-Westort, L. Rosenzweig & S. Athey (PAP: https://osf.io/ny2xc/)

Mode: Messenger bot survey (~25 min)
Page: Social Impact Research Initiative
Target population: Nigerians and Kenyans 18+
Ad targets: above/below avg. adult age in each country, m/f
Budget: $1040
Dates: February 26 - March 20, 2021
Messages started: 16,166
Completed surveys: 9,750
Cost per completed survey: $0.11
Incentives: 50 KES/200 NGN ~ $0.50

Mean age: 28
53% male



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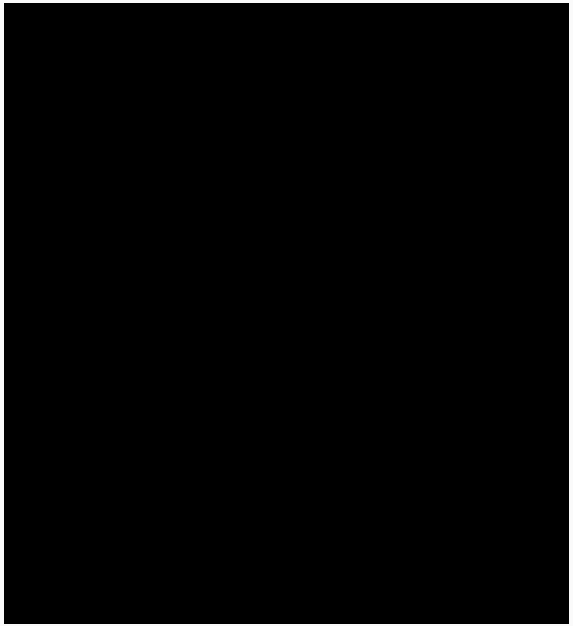


chatfuel

Quality/Quantity: An Assessment of Facebook for Respondent Recruitment in Kenya and Mexico

Leah R. Rosenzweig, Parrish Bergquist, Katherine Hoffmann Pham, Francesco Rampazzo, & Matto Mildenberger

Working paper [here]

Motivation

Opportunity for Online Surveys

- 67% of the world's population has a mobile phone subscription
- 49% has access to internet
- Online surveys can be fast + affordable
- Quality results?

Facebook as a Social Science Tool

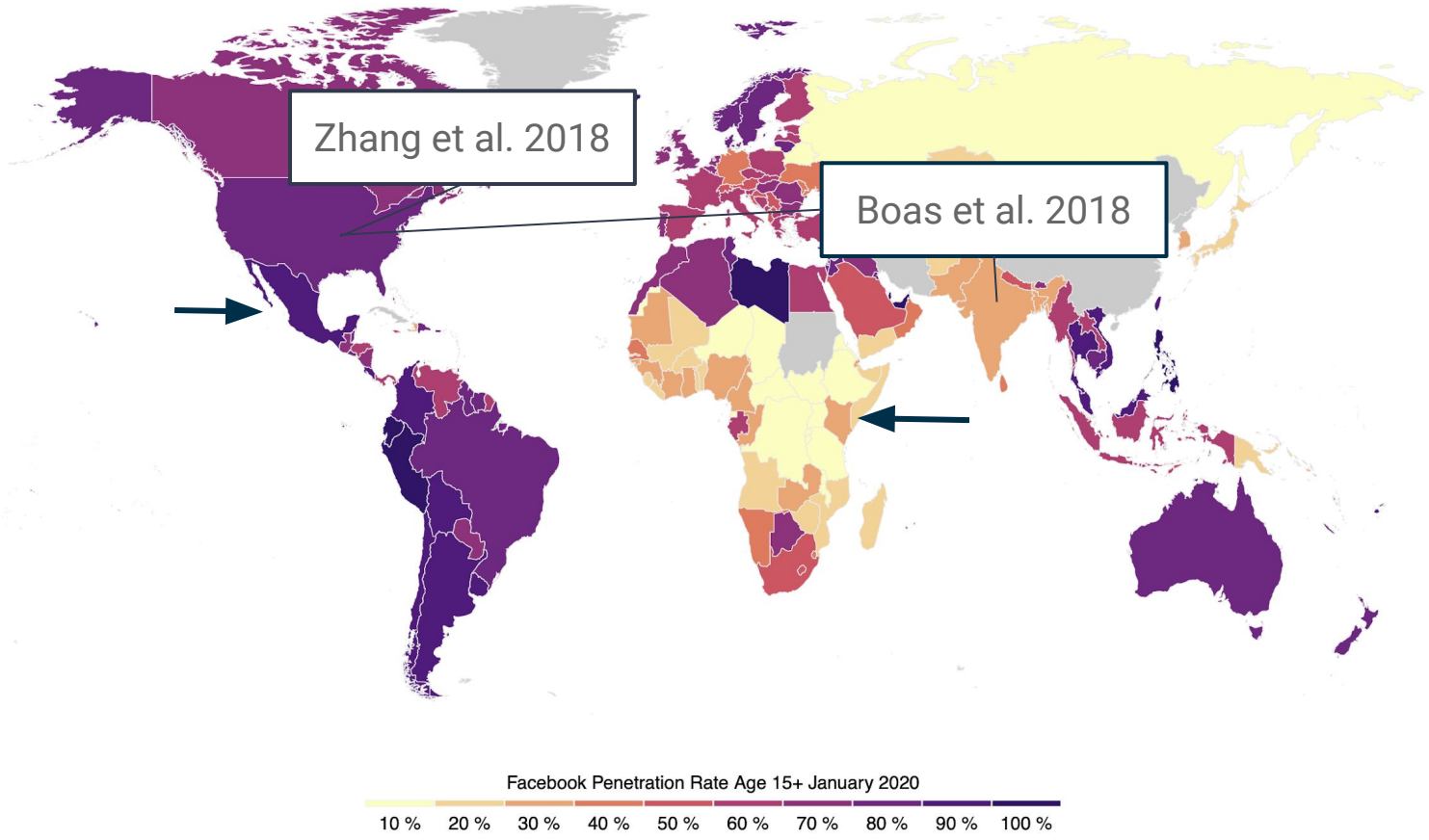
2.5 billion monthly active users as of September 2019

Microtargeting through the platform

- Polish migrants (Potschke & Braun 2017)
- East Africans (Rosenzweig & Zhou 2021)
- COVID-19 behavior (Grow et al. 2020)

Research Question

Can quota sampling using Facebook advertisements deliver quality results?



Can quota sampling using Facebook advertisements deliver quality results?

Quality

Internal validity:

- Does Facebook effectively identify respondents of interest? ✔
- Are the responses valid? ✔

External validity:

- Can all subgroups of interest be reached? ✗
- Are users who respond similar to those who didn't take the survey? ✔
- Are units independently sampled? ✗

Data & Results

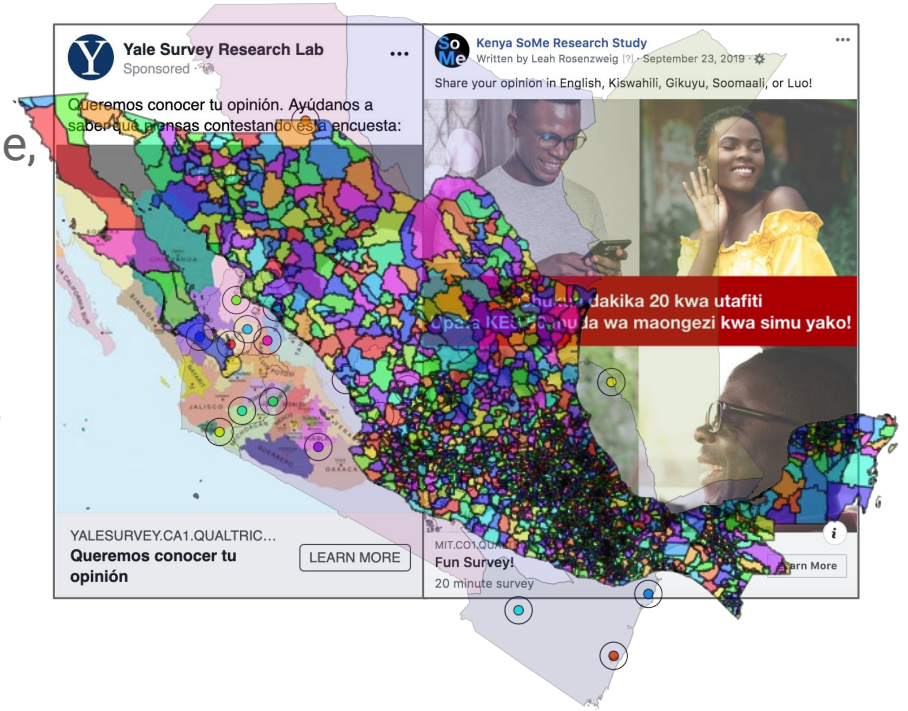
Recruitment

Mexico

- Strata: gender, age, education, administrative unit
- Climate change
- N=5,168

Kenya

- Strata: gender, age, education, Afrobarometer clusters
- Political attitudes
- N=1,452



Internal Validity

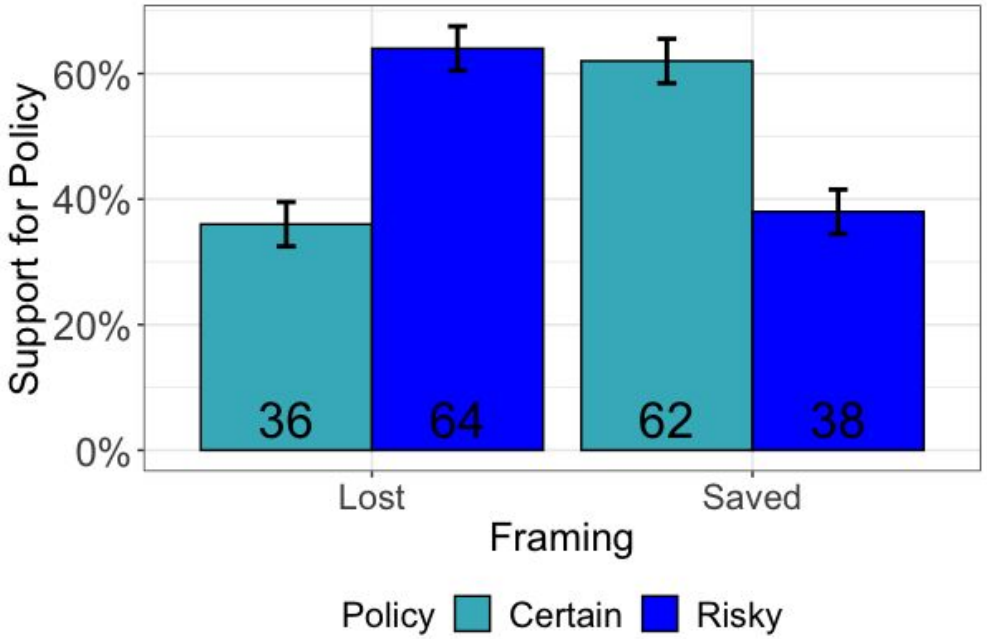
- Targeting accuracy: % match (survey vs. Facebook)
- Attention checks: In Kenya, 98% pass easy check

	Mexico	Kenya
Gender	98	90
Location	67	63
Age	87	47*

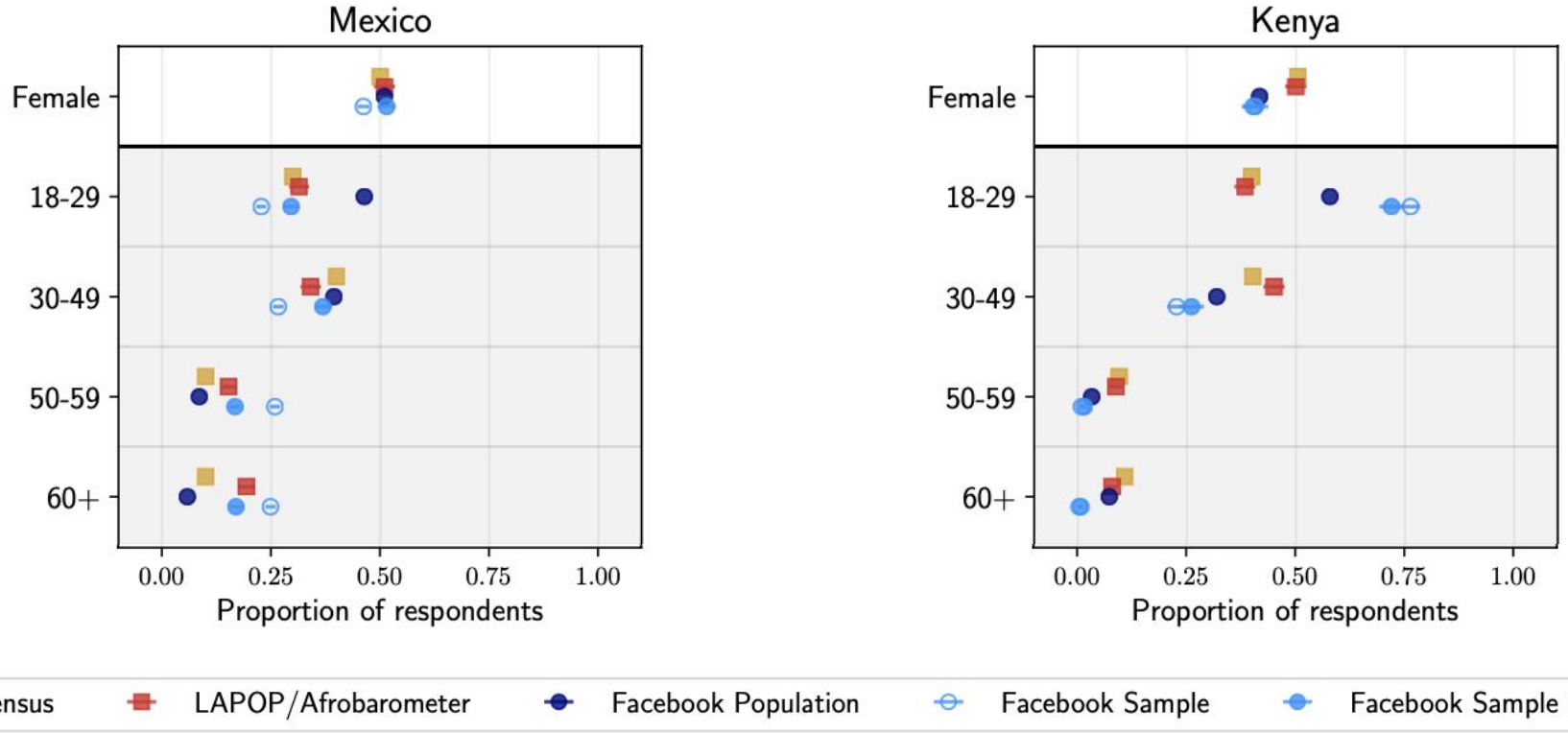
*targeting 32+

Internal Validity

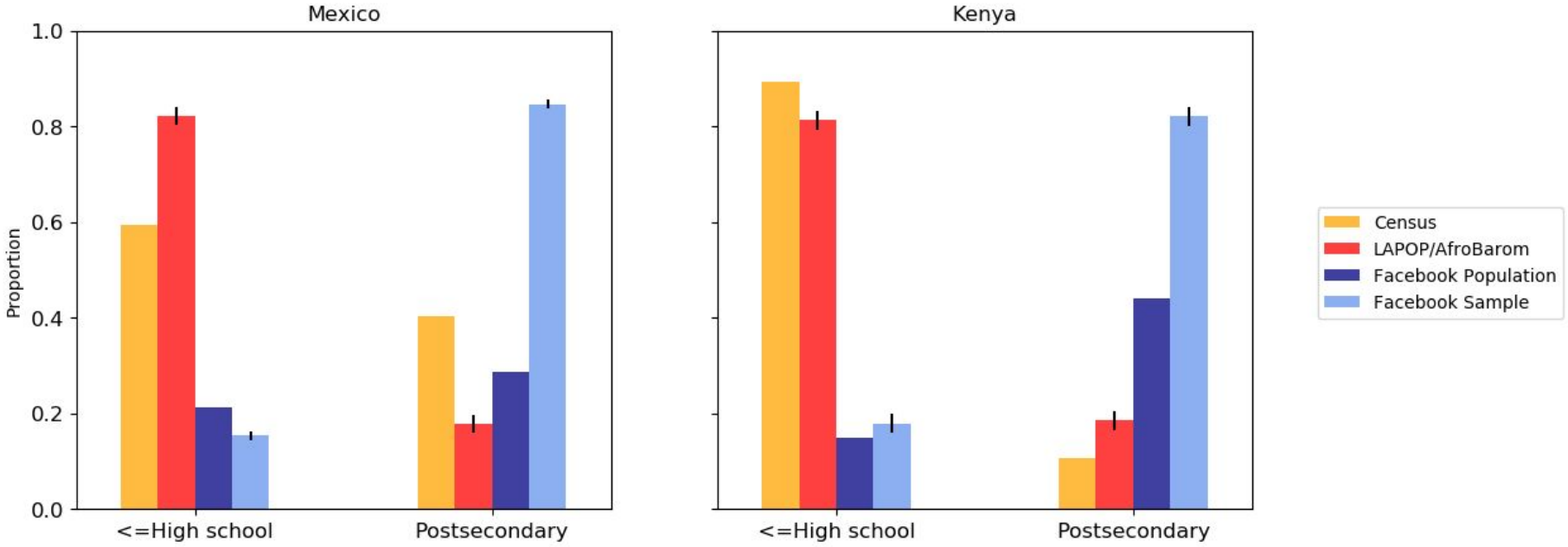
In Kenya, we replicate the finding from Tversky & Kahneman (1981)



External Validity - Demographics



External Validity - Demographics



Cost

Costs are low but variable and depend on targeting criteria

		Mexico	Kenya
Reach		439,056	318,960
Survey results		5,313	1,211
Total spent		$847.76	$1,293.91
Cost per survey	Min	$0.07	$0.05
	Median	$0.13	$1.15
	Max	$0.55	$22.07

Conclusions

Facebook can diversify audiences beyond MTurk and lab samples

- Relatively cheap and quick to recruit
- Rich targeting capabilities

This comes with costs:

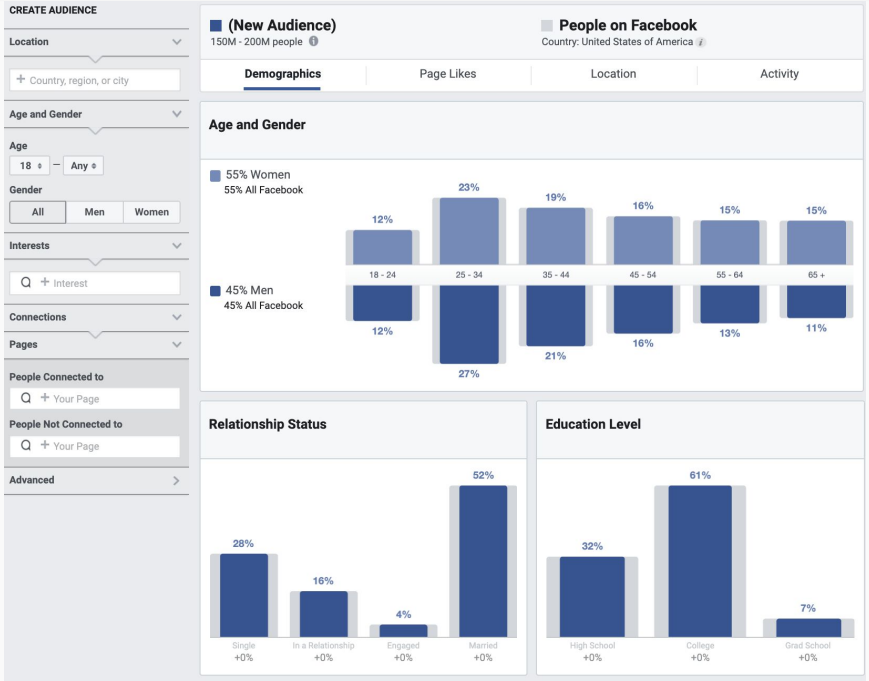
- Some strata cannot be filled + “expensive” to reach certain populations
- Targeting accuracy is mixed
- Selection bias with respect to national **and** Facebook population
- The platform is not design with researchers in mind

Part II

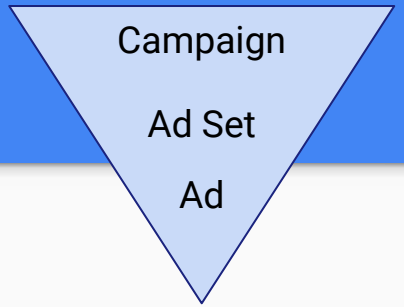
How to use Facebook advertisements to recruit respondents

Is Facebook right for this project?
Can I reach the people I want in an affordable way?

- Depends on your question of interest and target population
- Internet/phone access and country-level regulations (social media tax, FB restricted, etc.) that may make Facebook a suboptimal tool for recruitment.
- Make sure your target group is accessible using audience estimates and FB API
    - Audience insights: https://www.facebook.com/ads/audience-insights



Setting up your ads

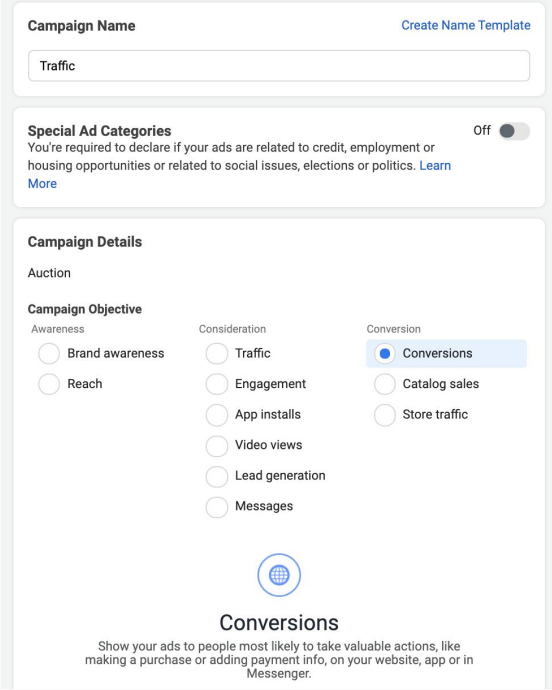


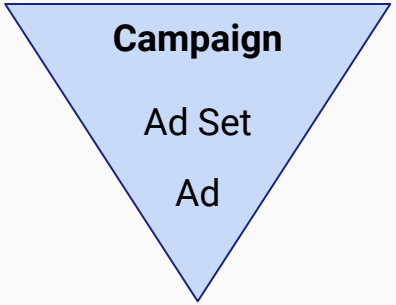
1. Create/select the Facebook page you want to send ads from
2. Decide how many ads/ad sets you want to run. *Are there variables you want to balance?*
    a. You'll need a different "Ad Set" for each target *audience*
    b. You can also set a different budget and timeline for each Ad Set
3. Set your daily budget *(> lifetime budget)*
4. Adding text and images to your ad
5. Add the "call to action" and link *(where do you want to send people who click on your ad?)*
6. Have Facebook optimize your ads for your desired outcome (e.g., completed surveys)

https://www.facebook.com/adsmanager/manage/campaigns/

Setting up your ads

- Set up the campaign and objective

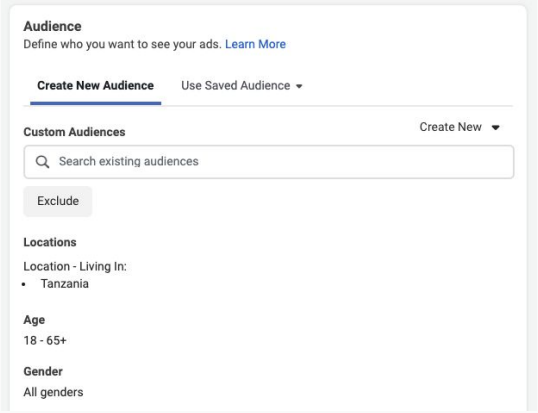


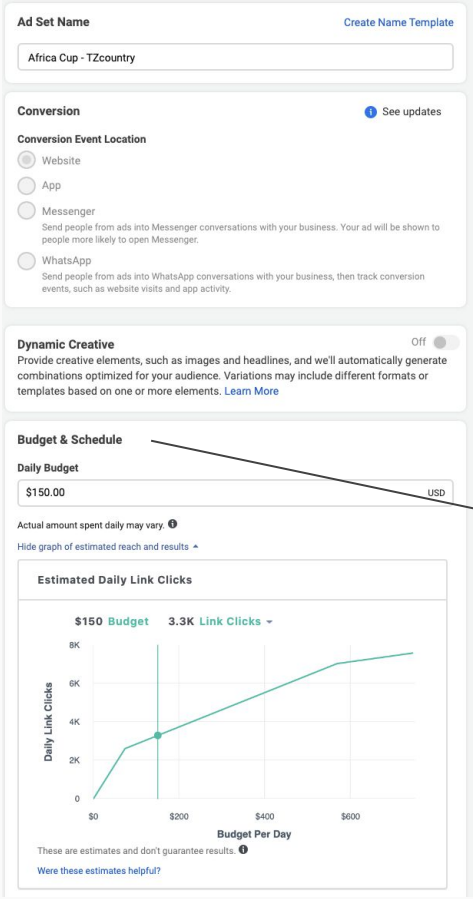


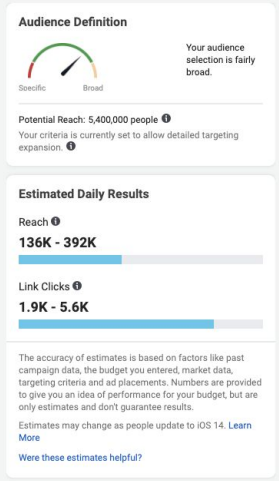
Setting up your ads

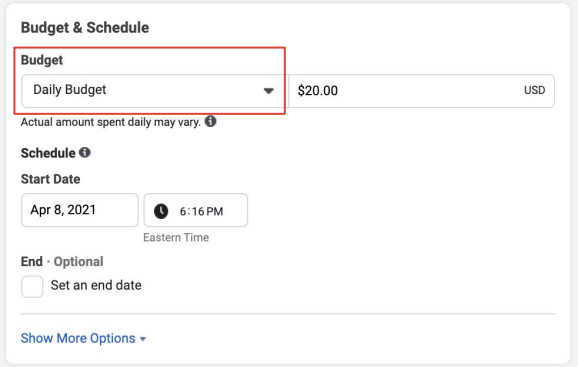
- Set up the campaign and objective
- Set up your ad set(s)
  - Conversion
  - Budget and Schedule
  - Audience

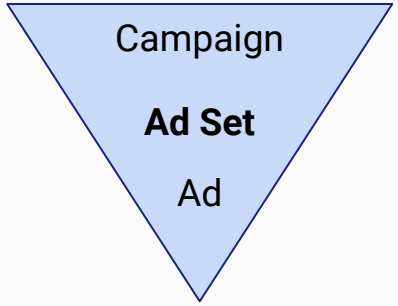
*You'll need a different **Ad Set** for each target *audience*. You can also set a different budget and timeline for each Ad Set





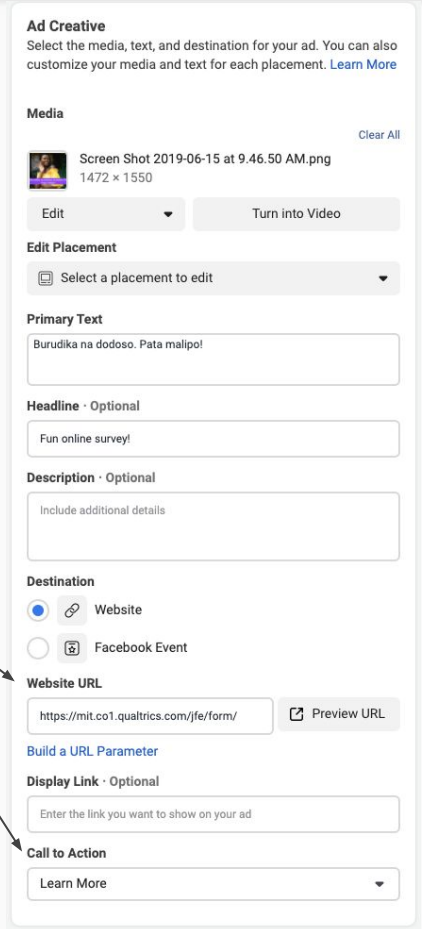


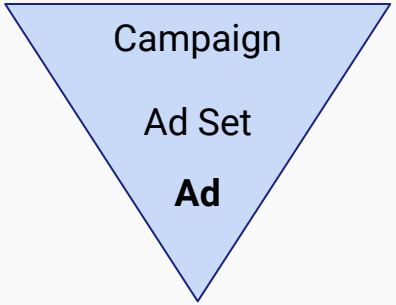


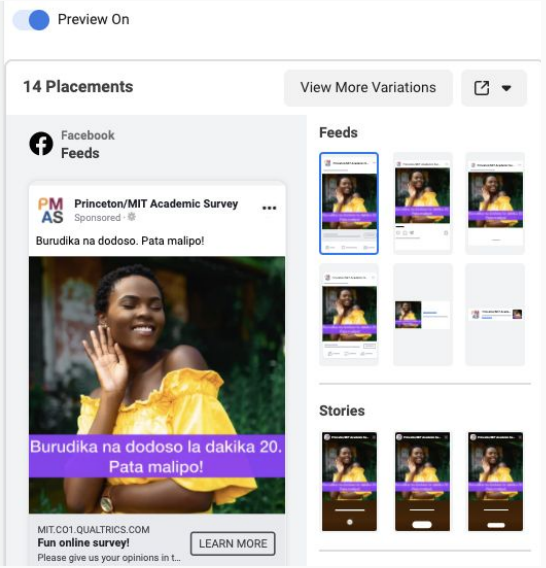


Setting up your ads

- Set up the campaign and objective
- Set up your ad set(s)
  - Conversion
  - Budget and Schedule
  - Audience
- Adding text and images to your ad
  - Stock photos: pixabay/pexels
- Add the “call to action” and link *(where do you want to send people who click on your ad?)*







Ad creatives matter

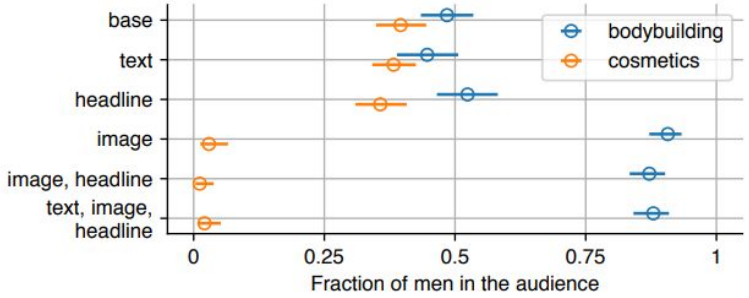
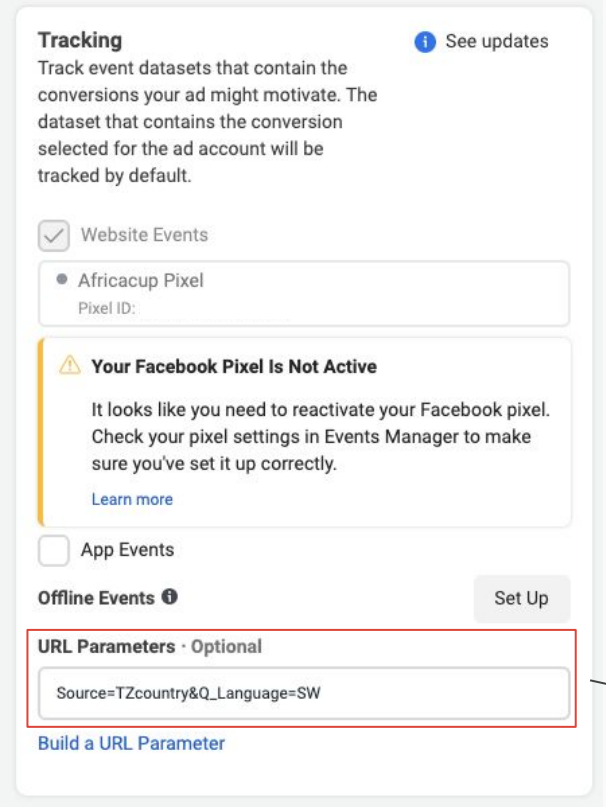


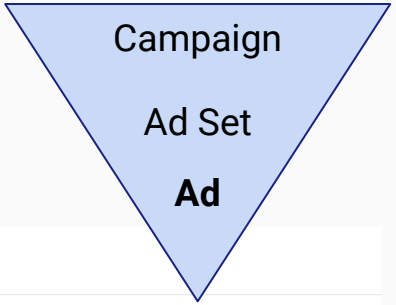
Fig. 3. "Base" ad contains a link to a page about either bodybuilding or cosmetics, a blank image, no text, or headline. There is a small difference in the fraction of male users for the base ads, and adding the "text" only decreases it. Setting the "headline" sets the two ads apart but the audience of each is still not significantly different than that of the base version. Finally, setting the ad "image" causes drastic changes: the bodybuilding ad is shown to a 91% male audience, the cosmetics ad is shown to a 5% male audience, despite the same target audience.

Discrimination through Optimization: How Facebook's Ad Delivery Can Lead to Biased Outcomes
Muhammad Ali*, Piotr Sapiezynski*, Miranda Bogen, Aleksandra Korolova, Alan Mislove, Aaron Rieke. CSCW 2019 https://dl.acm.org/doi/abs/10.1145/3359301

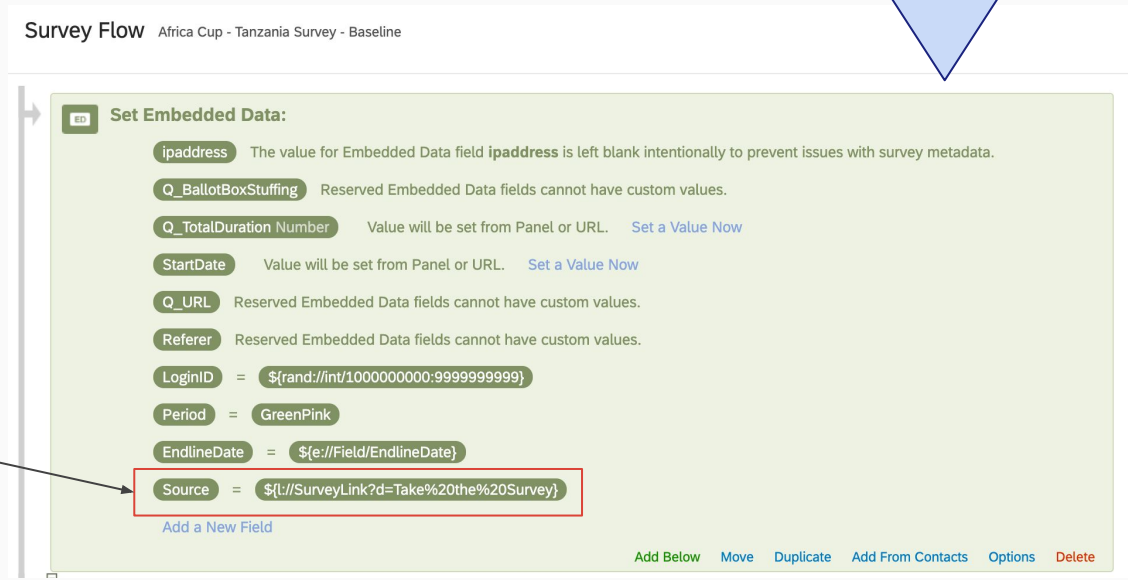
Tracking which ads respondents come from

Facebook

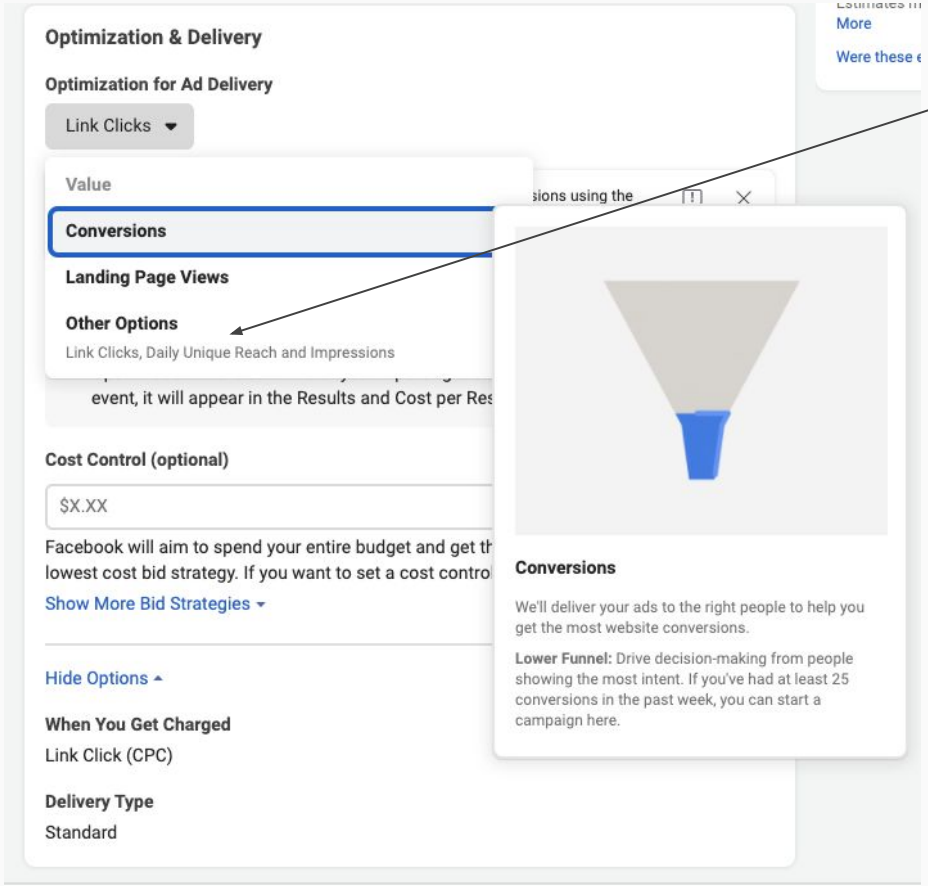




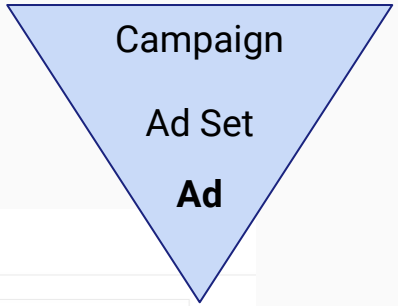
Qualtrics

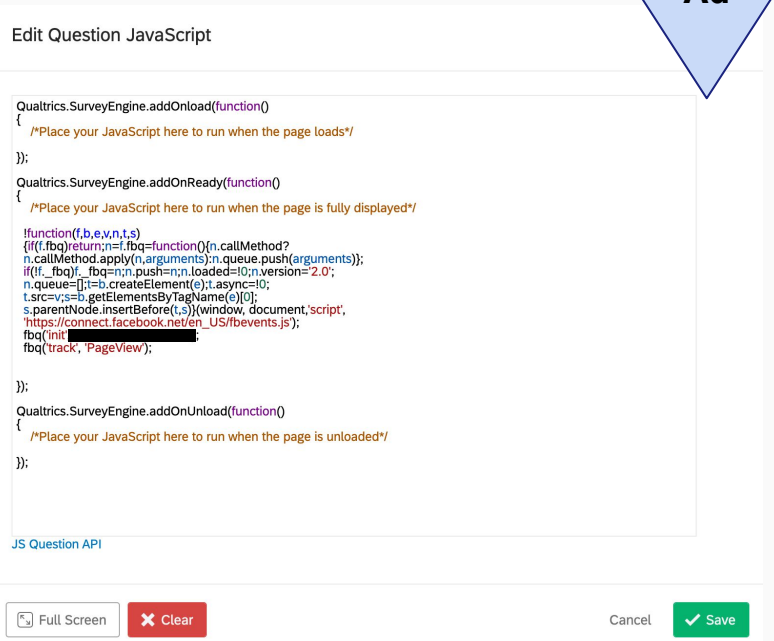


Tracking conversions (completed surveys) with Facebook *pixel*



If you don't want to set up a pixel and optimize for completed surveys, you probably want to instead optimize (and get charged) for *link clicks*

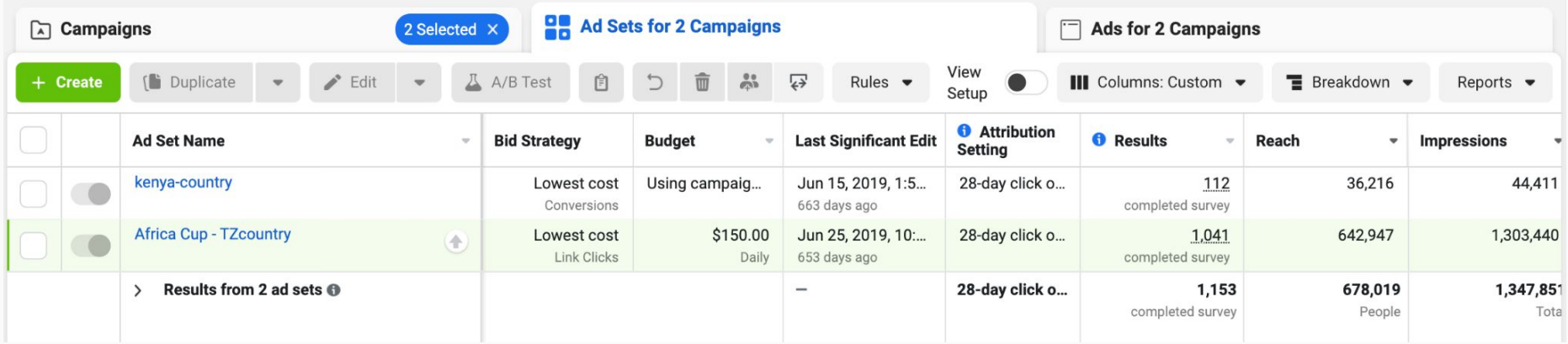


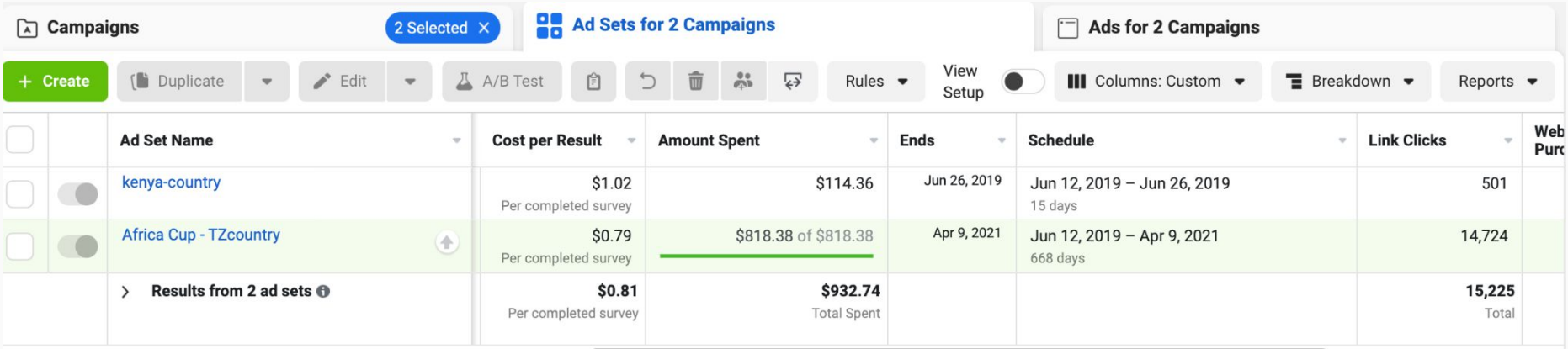


https://www.facebook.com/business/help/952192354843755?id=1205376682832142

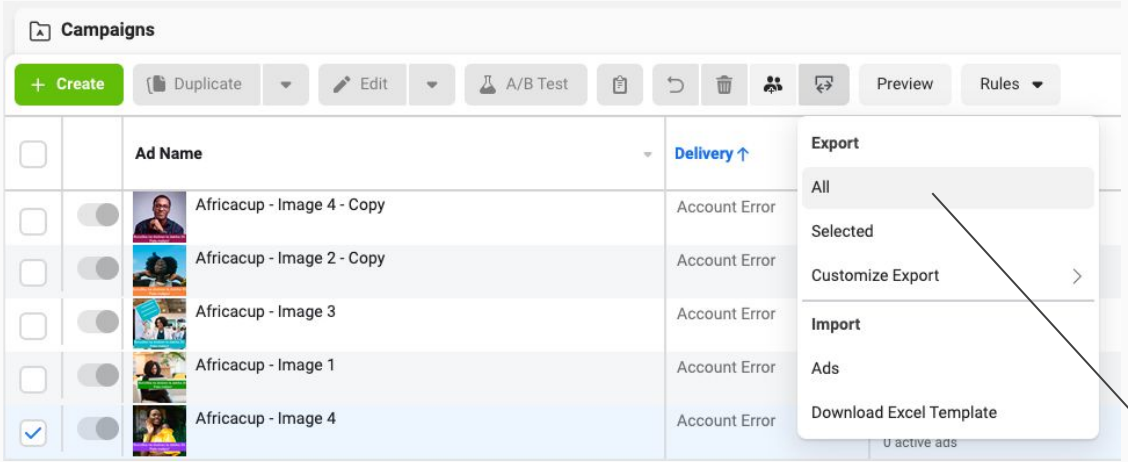
Monitoring ad quotas and metrics

https://business.facebook.com/adsmanager





Easier way to create many ads



AJ	AQ	AR	AV
Link	Countries	Cities	Addresses
https://princetonsurvey.az1.qualtrics.com		Garissa, North Eastern Province, Kenya +50mi	
https://mit.co1.qualtrics.com/jfe/form/S		Kigoma, Kigoma, Tanzania +25mi	(-4.807562, 30.360718) +39mi
https://princetonsurvey.az1.qualtrics.com	KE		
https://princetonsurvey.az1.qualtrics.com	KE		
https://mit.co1.qualtrics.com/jfe/form/S		Kigoma, Kigoma, Tanzania +25mi	(-4.807562, 30.360718) +39mi
https://mit.co1.qualtrics.com/jfe/form/S		Kigoma, Kigoma, Tanzania +25mi	(-4.807562, 30.360718) +39mi
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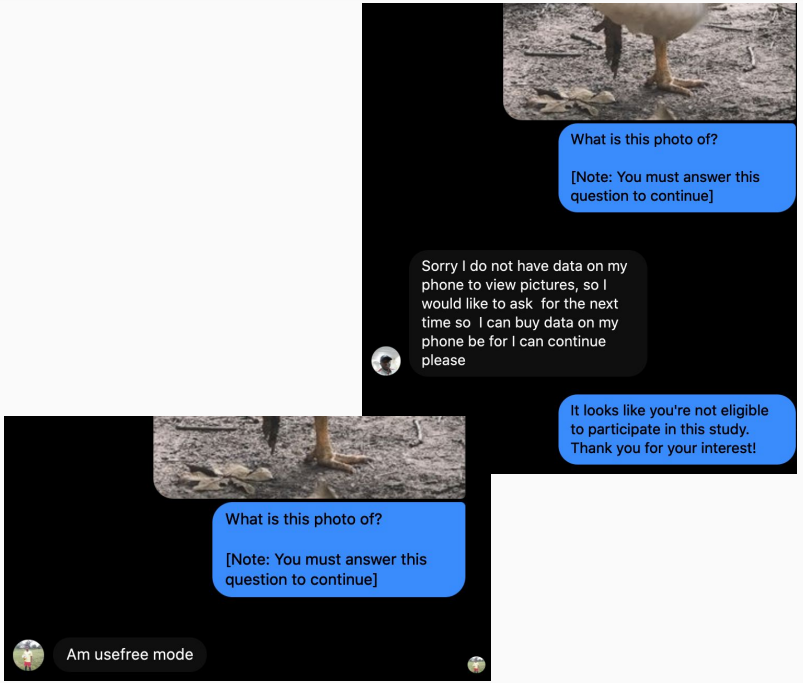
https://princetonsurvey.az1.qualtrics.com	KE		

FAQs

1. How to estimate ad costs?
    a. **Best**: run a pilot with your survey, ads, and targets.
    b. **2nd best**: try to estimate costs based on other research in similar context [function of incentive, survey length, targeting, ad creatives, and market!]
2. Survey mode: Qualtrics vs. Chatbot?
    a. Qualtrics better for complicated flows and randomizations
    b. Messenger bot better if you want to easily recontact people (panel) and debrief attriters!
3. To incentivize or not?
    a. Upside: quicker to get respondents
    b. Downside: sharing links across ads (particularly problematic if you are trying to reach only a particular subgroup)

Tips

1. Create your campaign/ads a couple of weeks before you plan to run your survey.
    - Each ad is review by Facebook. It can take anywhere from a few hours to several days for your ads to be approved and ready to go live!
2. Add screeners for image/video treatments
    - E.g. include a photo at the beginning of the survey and make sure respondents can view the image and correctly identify it.
3. Include a few attention checks (as you would for a Mturk study) that range in difficulty level.



Challenges

Targeting:

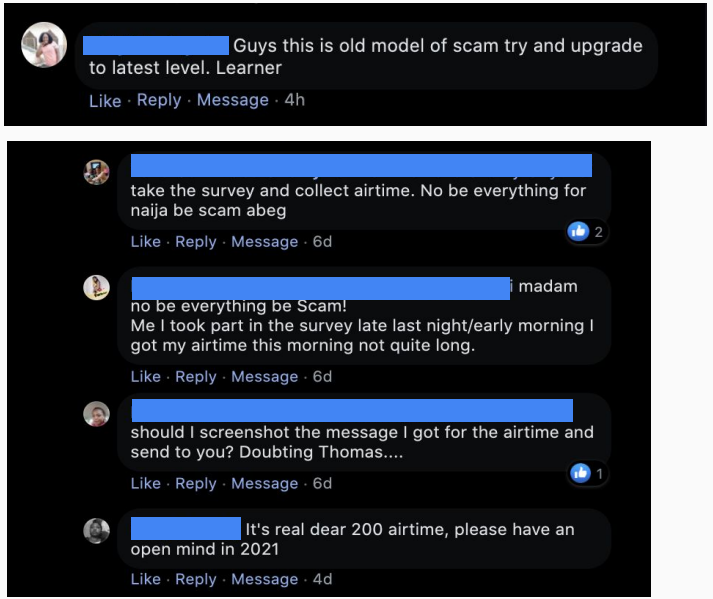
- Geographic units are not standardized/vary by country and sometimes out of date (e.g. regions rather than counties in Kenya)
- Created with US system in mind (i.e., education levels)
- FB estimates are sometimes wrong

Bad actors: Repeat respondents and fake pages

Paying respondents: Automating incentive payment

- One solution: Africa's Talking - https://github.com/LeahRosenzweig/sending_airtime

Moderating ad comments:



Concluding thoughts

Design of Facebook ads for respondent recruitment is more of an art than a science.

While there are challenges, Facebook ads are a quick and relatively cheap way to recruit diverse respondents in many contexts. And for the most part can provide quality data, especially if you are mainly concerned with internal validity.

Questions?

Thanks!

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