



STI PREVENTION: HARNESSING SOCIAL MEDIA FOR HEALTH PROMOTION

RAYNER KAY JINTAN

PH.D. CANDIDATE

SAW SWEE HOCK SCHOOL
OF PUBLIC HEALTH

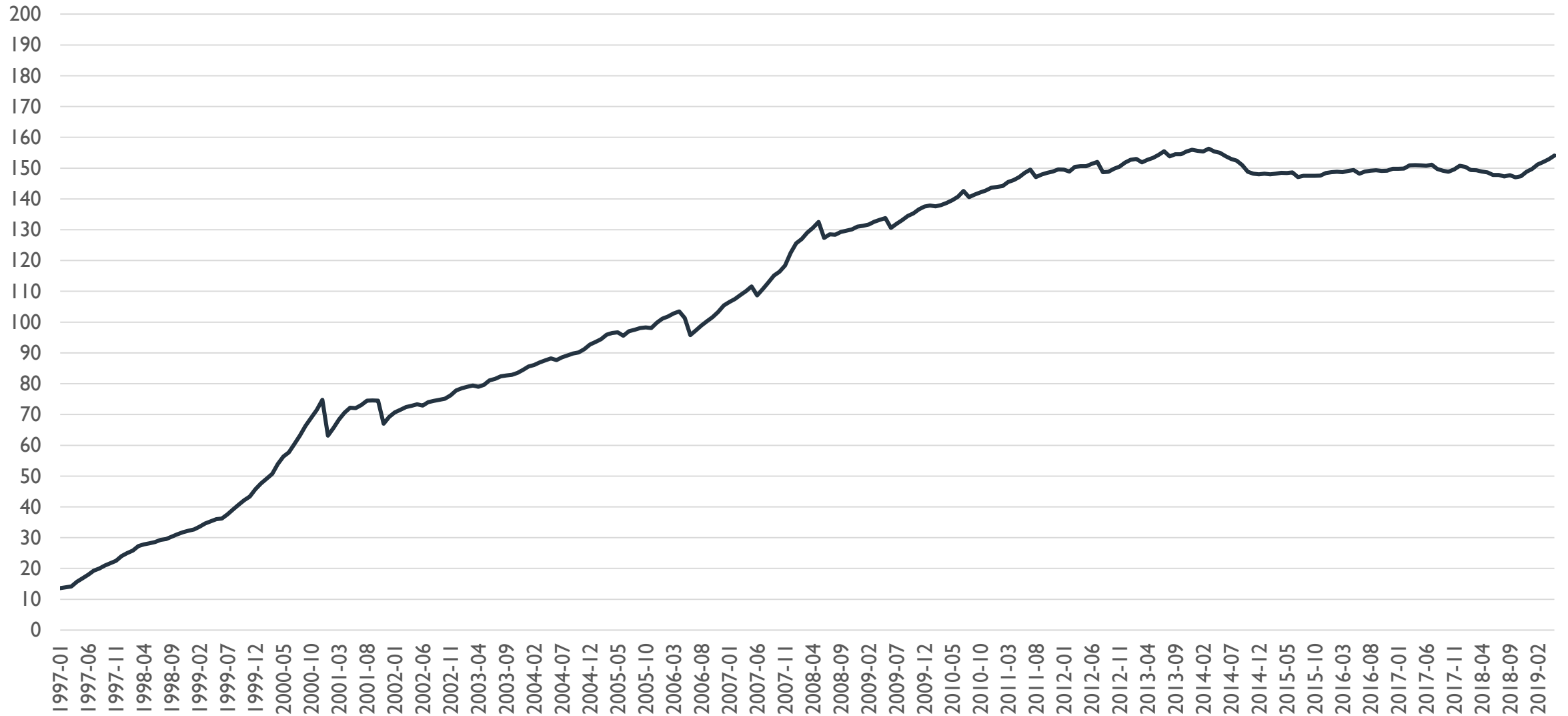


THE RISE OF SOCIAL MEDIA

SETTING THE SCENE



Mobile Penetration Rate in Singapore (%)



JAN
2019

SOCIAL MEDIA PENETRATION IN 2019

BASED ON ACTIVE USERS OF THE TOP SOCIAL NETWORKS IN EACH COUNTRY / TERRITORY, COMPARED TO TOTAL POPULATION



66

SOURCES: LATEST DATA PUBLISHED BY SOCIAL MEDIA PLATFORMS VIA PRESS RELEASES, INVESTOR EARNINGS ANNOUNCEMENTS, AND IN SELF-SERVE ADVERTISING TOOLS; ARAB SOCIAL MEDIA REPORT; TECHRASA; NIKI AGHAEI; ROSE.R.U; KEPIOS ANALYSIS. NOTE: PENETRATION FIGURES ARE BASED ON TOTAL POPULATION, REGARDLESS OF AGE.

Hootsuite we are social

JAN
2019

SINGAPORE

THE ESSENTIAL HEADLINE DATA YOU NEED TO UNDERSTAND MOBILE, INTERNET, AND SOCIAL MEDIA USE



TOTAL
POPULATION



5.83
MILLION

URBANISATION:

100%

MOBILE
SUBSCRIPTIONS



8.37
MILLION

vs. POPULATION:

144%

INTERNET
USERS



4.92
MILLION

PENETRATION:

84%

ACTIVE SOCIAL
MEDIA USERS



4.60
MILLION

PENETRATION:

79%

MOBILE SOCIAL
MEDIA USERS



4.20
MILLION

PENETRATION:

72%

15

SOURCES: POPULATION: UNITED NATIONS; U.S. CENSUS BUREAU. MOBILE: GSMA INTELLIGENCE. INTERNET: INTERNETWORLDSTATS; ITU; WORLD BANK; CIA WORLD FACTBOOK; EUROSTAT. LOCAL GOVERNMENT BODIES AND REGULATORY AUTHORITIES; MIDEASTMEDIA.ORG; REPORTS IN REPUTABLE MEDIA. SOCIAL MEDIA: PLATFORMS' SELF-SERVE ADVERTISING TOOLS; PRESS RELEASES AND INVESTOR EARNINGS ANNOUNCEMENTS; ARAB SOCIAL MEDIA REPORT; TECHRASA; NIKI AGHAEB; ROSE.R.U. (ALL LATEST AVAILABLE DATA IN JANUARY 2019).



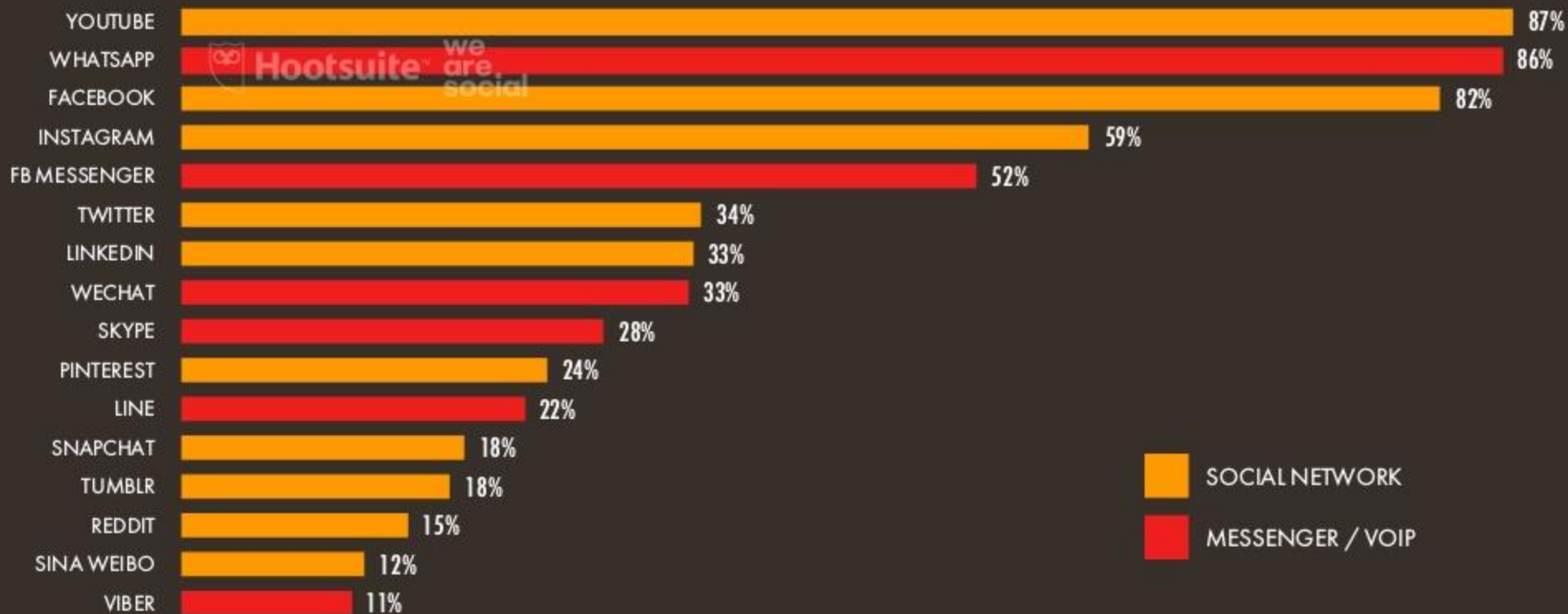
Hootsuite™

we
are
social

JAN
2019

MOST ACTIVE SOCIAL MEDIA PLATFORMS

PERCENTAGE OF INTERNET USERS WHO REPORT USING EACH PLATFORM [SURVEY BASED]



JAN
2019

SOCIAL MEDIA ADVERTISING AUDIENCES

A COMPARISON OF THE TOTAL ADDRESSABLE ADVERTISING AUDIENCE* OF SELECTED SOCIAL MEDIA PLATFORMS



TOTAL ADVERTISING
AUDIENCE ON FACEBOOK
(MONTHLY ACTIVE USERS)



4.30
MILLION

FEMALE 48%
MALE 52%

TOTAL ADVERTISING
AUDIENCE ON INSTAGRAM
(MONTHLY ACTIVE USERS)



2.20
MILLION

FEMALE 55%
MALE 45%

TOTAL ADVERTISING
AUDIENCE ON TWITTER
(MONTHLY ACTIVE USERS)



1.01
MILLION

FEMALE 38%
MALE 62%

TOTAL ADVERTISING
AUDIENCE ON SNAPCHAT
(MONTHLY ACTIVE USERS)



555.0
THOUSAND

FEMALE 59%
MALE 40%

TOTAL ADVERTISING
AUDIENCE ON LINKEDIN
(REGISTERED MEMBERS)



2.60
MILLION

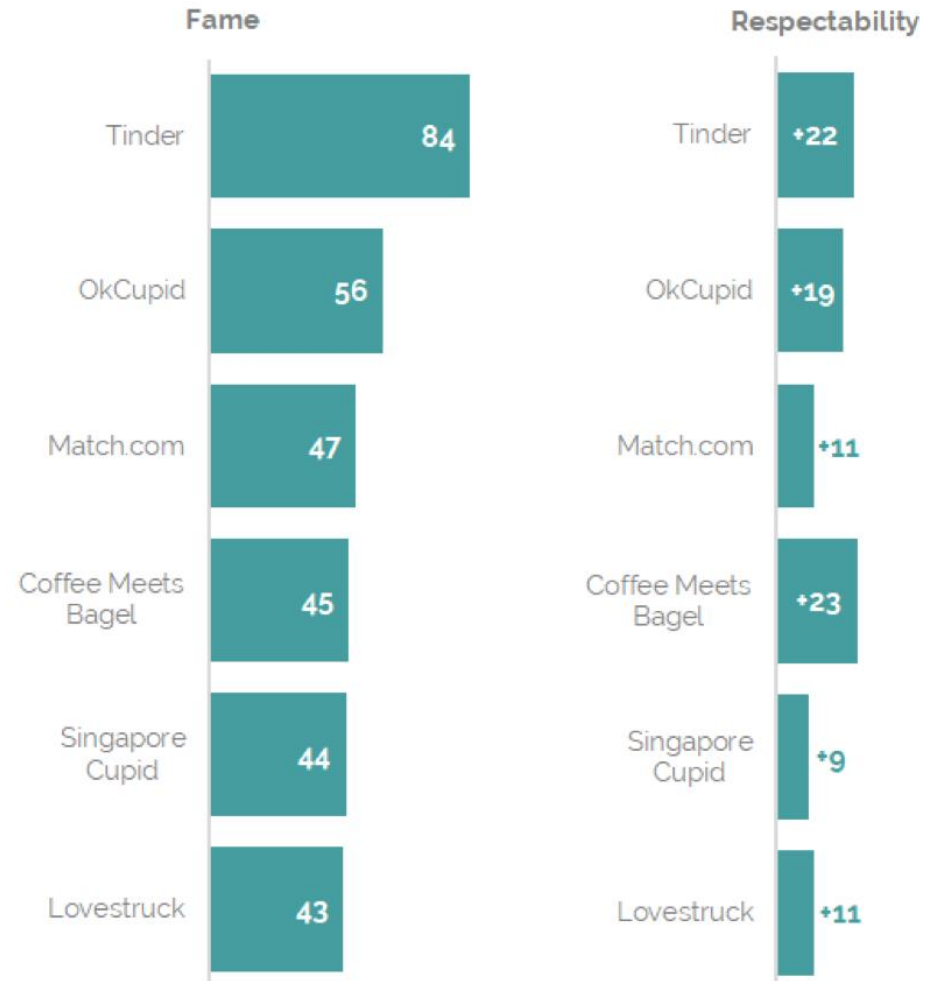
FEMALE 46%
MALE 54%

ONLINE DATING APPS

- YouGov survey of 1038 Singaporeans in 2017; weighted to be representative of online population
- About 33% of Singaporeans had ever used a dating app

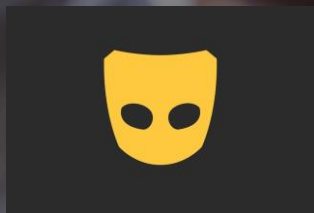
Internet dating rankings

% of all adults who have heard of the following, and net respectability score among people who have ever used an internet dating service or app



SOCIAL APP

THE LARGEST & MOST ENGAGED MILLENNIAL GAY AUDIENCE



INTO
INTOMORE.COM

Grindr



Thailand — 100K

Singapore — 50k

Indonesia — 200k

HK — 40k

Taiwan — 50K

Malaysia — 120K

Philippines — 140K

Vietnam — 35K

Monthly active users

TOTAL SEA — 735K



54 MINS.

Spent in app per day
(More than Facebook,
Snapchat, Instagram)



18%

User growth
Year-over-year in 2016



75%+

of Grindr and INTO
users are millennials



SOCIAL MEDIA AND STI PREVENTION

SUCCESSES IN THE REGION



CROWDSOURCING IN CHINA

 A Peer-Reviewed, Open Access Journal
View this Article | Submit to PLOS | Get E-Mail Alerts | Contact Us

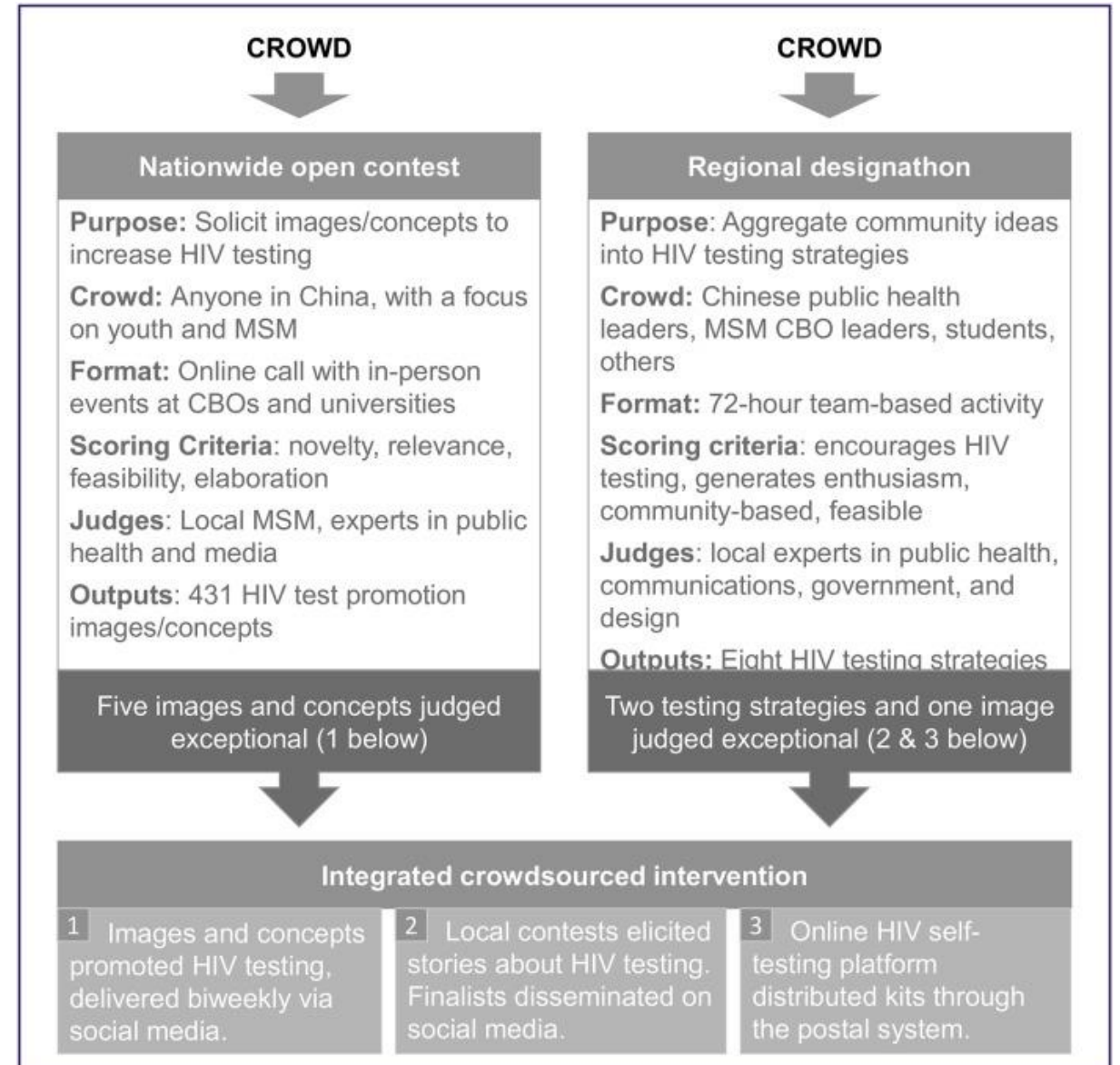
PLoS Med. 2018 Aug; 15(8): e1002645. PMID: PMC6112627
Published online 2018 Aug 28. doi: [10.1371/journal.pmed.1002645](https://doi.org/10.1371/journal.pmed.1002645) PMID: [30153265](https://pubmed.ncbi.nlm.nih.gov/30153265/)

Crowdsourcing to expand HIV testing among men who have sex with men in China: A closed cohort stepped wedge cluster randomized controlled trial

Study Design

1. Crowdsourcing for HIV posters
2. Designation for HIV campaign
3. Stepped-wedge RCT in 8 Chinese cities

Source: Tang W, Wei C, Cao B, Wu D, Li KT, et al. (2018) Crowdsourcing to expand HIV testing among men who have sex with men in China: A closed cohort stepped wedge cluster randomized controlled trial. PLOS Medicine 15(8): e1002645. <https://doi.org/10.1371/journal.pmed.1002645>



CROWDSOURCING IN CHINA

A poster featuring five hands of different skin tones arranged in a circle, holding a central illustration of a man and a woman in rainbow-colored clothing. Above them are three small red hearts. At the bottom, there is a yellow banner with a red ribbon icon and Chinese text.

我们一起检测HIV
让艾不在圈子蔓延
For our home please detect HIV together

An advertisement for an HIV rapid test kit. It shows a hand holding a test tube with red liquid. Below it are three test kits with different results: one with one red line, one with two red lines, and one with three red lines. The text is in Chinese.

少年，你几道杠？

骚年，你造嘛：
在HIV快速筛查试剂中，
一道杠代表阴性，
两/三道杠代表疑似阳性，
如有高危行为请去检测。

CROWDSOURCING IN CHINA

Pre-intervention (0-9 months)#	Intervention (3 months)	Post-intervention (0-9 months)#
Routine CDC and CBO promotional efforts	Routine CDC and CBO promotional efforts 6 HIV promotional images delivered biweekly via WeChat Access to HIV self-testing application platform (one free self test)* Local CBO-led contests for HIV testing stories	Routine CDC and CBO promotional efforts Exposure lag: sharing of promotional images Exposure lag: delay in usage of self-testing kits (up to 3 months) Exposure lag in CBO-led contests (1-2 months)
Baseline survey and follow-up surveys every 3 months		

CROWDSOURCING IN CHINA

Table 2. HIV testing rates by intervention group over four follow-up periods among Chinese MSM, 2016–2017 (N = 1,219).

Group	Enrollment, n	HIV testing proportion in the past three months, percent (participants tested/total participants)*			
		1st follow-up	2nd follow-up	3rd follow-up	4th follow-up
Group 1	383	19.1 (56/293)	35.4 (99/280)	25.4 (70/276)	32.0 (88/275)
Group 2	328	19.7 (55/279)	32.7 (85/260)	29.1 (69/237)	36.5 (85/233)
Group 3	316	19.8 (51/257)	23.9 (61/255)	49.8 (122/245)	39.4 (93/236)
Group 4	354	21.3 (62/291)	28.3 (83/293)	29.0 (83/286)	48.7 (128/263)

Table 3. Effect of crowdsourced intervention on uptake of HIV testing among Chinese MSM, 2016–2017: Generalized linear mixed models (N = 1,219).

Effect	Estimate (95% CI) ^ε	p-value	ICC by city
Risk ratio			
HIV testing in the past three months (individual level)			
Intervention effect assuming fixed secular trend	1.43 (1.19, 1.73)	<0.001	0.016
Per-protocol effect*	1.49 (1.21, 1.83)	<0.001	0.020
Intervention effect adjusted for province [¶]	1.47 (1.21, 1.78)	<0.001	0.011
Intervention effect adjusted for age, marital status, and income	1.43 (1.18, 1.73)	<0.001	0.016
Intervention effect using multiple imputation	1.43 (1.17, 1.69)	<0.001	---
By age group			
Age ≤30	1.41 (1.16, 1.72)		
Age >30	1.57 (1.12, 2.21)		
By in-person community activities			
Cities with in-person community activities ¹	1.56 (1.24, 1.96)		
Cities without in-person community activities ²	1.35 (1.06, 1.73)		
Risk (probability) difference, percent			
City-level HIV testing in the past three months			
Weighted by sample size for each city	8.9 (2.2, 15.5)	0.01	---

'GET AN EARLY TEST - CHRYSANTHEMUM TEA' IN HONG KONG



Multimedia Campaign: 'Kuk Fa Cha'

Kuk Fa = Pun for 'anus'
Cha = Homophone for 'test'

Campaign elements:

1. Viral 1-minute video
2. Posters and pamphlets
3. Dedicated campaign website
4. 'Fake' chrysanthemum tea vending machines at gay-specific venues; gift packs contain condoms and HIV testing information

'GET AN EARLY TEST - CHRYSANTHEMUM TEA' IN HONG KONG



CHRYSANTHEMUM TEA IN HONG KONG

Cross-sectional study design

- 6 months post-campaign
- 150 participants recruited from 12 gay venues at different time slots on week day and weekend events
- Those who tested in last 6 months associated with awareness of campaign

Source: Kwan, N. , Wong, A. , Fang, Y. and Wang, Z. (2018), 'Get an early check – Chrysanthemum tea': An outcome evaluation of a multimedia campaign promoting HIV testing among men who have sex with men in Hong Kong. *HIV Med*, 19: 347-354. doi:10.1111/hiv.12583

Table 2 Factors associated with uptake of HIV testing in the last 6 months

	Row %	ORu (95% CI)	ORm (95% CI)
Age group			
18-29 years	47.7	1.0	
30-39 years	41.5	0.78 (0.37, 1.65)	
≥40 years	30.8	0.49 (0.19, 1.24)	—
Received free condoms in the last year			
No	32.4	1.0	
Yes	46.6	1.82 (0.83, 3.95)	—
Had anal intercourse with regular male sex partners			
No	32.7	1.0	
Yes	48.5	1.94 (0.97, 3.90) [†]	NS
Had anal intercourse with nonregular male sex partners			
No	32.2	1.0	1.0
Yes	57.6	2.86 (1.47, 5.55)**	2.36 (1.05, 5.31)*
Had anal intercourse with commercial male sex partners			
No	43.2	1.0	
Yes	40.0	0.88 (0.14, 5.39)	—
Used illicit drugs before or during anal intercourse with men			
No	43.2	1.0	
Yes	42.9	0.99 (0.21, 4.57)	—
Had unprotected anal intercourse with any type of male sex partner			
No	24.5	1.0	1.0
Yes	53.0	3.47 (1.66, 7.26)***	2.06 (0.87, 4.92)
Exposure to the 'Get an early check – chrysanthemum tea' campaign			
No	33.7	1.0	1.0
Yes	54.3	2.33 (1.21, 4.48)*	2.55 (1.25, 5.19)*

Variables listed in Table 1 with $P < 0.10$ in univariate analysis were considered as candidates for the forward stepwise logistic regression (entry: $P < 0.10$; exclusion: $P > 0.20$).

[†] $P < 0.10$; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$; — $P > 0.10$ in the univariate analysis, and not considered in the model. Bold text indicates significance at $P < 0.05$. CI, confidence interval; ORu, univariate odds ratio; ORm, multivariate odds ratio. NS was considered but not selected by the multivariate model.

USE OF INTERNET POPULAR OPINION LEADERS IN TAIWAN



Campaign elements:

1. Internet popular opinion leaders (iPOL) were identified via formative online ethnography and recommendations from community leaders
2. 369 iPOL were trained by HIV/STI experts during a 12-week period in 2010
3. Intervention period from April-September 2011
4. By end-2011, 432 posts, 503 comments, 804 likes were garnered in total with estimated 959088 impressions on the page

USE OF INTERNET POPULAR OPINION LEADERS IN TAIWAN

Table 3. Intervention effects on HIV testing and sexual behaviors within the previous 3 months among Internet-using MSM.

Outcome variables	Baseline ^a , n (%) n=1008		Follow-up, n (%) n=1037		χ^2 (df)	P value
	Intervention ^b n=501	Comparison ^b n=507	Intervention ^b n=499	Comparison ^b n=538		
Had HIV test in the past 6 months						
No	351 (70.05)	360 (71.14)	280 (56.11)	418 (77.69)	54.8 (1)	.001
Yes	150 (29.95)	146 (28.86)	219 (43.89)	120 (22.31)		
Number of male sexual partners						
0	145 (29.00)	145 (28.71)	117 (23.44)	175 (32.52)	9.9 (3)	.02
1	182 (36.40)	176 (34.85)	170 (34.06)	163 (30.29)		
2-5	145 (29.00)	155 (30.69)	176 (35.27)	172 (31.97)		
≥ 6	28 (5.60)	29 (5.74)	36 (7.21)	28 (5.20)		



MAKING IT WORK!

LESSONS FROM STI PREVENTION ON SOCIAL MEDIA IN SINGAPORE



SOCIAL MEDIA APPLICATIONS



Research recruitment



**Health promotion and
interventions**



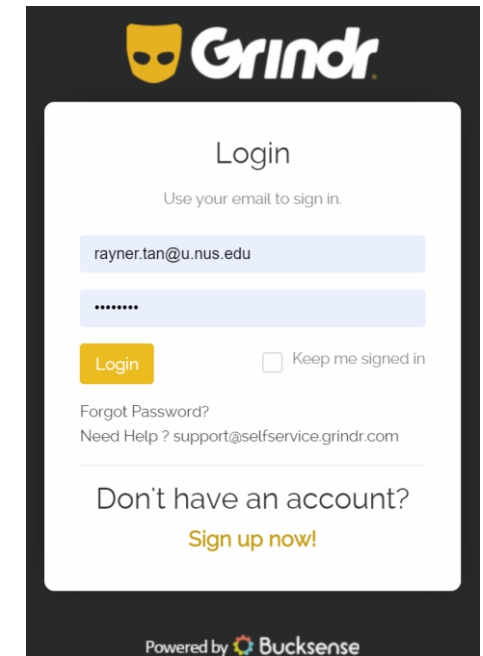
RECRUITMENT



Collaborations



**Community-Based Social
Media Networks**



Advertising platforms



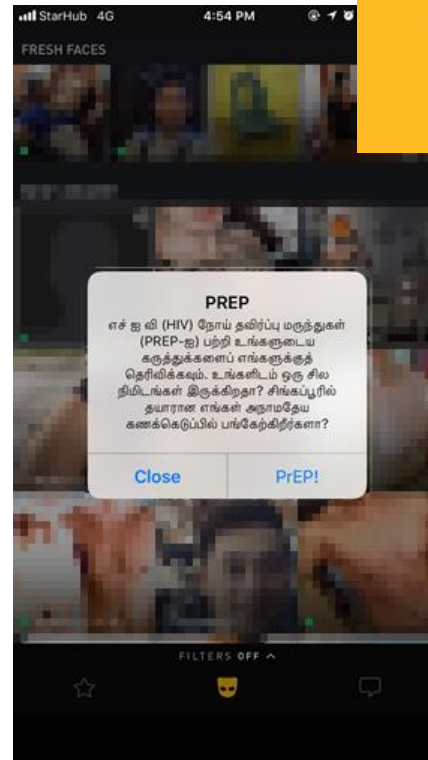
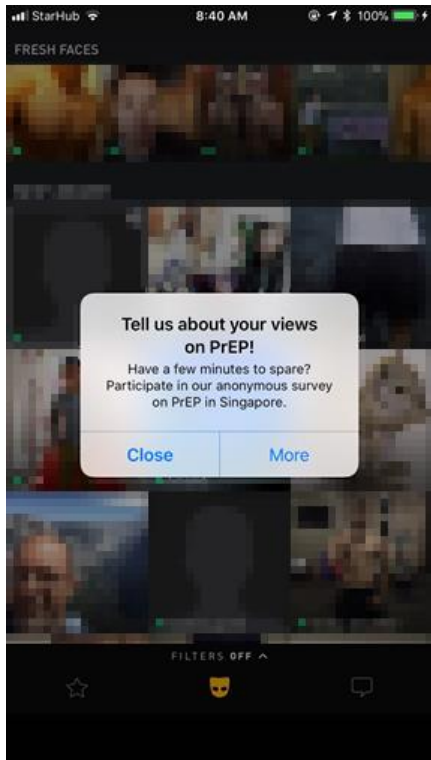
RECRUITMENT: COLLABORATIONS **GRINDR4EQUALITY & PREP IN SINGAPORE**



Collaborations

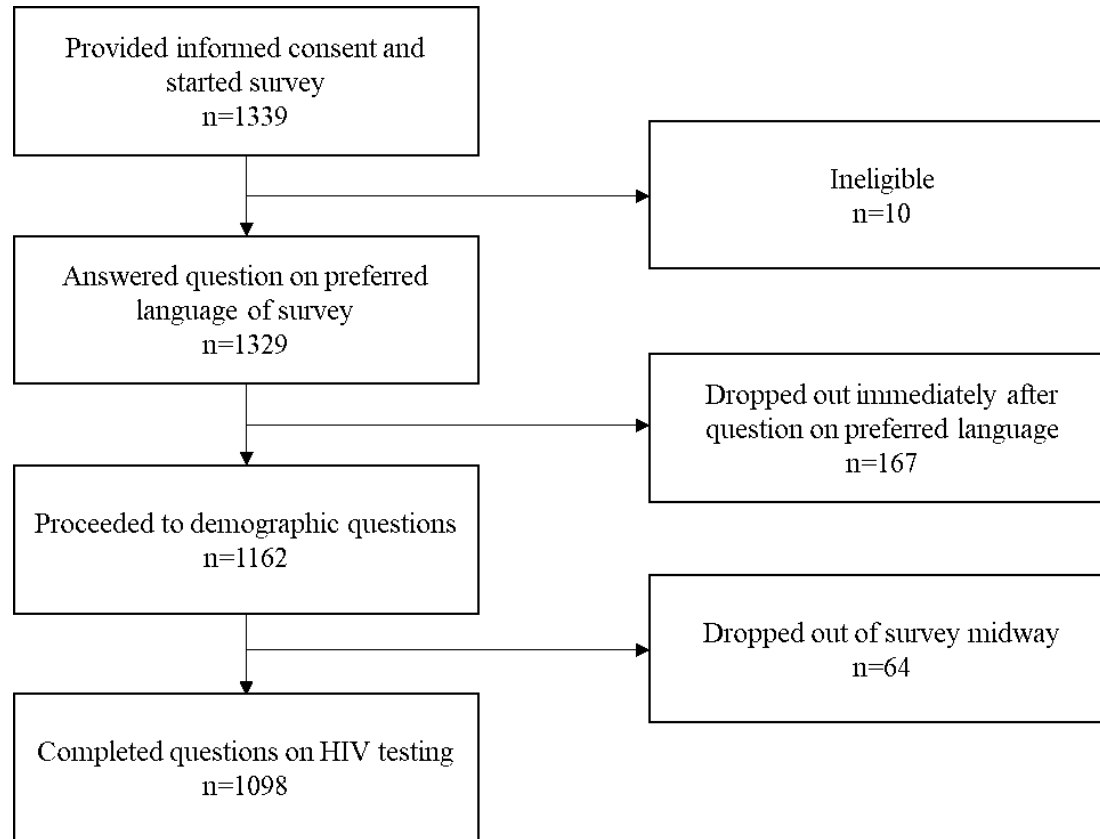


RECRUITMENT: COLLABORATIONS GRINDR4EQUALITY & PREP IN SINGAPORE

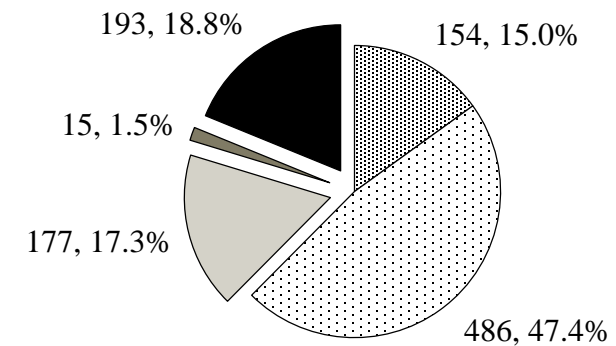




RECRUITMENT: COLLABORATIONS GRINDR4EQUALITY & PREP IN SINGAPORE



**Knowledge, Uptake, and Willingness to Use PrEP
(n=1025)**



- Yes, I have taken it
- ▣ Yes, I have heard of it but not taken it: Willing to use PrEP
- ▤ Yes, I have heard of it but not taken it: Not willing to use PrEP
- ▥ Yes, I have heard of it but not taken it: No response to PrEP willingness question
- No, I have never heard of it



RECRUITMENT: COLLABORATIONS GRINDR4EQUALITY & PREP IN SINGAPORE

Recruitment
Phase: April
– May 2019

10-minute
Survey and
Discrete
Choice
Experiment

Recruited
n=841 MSM

If these were your only 2 options, which would you prefer? Please select your preferred option before answering the question at the bottom of the page.

(1 of 4)

PrEP medication

- Get at: **Anonymous test sites**
- Cost per month: **\$50**

Follow-up tests

- At: **GP clinics**
- Every: **12 months**
- Cost: **\$150**

Risks per sexual encounter

- HIV infection: **0%**
- STI infection: **20%**

Select

PrEP medication

- Get at: **GP clinics**
- Cost per month: **\$350**

Follow-up tests

- At: **Polyclinic or hospital**
- Every: **3 months**
- Cost: **\$100**

Risks per sexual encounter

- HIV infection: **1%**
- STI infection: **5%**

Select

PrEP only versus Condoms only

Now that you have selected your preferred PrEP option above, we want to compare your preferred option with a condoms-only option*

Would you prefer to **use PrEP only** or **use condoms only**, based on your preferred PrEP option above?

**This assumes that using condoms lowers risk of HIV/STI infection to 0%*

PrEP only

Condoms only



RECRUITMENT: COMMUNITY NETWORKS

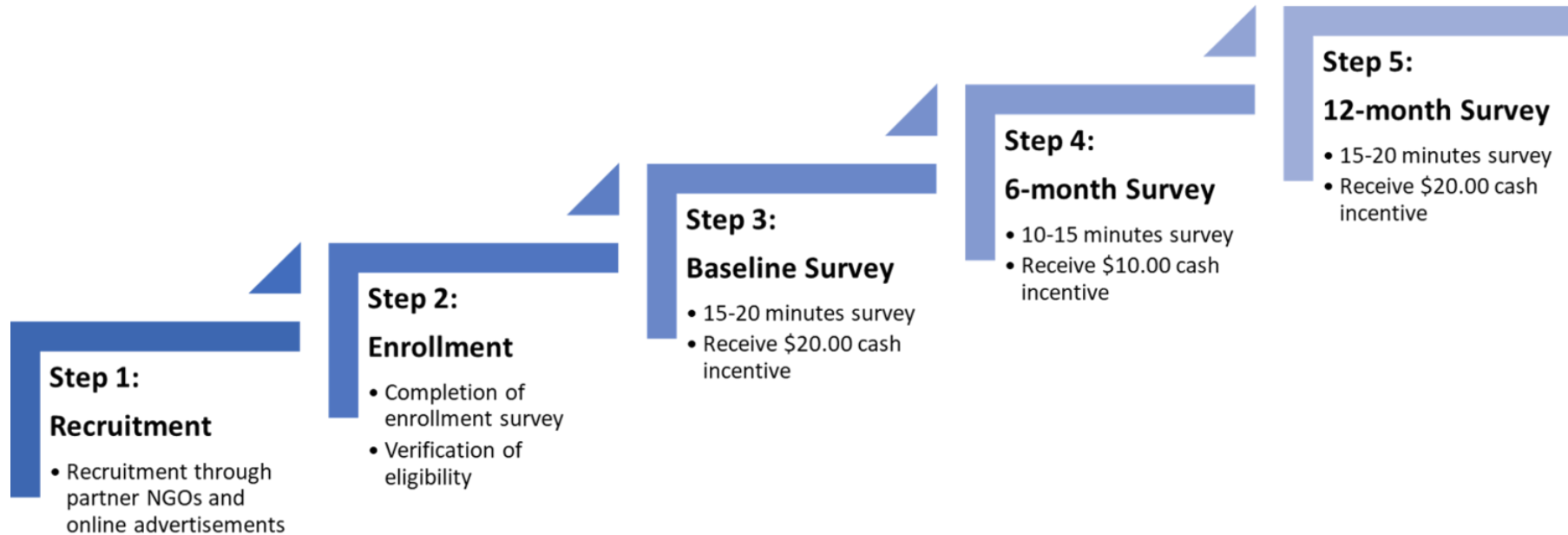
PINK CARPET Y COHORT STUDY



**Community-Based Social Media
Networks**



RECRUITMENT: COMMUNITY NETWORKS PINK CARPET Y COHORT STUDY



Eligibility Criteria:

- 18 to 25 years old at enrolment
- HIV-negative or unsure of status
- Cis/trans male who identifies as gay, bisexual, or queer

Total Performance:

- 701 participants enrolled
- 570 baseline surveys completed



RECRUITMENT: COMMUNITY NETWORKS PINK CARPET Y COHORT STUDY



Saw Swee Hock
School of Public Health



Are you 18-25 years old?
An SG citizen/PR?
HIV-negative/unsure of status?
A gay/bi/queer, cis/trans man?

HAVE A SAY IN YOUR HEALTH
BE A VOICE FOR THE COMMUNITY

Fill up a series of
confidential surveys and earn
up to \$50.00 in cash

ENROLL TODAY!

www.pcycohort.com

A collaboration by the
Saw Swee Hock School of Public Health (NUS)
and Action for AIDS Singapore





In the last 6 months, in which types of venues or channels in Singapore have you used to hook up with other guys? (n=543)	n	%
Through smartphone apps	312	57.5
Through friends	109	20.1
Saunas	93	17.1
Private or home parties (in Singapore)	84	15.5
Through internet sites and chatrooms	68	12.5
Public toilets	57	10.5
Bars and clubs	39	7.2
Public parks or other public area	25	4.6
At the gym	17	3.1
Paid someone to have sex	7	1.3

Which of these smartphone apps or internet sites and chatrooms did you use to meet other guys for sex in the last 6 months? (n=543)	n	%
Grindr	295	54.3
Tinder	151	27.8
Jack'd	142	26.2
Recon	20	3.7
Surge	15	2.8
Growlr	12	2.2
Scruff	10	1.8
Blued	9	1.7
Hornet	7	1.3
Coffee Meets Bagel	6	1.1
Planetromeo	4	0.7
9Monsters	3	0.6



RECRUITMENT: ADVERTISING AIMSS & PCY COHORT STUDY

Campaign	Impressions	Clickthrough Rate	Total Clicks	Total Spend
AIMSS 2018 (43 Days)	83350	6.55%	5403	\$1000.00
Pink Carpet Y Cohort Study (32 Days)	80188	3.79%	4456	\$900.00

Advertising

**AIMSS 2018
n=80**

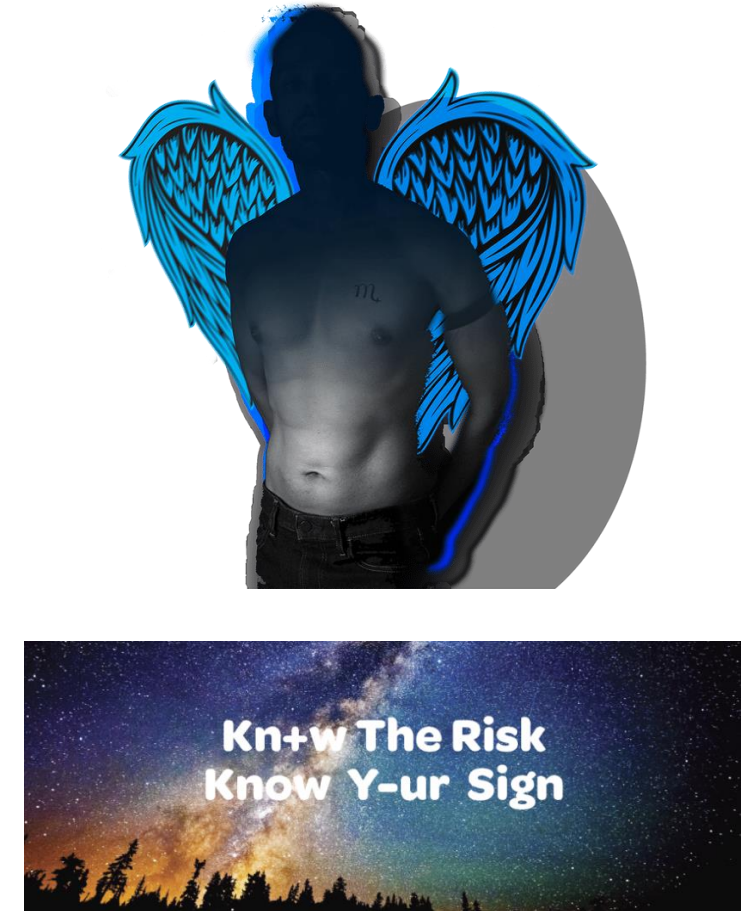
**PCY Cohort
Study
n=uncertain**



HEALTH PROMOTION & INTERVENTIONS



gayhealth.sg
In the Pink





HEALTH PROMOTION & INTERVENTIONS

Season 1: > 1.3 Million Views



Award Nominations

8th Indie Series Awards

Best Web Series – Drama
Best Directing – Drama (Leon Cheo)
Best Supporting Actor – Drama (Steven Lim)
Best Cinematography (Looi Wan Ping)
Best Editing (Christopher Datugan)

3rd Bilbao Web Fest

Best Series
Best Drama,
Best Ensemble Cast
Best Cinematography (Looi Wan Ping)

3rd Rio Web Fest

Best Diversity Series
Best Cinematography

5th Melbourne Web Fest

Best International Drama

Awards

2017 – Best Web Drama Series – 1st Formosa Festival of Int'l Filmmaker Awards
2017 – Best Supporting Actor (Drama) – 8th Indie Series Awards
2016 – Best Short TV Drama – 11th ITVFest – Independent Television Festival

Festivals

2017 – 1st Formosa Festival of Int'l Filmmaker Awards
2017 – 3rd Bilbao Seriesland
2017 – 5th Melbourne Web Fest
2017 – 2nd Out Web Fest
2017 – 33rd Los Angeles Asian Pacific Film Festival
2017 – 6th HollyWeb Festival
2016 – 2nd NYC Web Fest
2016 – 3rd Rio Web Fest
2016 – Roma Web Fest
2016 – 11th ITVFest – Independent Television Festival



HEALTH PROMOTION & INTERVENTIONS

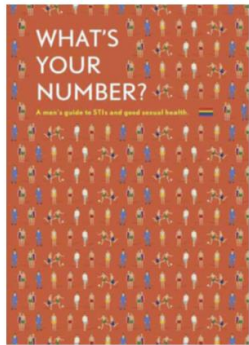
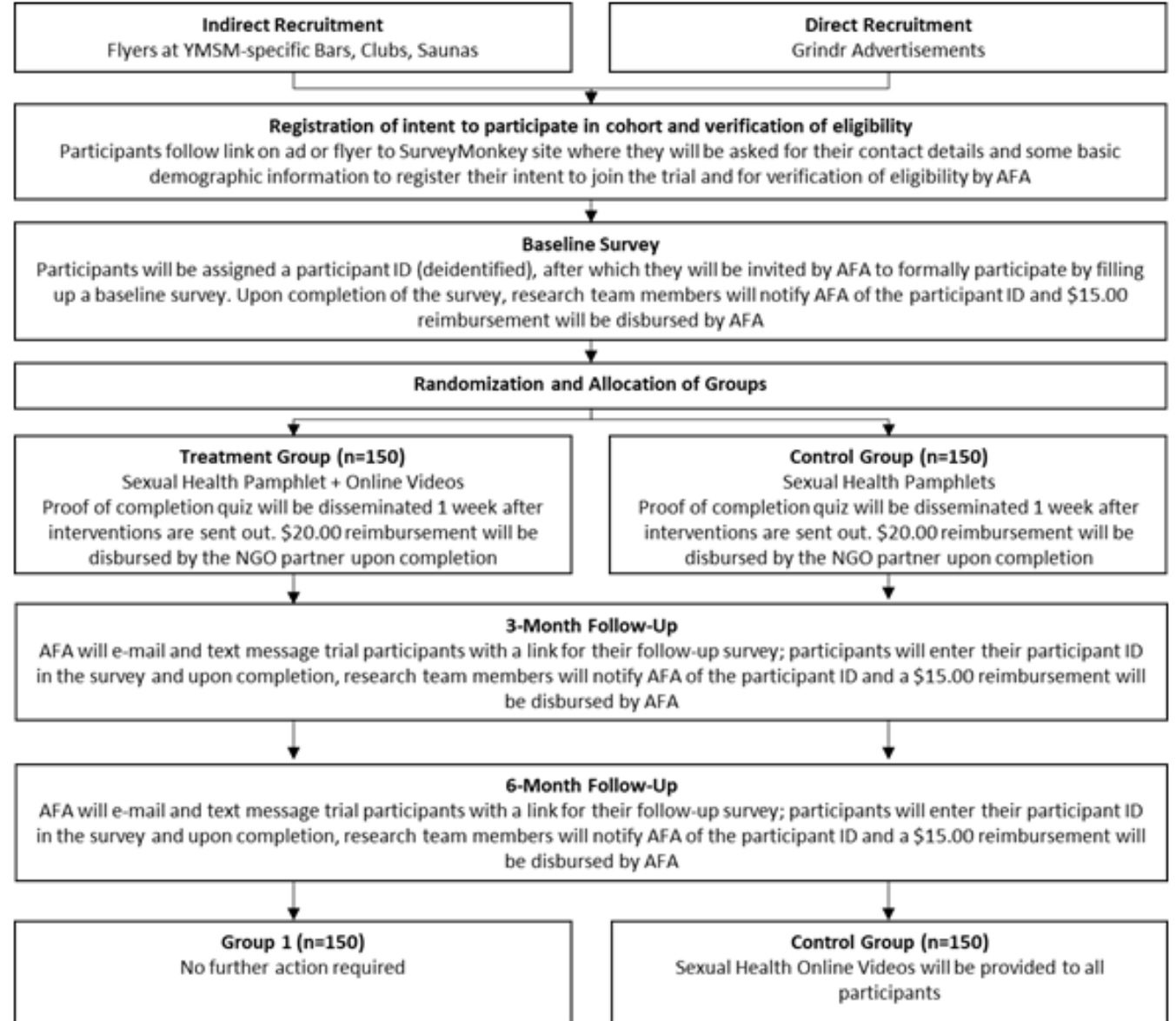


Figure 3. Screenshots from the online sexual health pamphlet





CONCLUSION

TAKE HOME MESSAGES





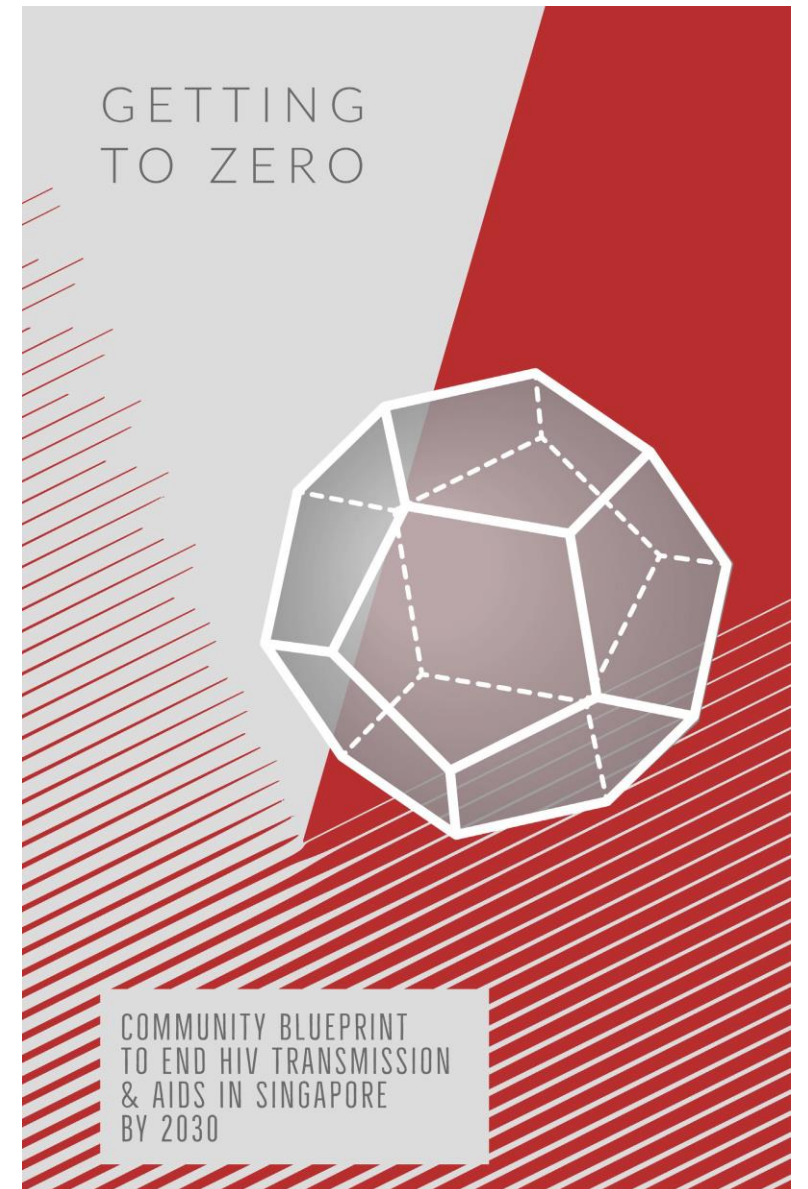
TAKE HOME MESSAGES

- Social media penetration is high, especially in Singapore.
- Past social media campaigns for HIV/STI prevention have been useful in other settings.
- Social media is useful to reach populations who may have been left behind by formal healthcare institutions for epidemiological research as well as health promotion and interventions.
- We are not maximizing the use of social media for health and health interventions, especially in STI research and health promotion.
- Where are the campaigns for non-gay men? Trans women, cis women, heterosexual men are left out.
- More work needs to be done to evaluate social media-based health promotion material.

BLUEPRINT TO END HIV IN SINGAPORE

Table of Contents

TABLE OF CONTENTS	1
EXECUTIVE SUMMARY	2
INTRODUCTION	6
KEY POPULATION: HIGH RISK HETEROSEXUAL MEN	10
KEY POPULATION: MEN WHO HAVE SEX WITH MEN	14
HIDDEN POPULATION: TRANSGENDER PEOPLE	18
HIDDEN POPULATION: UNREGULATED SEX WORKERS	21
HIDDEN POPULATION: PEOPLE WHO USE DRUGS (PUDS)	25
POPULATION SEGMENT: LATE PRESENTERS	28
TACKLING HIV-RELATED STIGMA AND DISCRIMINATION	31
THE COMMUNITY WORKFORCE – GENERAL PRACTITIONERS & COMMUNITY GROUPS PROVIDING SERVICES TO AFFECTED POPULATIONS	36
NORMALISING AND SCALING-UP THE USE OF PREP	38
MONITORING AND EVALUATION OF HIV PREVENTION PROGRAMMES	41





THANK YOU

QUESTIONS

