



AppCensus

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1,000 Mobile Apps in Australia: Appendix B: Health Apps

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B Health Apps

In this section, in contrast with the analysis in Section 4 that examined privacy trends across the three categories of apps, we present summary data about the specific apps that we tested within the Health category. For these 103 apps, we present information about the data types transmitted by these apps during the testing period (Section B.1), which includes the most popular apps in this category that we detected transmitting these data types (Section B.1.4), and the most common recipients of this data (Section B.1.2). In Section B.2, we list the most frequently requested “dangerous” permissions by these apps,⁸⁷ as well as the most popular apps that requested them (in contrast with popular apps in this category that requested the fewest permissions). Finally, we list the most common SDKs identified within these apps (Section B.3),⁸⁸ including highlighting those that are most likely to collect user information (i.e., SDKs involved in analytics and advertising).

B.1 Data Types Transmitted

Apps in the Health category were observed transmitting the data types listed in Table 15 during the testing period.⁸⁹

Data Type	# of Apps	(% of Apps)
AAID	65	(63.1%)
Android ID	45	(43.7%)
Email	17	(16.5%)
Name	12	(11.7%)
GPS Location	12	(11.7%)
Coarse Location	12	(11.7%)
WiFi BSSID	2	(1.9%)
WiFi SSID	2	(1.9%)
WiFi MAC	2	(1.9%)
BT Name	1	(1.0%)

Table 15: Data types transmitted by apps in the Health category during the testing period.

⁸⁷For an explanation of dangerous permissions, see Section 4.3.

⁸⁸For an explanation of SDKs, see Section 4.1.2.

⁸⁹For an explanation of these data types, see Section 3.

B.1.1 Most Common Hostnames Contacted

Table 16 depicts the top 10 hostnames observed being contacted by Health apps during the testing period, whereas Table 17 depicts the top 10 parent companies corresponding to these hostnames. This data reflects Internet servers that were *contacted* by apps, but does not necessarily mean that they received sensitive user information—we specifically discuss that subset of recipients in Section B.1.2. The discrepancy between the two sections is due to the fact that some app transmissions may simply not contain sensitive user information⁹⁰ or that its transmission was obfuscated using a method that we did not immediately recognize.

Hostname	Parent Company	# of Apps	(% of Apps)
settings.crashlytics.com	Google	65	(63.1%)
graph.facebook.com	Facebook	48	(46.6%)
firebaseremoteconfig.googleapis.com	Google	48	(46.6%)
googleads.g.doubleclick.net	Google	31	(30.1%)
firebaseinstallations.googleapis.com	Google	22	(21.4%)
tpc.google syndication.com	Google	22	(21.4%)
csi.gstatic.com	Google	20	(19.4%)
lh3.googleusercontent.com	Google	20	(19.4%)
cdn.branch.io	Branch Metrics	19	(18.4%)
pagead2.googleadservices.com	Google	17	(16.5%)

Table 16: The top 10 most common hostnames contacted by Health apps during testing.

Company	# of Apps	(% of Apps)
Google	87	(84.5%)
Facebook	51	(49.5%)
Branch Metrics	19	(18.4%)
Amplitude	16	(15.5%)
AppsFlyer	15	(14.6%)
NA	13	(12.6%)
Adjust	12	(11.7%)
Liftoff	12	(11.7%)
Braze	10	(9.7%)
Verizon	6	(5.8%)

Table 17: The top 10 most common companies contacted by Health apps during testing.

⁹⁰We define “user information” in Section 3.

B.1.2 Most Common Data Recipients

Table 18 depicts the top 10 data recipients among the Health apps during the testing period. Figure 31 depicts the approximate locations of these companies' Internet servers,⁹¹ while Table 19 lists additional information about the most common data recipients, such as the approximate locations of their servers, IP addresses contacted during testing, and the types of sensitive user information that we observed them receive.

Hostname	Parent Company	# of Apps	(% of Apps)
graph.facebook.com	Facebook	40	(38.8%)
api2.branch.io	Branch Metrics	16	(15.5%)
api.amplitude.com	Amplitude	16	(15.5%)
app.adjust.com	Adjust	10	(9.7%)
launches.appsflyer.com	AppsFlyer	10	(9.7%)
inapps.appsflyer.com	AppsFlyer	8	(7.8%)
settings.crashlytics.com	Google	6	(5.8%)
www.facebook.com	Facebook	6	(5.8%)
data.flurry.com	Verizon	4	(3.9%)
rollouts.api.ua.com	Under Armour	4	(3.9%)

Table 18: The top 10 most common data recipients from Health apps during testing.

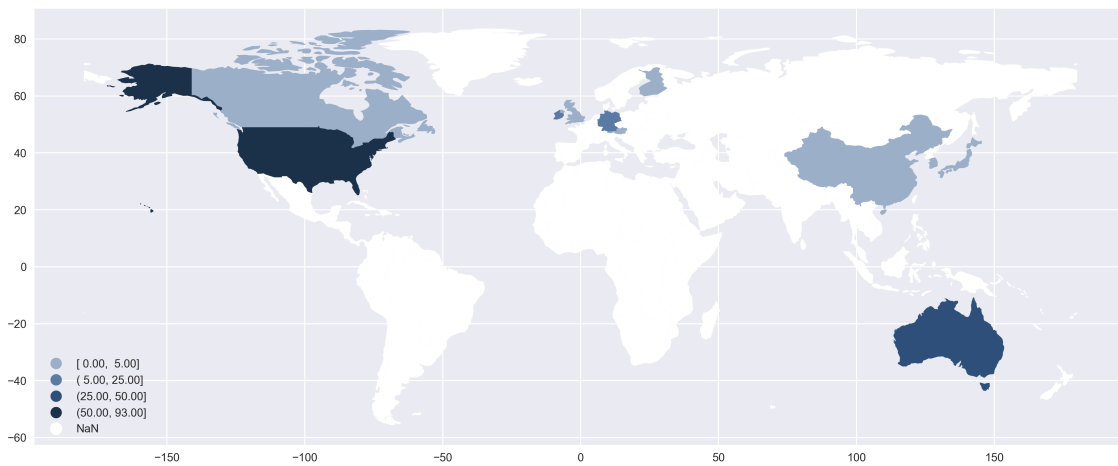


Figure 31: Percentage of Health apps transmitting to different countries during testing.

⁹¹ As determined by geolIP lookups.

Table 19: The 10 most common recipient hostnames of user information from Health apps during the testing period, along with their IP addresses, company information, and the data types that were observed being transmitted.

Parent Company	Country	IPs	Received Data
graph.facebook.com			
Facebook	United States	157.240.8.18 (US) 31.13.70.1 (US)	AAID Email
api.amplitude.com			
Amplitude	United States	52.27.215.6 (US) 52.11.137.254 (US) 52.33.249.84 (US) 34.217.186.250 (US) 52.26.238.149 (US) 52.27.22.242 (US) 54.69.48.36 (US) 54.69.211.111 (US) 54.201.178.213 (US) 54.148.167.80 (US) 34.213.9.114 (US) 54.201.177.56 (US) 54.203.10.108 (US) 52.26.27.141 (US)	GPS Location Android ID AAID Coarse Location
api2.branch.io			
Branch Metrics	United States	99.86.212.117 (US) 99.86.212.67 (US) 13.226.111.60 (US) 13.226.111.122 (US) 13.224.175.84 (US) 99.86.212.51 (US) 99.86.212.76 (US) 13.226.111.100 (US)	Android ID AAID
launches.appsflyer.com			
AppsFlyer	United States	52.19.22.112 (IE) 54.72.227.247 (IE) 52.48.237.184 (IE) 52.214.200.82 (IE) 52.19.47.237 (IE) 34.252.247.192 (IE) 52.209.184.45 (IE) 108.128.146.254 (IE) 54.194.148.72 (IE) 54.77.95.189 (IE)	Android ID AAID
app.adjust.com			
Adjust	United States	185.151.204.11 (DE) 185.151.204.12 (DE) 185.151.204.15 (DE) 185.151.204.14 (DE) 185.151.204.6 (DE) 185.151.204.7 (DE)	AAID

(Table Continues)

Table 19 (Continued)

Parent Company	Country	IPs	Received Data
<code>inapps.appsflyer.com</code>			
AppsFlyer	United States	52.210.72.149 (IE) 52.214.132.117 (IE) 54.171.1.118 (IE) 54.171.102.191 (IE) 54.77.155.158 (IE) 52.17.235.120 (IE) 52.208.189.239 (IE) 54.72.147.211 (IE)	Android ID AAID
<code>settings.crashlytics.com</code>			
Google	United States	172.217.167.99 (US) 142.250.66.195 (US) 216.58.200.99 (US) 172.217.25.163 (US)	Android ID AAID
<code>www.facebook.com</code>			
Facebook	United States	157.240.8.35 (US)	AAID
<code>data.flurry.com</code>			
Verizon	United States	115.178.9.19 (HK) 115.178.9.18 (HK)	Android ID AAID
<code>t.appsflyer.com</code>			
AppsFlyer	United States	34.250.113.5 (IE) 54.194.90.173 (IE) 52.18.129.177 (IE) 34.252.37.26 (IE)	Android ID AAID

B.1.3 Apps Ranked by Number of Recipients

Table 20 ranks the Health apps based on the number of recipients to which we detected each transmit sensitive user information during testing.

Table 20: Health apps ordered by the number of recipients during the testing period (by unique hostnames and their parent companies).

App	Developer	Installs	Recipients	
			Hostnames	Companies
Sleep Sounds Package Name: net.metapps.sleepsounds Version: 4.5.3.RC-Android-Free(69) (69)	Sound Sleep - Relaxing Sounds and White Noise	5,000,000	17	11
Relax Melodies: Sleep Sounds Package Name: ipnossoft.rma.free Version: 10.5.2 (9757)	Ipnos Software	10,000,000	12	8
Sleepa: Relaxing sounds, Sleep Package Name: net.relaxio.sleepo Version: 1.7.3.RC-GP-Free(35) (35)	Sound Sleep - Relaxing Sounds and White Noise	1,000,000	13	7
Run with Map My Run Package Name: com.mapmyrun.android2 Version: 20.9.0 (20090000)	MapMyFitness, Inc.	10,000,000	11	6
Walking & Running Pedometer for Health & Weight Package Name: cc.pacer.androidapp Version: p7.4.2 (2020041700)	Pacer Health	10,000,000	7	6
Runkeeper - GPS Track Run Walk Package Name: com.fitnesskeeper.runkeeper.pro Version: 10.6.3 (8785)	ASICS Digital, Inc.	10,000,000	8	6
Lifesum - Diet Plan, Macro Calculator & Food Diary Package Name: com.sillens.shapeupclub Version: 7.8.0 (361)	Lifesum	10,000,000	8	6
Calorie Counter by Lose It! for Diet & Weight Loss Package Name: com.fitnow.loseit Version: 12.3.103 (11658)	FitNow, Inc.	10,000,000	7	6
AllTrails: Hiking, Running & Mountain Bike Trails Package Name: com.alltrails.alltrails Version: 11.1.1 (7829)	AllTrails, LLC	5,000,000	7	6
C25K® - 5K Running Trainer Package Name: com.c25k Version: 143.51 (232)	Zen Labs Fitness	1,000,000	6	6
Plant Nanny ² - Your Adorable Water Reminder Package Name: com.fourdesire.plantnanny2 Version: 2.1.13.1 (58)	Fourdesire	1,000,000	11	6

(Table Continues)

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
adidas Running App by Runtastic - Running Tracker Package Name: com.runtastic.android Version: 11.1 (202005081)	Runtastic	50,000,000	7	5
Calorie Counter - MyFitnessPal Package Name: com.myfitnesspal.android Version: 20.7.0 (14675)	MyFitnessPal, Inc.	50,000,000	6	5
Nike Run Club Package Name: com.nike.plusgps Version: 3.7.1 (1715881210)	Nike, Inc.	10,000,000	6	5
Walk with Map My Walk Package Name: com.mapmywalk.android2 Version: 20.9.0 (20090000)	MapMyFitness, Inc.	5,000,000	10	5
JEFIT Workout Tracker, Weight Lifting, Gym Log App Package Name: je.fit Version: 10.52 (314)	Jefit Inc.	5,000,000	7	5
Fabulous: Self Care Package Name: co.thefabulous.app Version: 3.62 (36202)	TheFabulous	5,000,000	5	5
Insight Timer - Free Meditation App Package Name: com.spotlightsix.zentimerlite2 Version: 13.5.28 (628)	Insight Network Inc	1,000,000	7	5
Mindbody: Fitness & Workout App Package Name: com.mindbodyonline.connect Version: 6.9.1 (16300)	MINDBODY Inc	1,000,000	7	5
Map My Fitness Workout Trainer Package Name: com.mapmyfitness.android2 Version: 20.9.0 (20090000)	MapMyFitness, Inc.	1,000,000	11	5
HealthEngine Package Name: com.healthengine.android Version: 6.12.0 (6092)	HealthEngine Pty Ltd	500,000	6	5
Mi Fit Package Name: com.xiaomi.hm.health Version: 4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000	5	4
Strava: Track Running, Cycling & Swimming Package Name: com.strava Version: 149.10 (1213397)	Strava Inc.	10,000,000	5	4
Calm - Meditate, Sleep, Relax Package Name: com.calm.android Version: 4.25.1 (4120062)	Calm.com, Inc.	10,000,000	5	4
BetterMe: Home Workouts & Diet Package Name: com.gen.workoutme	BetterMe Limited	10,000,000	5	4

(Table Continues)

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
Version: 3.6.8 (364) Headspace: Meditation & Sleep Package Name: com.getsomeheadspace.android Version: 3.57.0 (62975)	Headspace for Meditation, Mindfulness and Sleep	10,000,000	5	4
Clue Period Tracker, Ovulation & Cycle Calendar Package Name: com.clue.android Version: 19.1 (2858)	Clue Period Tracker by BioWink	10,000,000	3	3
Sweatcoin —It Pays To #StayHome Package Name: in.sweatco.app Version: 28.1 (1047)	Sweatco Ltd	10,000,000	4	3
Freeletics Training Coach –Bodyweight & Mindset Package Name: com.freeletics.lite Version: 6.17.0 (346884)	Freeletics	10,000,000	6	3
Sleep Cycle: Sleep analysis & Smart alarm clock Package Name: com.northcube.sleepcycle Version: 3.10.0.4578-release (4578)	Sleep Cycle AB	5,000,000	3	3
Geocaching® Package Name: com.groundspeak.geocaching.intro Version: 8.22.0 (1081)	Groundspeak Inc.	5,000,000	3	3
Stronglifts 5x5 - Weight Lifting & Gym Workout Log Package Name: com.stronglifts.app Version: 2.6.21 (404)	StrongLifts	1,000,000	4	3
Carb Manager: Keto Diet Tracker & Macros Counter Package Name: com.wombatapps.carbmanager Version: 6.4.3 (109)	Wombat Apps LLC	1,000,000	3	3
Moshi: Sleep and Mindfulness Package Name: com.mindcandy.sleepstories Version: 4.5.0 (653)	Mind Candy Ltd	500,000	3	3
Flo Period tracker, Ovulation & Pregnancy tracker Package Name: org.iggymedia.periodtracker Version: 4.48.1 (44801)	Flo Health, Inc.	50,000,000	2	2
Yoho Sports Package Name: com.uthink.ring Version: 20.35.69 (412)	mCube Inc.	10,000,000	3	2
Fitbit Package Name: com.fitbit.FitbitMobile Version: 3.20 (20243498)	Fitbit, Inc.	10,000,000	3	2
Period Tracker, Ovulation Calendar & Fertility app Package Name: com.period-tracker.pregnancy.ovulationtracker Version: 1.47.49 (49)	Leap Fitness Group	10,000,000	2	2

(Table Continues)

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
WW (Weight Watchers Reimagined) Package Name: com.weightwatchers.mobile Version: 8.13.0 (813000)	WW International, Inc	10,000,000	2	2
Map My Ride GPS Cycling Riding Package Name: com.mapmyride.android2 Version: 20.8.1 (20080100)	MapMyFitness, Inc.	5,000,000	2	2
Pill Reminder & Medication Tracker - Medisafe Package Name: com.medisafe.android.client Version: 8.83.09320 (9320)	Medisafe®	1,000,000	3	2
Pregnancy & Baby Tracker Package Name: com.wfe.view Version: 4.14 (185)	What to Expect	1,000,000	4	2
Zero - Fasting Tracker Package Name: com.zerofasting.zero Version: 1.7.5 (307)	Big Sky Health, Inc.	1,000,000	2	2
Anytime Fitness Package Name: com.anytimefitness.app Version: 2.10.0 (20631)	Anytime Fitness, LLC	500,000	2	2
F45 Training Package Name: com.fitnessmobileapps.f45training Version: 4.3.2 (430200)	Branded Apps by MINDBODY	100,000	2	2
Qantas Wellbeing Package Name: com.qantas.assure Version: 3.7.1 (375)	Qantas Airways Limited	100,000	2	2
Quit Now: My QuitBuddy Package Name: com.theprojectfactory.quitbuddy Version: 2.6 (26)	ANPHA	100,000	2	2
Appointuit Package Name: com.sibers.appointuit Version: 1.7.5 (20)	Appointuit Pty Ltd	100,000	3	2
Samsung Health Package Name: com.sec.android.app.shealth Version: 6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000	4	1
Period Tracker - Period Calendar Ovulation Tracker Package Name: com.popularapp.periodcalendar Version: 1.710.211 (211)	Simple Design Ltd.	100,000,000	1	1
Six Pack in 30 Days - Abs Workout Package Name: sixpack.sixpackabs.absworkout Version: 1.0.21 (25)	Leap Fitness Group	50,000,000	1	1
Arm Workout - Biceps Exercise	Leap Fitness Group (Table Continues)	10,000,000	2	1

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
Package Name: armwork- out.armworkoutformen.armexercises Version: 1.0.11 (11) Period Tracker Package Name: com.period.tracker.lite Version: 11.6.1 (110)	GP International LLC	10,000,000	2	1
Lifelog Package Name: com.sonymobile.lifelog Version: 4.0.A.0.28 (8388636)	Sony Mobile Communications	10,000,000	1	1
LG Health Package Name: com.lge.lifetracker Version: 5.50.4 (2141050040)	LG Electronics, Inc.	10,000,000	1	1
Bluelight Filter for Eye Care - Auto screen filter Package Name: jp.ne.hardyinfinity.bluelightfilter.free Version: 3.5.1 (2053050190)	Hardy-infinity	10,000,000	1	1
Pedometer - Step Counter Free & Calorie Burner Package Name: pedome- ter.stepcounter.calorieburner.pedometerforwalking Version: 2.0.0 (30)	Simple Design Ltd.	10,000,000	1	1
Lose Belly Fat at Home - Lose Weight Flat Stomach Package Name: losebelly- fat.flatstomach.absworkout.fatburning Version: 1.3.0 (30)	Leap Fitness Group	10,000,000	1	1
Stretching Exercises at Home -Flexibility Training Package Name: stretching.stretch.exercises.back Version: 1.1.4 (26)	Leap Fitness Group	5,000,000	1	1
Smiling Mind Package Name: com.smilingmind.app Version: 3.8.0 (1588907201)	Smiling Mind	500,000	1	1
Waking Up: A Meditation Course Package Name: org.wakingup.android Version: 1.5.53 (168)	Waking Up LLC	500,000	2	1
HotDoc Package Name: au.com.hotdoc.android.hotdoc Version: 2.219.0 (41900)	HotDoc Online Pty Ltd	500,000	1	1
The Chemist Warehouse App Package Name: au.com.cwretailservices.cwapp Version: 1.9.0 (120)	CW Retail Services	100,000	1	1
F45 Challenge Package Name: com.f45training.challenge Version: 2.1.9 (72)	F45 Training	100,000	1	1
My Medibank (Table Continues)	Medibank Private Limited	100,000	1	1

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
Package Name: au.com.medibank.phs Version: 4.10.1 (2406)				
Donate Blood Package Name: au.com.donateblood.donorapp.prod Version: 2.3.3 (1420)	Australian Red Cross Lifeblood	100,000	1	1
PhysiApp® Package Name: com.physitrack.physiapp Version: 1.8.9 (354)	Physitrack Limited	100,000	1	1
Australian Calorie Counter - Easy Diet Diary Package Name: au.com.xyris.eddflutter Version: 6.0.28 (343)	Xyris Software	50,000	1	1
Oura Package Name: com.ouraring.oura Version: 3.0.1 (44000)	Oura Health Ltd	50,000	1	1
GP4Me Package Name: au.com.hotdoc.android.ipn Version: 2.216.0 (41600)	HotDoc Online Pty Ltd	50,000	1	1
HaloGP Package Name: au.com.hotdoc.android.primary Version: 2.216.0 (41600)	HotDoc Online Pty Ltd	50,000	1	1
AIA Vitality Australia Package Name: com.vitality.aia.au Version: 3.4.904 (904)	AIA Australia	10,000	1	1
Tunstall myCareTrack Package Name: au.com.tunstallhealthcare.mycaretrack Version: 1.5.7 (1522114200)	Tunstall	100	1	1
Huawei Health Package Name: com.huawei.health Version: 10.0.5.332 (1000055332)	Huawei Internet Service	100,000,000	0	0
Google Fit: Health and Activity Tracking Package Name: com.google.android.apps.fitness Version: 2.31.22-130 (2023122130)	Google LLC	50,000,000	0	0
Home Workout - No Equipment Package Name: homework- out.homeworkouts.noequipment Version: 1.0.44 (44)	Leap Fitness Group	50,000,000	0	0
Twilight - Blue light filter for better sleep Package Name: com.urbandroid.lux Version: 11.2 (363)	Urbandroid (Petr Nálezka)	10,000,000	0	0
Step Counter - Pedometer Free & Calorie Counter Package Name: pedome- ter.steptracker.calorieburner.stepcounter	Leap Fitness Group	10,000,000	0	0

(Table Continues)

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
Version: 1.1.1 (61) Pedometer - Step Counter Package Name: com.tayu.tau.pedometer Version: 5.33 (56)	ITO Technologies, Inc.	10,000,000	0	0
Monitor Your Weight Package Name: monitoryourweight.bustan.net Version: 4.9.9.9 (4999)	Husain Al-Bustan	10,000,000	0	0
LOSE Weight App for Men - Weight Loss in 30 Days Package Name: menloseweight.loseweightappformen.weightlossformen Version: 1.0.9 (19)	Leap Fitness Group	10,000,000	0	0
Garmin Connect™ Package Name: com.garmin.android.apps.connectmobile Version: 4.29 (5373)	Garmin	10,000,000	0	0
Blue Light Filter - Night Mode, Night Shift Package Name: com.eyefilter.nightmode.bluelightfilter Version: 1.4.7N (73)	Leap Fitness Group	10,000,000	0	0
Women Workout at Home - Female Fitness Package Name: women.workout.female.fitness Version: 1.1.9 (25)	Leap Fitness Group	10,000,000	0	0
Interval Timer Package Name: cc.dreamspark.intervaltimer Version: 2.1.1 (210100)	dreamspark	1,000,000	0	0
Heart Rate Monitor Package Name: com.repsi.heartrate Version: 3.5 (35)	REPS	1,000,000	0	0
Blue Light Filter & Night Mode - Night Shift Package Name: com.ascendik.eyeshield Version: 3.11 (311)	Ascendik	1,000,000	0	0
Tabata Timer: Interval Timer Workout Timer HIIT Package Name: com.evgeniysharafan.tabatatimer Version: 5.2.1 (502001)	Eugene Sharafan	1,000,000	0	0
Pregnancy Week By Week Package Name: com.easymobs.pregnancy Version: 1.2.46 (76)	Amila	1,000,000	0	0
Express Plus Medicare Package Name: au.gov.dhs.expressplus.medicare Version: 2.3.0 (65)	Services Australia	1,000,000	0	0
Health Mate - Total Health Tracking Package Name: com.withings.wiscale2 Version: 4.9.1 (4090101)	Withings	1,000,000	0	0
vívofit jr.	Garmin (Table Continues)	500,000	0	0

Table 20 (Continued)

App	Developer	Installs	Recipients	
			Hostnames	Companies
Package Name: com.garmin.android.apps.vivokid Version: 4.3 (194) Coronavirus Australia	DTA App Developer	500,000	0	0
Package Name: au.gov.health.covid19 Version: 1.0.4 (13) 13SICK, National Home Doctor	National Home Doctor Service	100,000	0	0
Package Name: com.hds.homedoctor2 Version: 5.9.7 (592) My OSHC Assistant	Allianz Global Assistance - Australia	100,000	0	0
Package Name: com.aga.oshc.mobile Version: 3.2 (28) HCF My Membership	HCF Australia	100,000	0	0
Package Name: au.com.hcf.hcf Version: 6.0.5 (2004203) Myzone®	MYZONE	100,000	0	0
Package Name: com.myzone.myzoneble Version: 2.32.6 (773) MedAdvisor	MedAdvisor	100,000	0	0
Package Name: medadvisor.main Version: 5.3.2 (80) myBupa	Bupa Australia	100,000	0	0
Package Name: bupa.ProviderFinder Version: 2.10.1 (52) nib Health Insurance	nib Health Insurance	100,000	0	0
Package Name: au.com.nib Version: 7.2.9 (2065) Kubofit	Fitness Lifestyle Group	10,000	0	0
Package Name: com.flg.kubofitapp Version: 2.1.0-2373 (1068) CareMonkey	CareMonkey	10,000	0	0
Package Name: com.PeakConnection.CareMonkey Version: 4.7.35 (40735) HeartBug	HeartBug	1,000	0	0
Package Name: au.com.heartbug.app Version: 2.2.3 (31)				

B.1.4 Popular Apps Transmitting Each Data Type

For each of these data types, Table 21 lists the top 5 most popular apps that we observed transmitting them during testing.⁹²

Table 21: The top 5 Health apps that we detected transmitting each data type during the testing period.

Data Type	Top 5 Apps	Developer	# of Installs
AAID	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Period Tracker - Period Calendar Ovulation Tracker (com.popularapp.periodcalendar), v1.710.211 (211)	Simple Design Ltd.	100,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Six Pack in 30 Days - Abs Workout (sixpack.sixpackabs.absworkout), v1.0.21 (25)	Leap Fitness Group	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
Android ID	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
	Calorie Counter - MyFitnessPal (com.myfitnesspal.android), v20.7.0 (14675)	MyFitnessPal, Inc.	50,000,000
	Flo Period tracker, Ovulation & Pregnancy tracker (org.iggymedia.periodtracker), v4.48.1 (44801)	Flo Health, Inc.	50,000,000
Email	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
	Strava: Track Running, Cycling & Swimming (com.strava), v149.10 (1213397)	Strava Inc.	10,000,000
	Clue Period Tracker, Ovulation & Cycle Calendar (com.clue.android), v19.1 (2858)	Clue Period Tracker by BioWink	10,000,000
	Lifelog (com.sonymobile.lifelog), v4.0.A.0.28 (8388636)	Sony Mobile Communications	10,000,000
	LG Health	LG Electronics, Inc.	10,000,000

(Table Continues)

⁹²Popularity is determined by the number of reported installs in the Google Play Store.

Table 21 (Continued)

Data Type	Top 5 Apps	Developer	# of Installs
	(com.lge.lifetracker), v5.50.4 (2141050040)		
Name	Strava: Track Running, Cycling & Swimming (com.strava), v149.10 (1213397)	Strava Inc.	10,000,000
	Clue Period Tracker, Ovulation & Cycle Calendar (com.clue.android), v19.1 (2858)	Clue Period Tracker by BioWink	10,000,000
	Lifelog (com.sonymobile.lifelog), v4.0.A.0.28 (8388636)	Sony Mobile Communications	10,000,000
	Lifesum - Diet Plan, Macro Calculator & Food Diary (com.sillens.shapeupclub), v7.8.0 (361)	Lifesum	10,000,000
	Relax Melodies: Sleep Sounds (ipnossoft.rma.free), v10.5.2 (9757)	Ipnos Software	10,000,000
GPS Location	Run with Map My Run (com.mapmyrun.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	10,000,000
	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000
	Walk with Map My Walk (com.mapmywalk.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	5,000,000
	AllTrails: Hiking, Running & Mountain Bike Trails (com.alltrails.alltrails), v11.1.1 (7829)	AllTrails, LLC	5,000,000
	Geocaching@ (com.groundspeak.geocaching.intro), v8.22.0 (1081)	Groundspeak Inc.	5,000,000
Coarse Location	Run with Map My Run (com.mapmyrun.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	10,000,000
	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000
	Walk with Map My Walk (com.mapmywalk.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	5,000,000
	AllTrails: Hiking, Running & Mountain Bike Trails (com.alltrails.alltrails), v11.1.1 (7829)	AllTrails, LLC	5,000,000
	Geocaching@ (com.groundspeak.geocaching.intro), v8.22.0 (1081)	Groundspeak Inc.	5,000,000
WiFi BSSID	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	C25K@ - 5K Running Trainer (com.c25k), v143.51 (232)	Zen Labs Fitness	1,000,000

(Table Continues)

Table 21 (Continued)

Data Type	Top 5 Apps	Developer	# of Installs
WiFi SSID	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	C25K® - 5K Running Trainer (com.c25k), v143.51 (232)	Zen Labs Fitness	1,000,000
WiFi MAC	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000
BT Name	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000

Table 22 lists the 5 most popular Health apps that transmitted the most data types during the testing period, whereas Table 23 lists the 5 most popular Health apps that transmitted the fewest data types during the testing period.

Top 5 Apps	Developer	# of Installs	Data Types
C25K® - 5K Running Trainer (com.c25k), v143.51 (232)	Zen Labs Fitness	1,000,000	8
Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000	6
Geocaching® (com.groundspeak.geocaching.intro), v8.22.0 (1081)	Groundspeak Inc.	5,000,000	6
Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000	5
Zero - Fasting Tracker (com.zerofasting.zero), v1.7.5 (307)	Big Sky Health, Inc.	1,000,000	5

Table 22: The top 5 Health apps that transmitted the most data types during testing.

Top 5 Apps	Developer	# of Installs	Data Types
Huawei Health (com.huawei.health), v10.0.5.332 (1000055332)	Huawei Internet Service	100,000,000	0
Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	50,000,000	0
Home Workout - No Equipment (homeworkout.homeworkouts.noequipment), v1.0.44 (44)	Leap Fitness Group	50,000,000	0
Twilight - Blue light filter for better sleep (com.urbandroid.lux), v11.2 (363)	Urbandroid (Petr Nálezka)	10,000,000	0
Step Counter - Pedometer Free & Calorie Counter (pedometer.steptracker.calorieburner.stepcounter), v1.1.1 (61)	Leap Fitness Group	10,000,000	0

Table 23: The top 5 Health apps that transmitted the fewest data types during testing.

B.2 App Permissions

Apps in the Health category requested the dangerous permissions listed in Table 24.⁹³

Data Type	# of Apps	(% of Apps)
WRITE_EXTERNAL_STORAGE	69	(67.0%)
READ_EXTERNAL_STORAGE	57	(55.3%)
ACCESS_FINE_LOCATION	56	(54.4%)
CAMERA	45	(43.7%)
ACCESS_COARSE_LOCATION	40	(38.8%)
GET_ACCOUNTS	38	(36.9%)
READ_PHONE_STATE	28	(27.2%)
READ_CONTACTS	20	(19.4%)
RECORD_AUDIO	16	(15.5%)
ACTIVITY_RECOGNITION	12	(11.7%)
CALL_PHONE	12	(11.7%)
READ_CALENDAR	11	(10.7%)
ACCESS_BACKGROUND_LOCATION	9	(8.7%)
WRITE_CALENDAR	9	(8.7%)
READ_CALL_LOG	5	(4.9%)
BODY_SENSORS	3	(2.9%)
ANSWER_PHONE_CALLS	3	(2.9%)
RECEIVE_SMS	2	(1.9%)
SEND_SMS	2	(1.9%)
ACCESS_MEDIA_LOCATION	1	(1.0%)
PROCESS_OUTGOING_CALLS	1	(1.0%)

Table 24: Dangerous permissions requested by apps in the Health category.

⁹³For an explanation of dangerous permissions, see Section 4.3.

B.2.1 Popular Apps Requesting Dangerous Permissions

For each of these permissions, Table 25 lists the top 5 most popular apps that we observed requesting dangerous permissions during testing.⁹⁴

Table 25: The 5 most popular Health apps that requested each dangerous permission.

Permission	Top 5 Apps	Developer	# of Installs
WRITE_EXTERNAL_STORAGE	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Period Tracker - Period Calendar Ovulation Tracker (com.popularapp.periodcalendar), v1.710.211 (211)	Simple Design Ltd.	100,000,000
	Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	50,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Home Workout - No Equipment (homeworkout.homeworkouts.noequipment), v1.0.44 (44)	Leap Fitness Group	50,000,000
READ_EXTERNAL_STORAGE	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Period Tracker - Period Calendar Ovulation Tracker (com.popularapp.periodcalendar), v1.710.211 (211)	Simple Design Ltd.	100,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Six Pack in 30 Days - Abs Workout (sixpack.sixpackabs.absworkout), v1.0.21 (25)	Leap Fitness Group	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
ACCESS_FINE_LOCATION	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	50,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
	Calorie Counter - MyFitnessPal	MyFitnessPal, Inc.	50,000,000

(Table Continues)

⁹⁴Popularity is determined by the number of reported installs in the Google Play Store.

Table 25 (Continued)

Permission	Top 5 Apps	Developer	# of Installs
	(com.myfitnesspal.android), v20.7.0 (14675)		
CAMERA			
	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
	Calorie Counter - MyFitnessPal (com.myfitnesspal.android), v20.7.0 (14675)	MyFitnessPal, Inc.	50,000,000
	Run with Map My Run (com.mapmyrun.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	10,000,000
ACCESS_COARSE_LOCATION			
	Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	50,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
	Calorie Counter - MyFitnessPal (com.myfitnesspal.android), v20.7.0 (14675)	MyFitnessPal, Inc.	50,000,000
	Twilight a Blue light filter for better sleep (com.urbandroid.lux), v11.2 (363)	Urbandroid (Petr Nálezka)	10,000,000
GET_ACCOUNTS			
	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Period Tracker - Period Calendar Ovulation Tracker (com.popularapp.periodcalendar), v1.710.211 (211)	Simple Design Ltd.	100,000,000
	Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	50,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
READ_PHONE_STATE			
	Huawei Health (com.huawei.health), v10.0.5.332 (1000055332)	Huawei Internet Service	100,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Calm - Meditate, Sleep, Relax	Calm.com, Inc.	10,000,000

(Table Continues)

Table 25 (Continued)

Permission	Top 5 Apps	Developer	# of Installs
	(com.calm.android), v4.25.1 (4120062)		
	Run with Map My Run (com.mapmyrun.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	10,000,000
	Walking & Running Pedometer for Health & Weight (cc.pacer.androidapp), vp7.4.2 (2020041700)	Pacer Health	10,000,000
READ_CONTACTS			
	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Calorie Counter - MyFitnessPal (com.myfitnesspal.android), v20.7.0 (14675)	MyFitnessPal, Inc.	50,000,000
	Strava: Track Running, Cycling & Swimming (com.strava), v149.10 (1213397)	Strava Inc.	10,000,000
	Sweatcoin —It Pays To #StayHome (in.sweatco.app), v28.1 (1047)	Sweatco Ltd	10,000,000
RECORD_AUDIO			
	Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	1,000,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	50,000,000
	Nike Run Club (com.nike.plusgps), v3.7.1 (1715881210)	Nike, Inc.	10,000,000
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
ACTIVITY_RECOGNITION			
	Calorie Counter - MyFitnessPal (com.myfitnesspal.android), v20.7.0 (14675)	MyFitnessPal, Inc.	50,000,000
	Strava: Track Running, Cycling & Swimming (com.strava), v149.10 (1213397)	Strava Inc.	10,000,000
	Sweatcoin —It Pays To #StayHome (in.sweatco.app), v28.1 (1047)	Sweatco Ltd	10,000,000
	Step Counter - Pedometer Free & Calorie Counter (pedometer.steptracker.calorieburner.stepcounter), v1.1.1 (61)	Leap Fitness Group	10,000,000
	Calorie Counter by Lose It! for Diet & Weight Loss (com.fitnow.loseit), v12.3.103 (11658)	FitNow, Inc.	10,000,000
CALL_PHONE			
	Mi Fit	Anhui Huami Information Technology Co.,Ltd.	50,000,000

(Table Continues)

Table 25 (Continued)

Permission	Top 5 Apps	Developer	# of Installs
	(com.xiaomi.hm.health), v4.1.0 (50300)		
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
	Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	10,000,000
	WW (Weight Watchers Reimagined) (com.weightwatchers.mobile), v8.13.0 (813000)	WW International, Inc	10,000,000
	The Chemist Warehouse App (au.com.cwretailservices.cwapp), v1.9.0 (120)	CW Retail Services	100,000
READ_CALENDAR			
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
	Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	10,000,000
	Headspace: Meditation & Sleep (com.getsomeheadspace.android), v3.57.0 (62975)	Headspace for Meditation, Mindfulness and Sleep	10,000,000
	Mindbody: Fitness & Workout App (com.mindbodyonline.connect), v6.9.1 (16300)	MINDBODY Inc	1,000,000
	Pill Reminder & Medication Tracker - Medisafe (com.medisafe.android.client), v8.83.09320 (9320)	Medisafe®	1,000,000
ACCESS_BACKGROUND_LOCATION			
	Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	50,000,000
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Sweatcoin —It Pays To #StayHome (in.sweatco.app), v28.1 (1047)	Sweatco Ltd	10,000,000
	Step Counter - Pedometer Free & Calorie Counter (pedometer.steptracker.calorieburner.stepcounter), v1.1.1 (61)	Leap Fitness Group	10,000,000
	Pill Reminder & Medication Tracker - Medisafe (com.medisafe.android.client), v8.83.09320 (9320)	Medisafe®	1,000,000
WRITE_CALENDAR			
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
	Headspace: Meditation & Sleep (com.getsomeheadspace.android), v3.57.0 (62975)	Headspace for Meditation, Mindfulness and Sleep	10,000,000
	Mindbody: Fitness & Workout App (com.mindbodyonline.connect), v6.9.1 (16300)	MINDBODY Inc	1,000,000
	Pill Reminder & Medication Tracker - Medisafe (com.medisafe.android.client), v8.83.09320 (9320)	Medisafe®	1,000,000

(Table Continues)

Table 25 (Continued)

Permission	Top 5 Apps	Developer	# of Installs
	HealthEngine (com.healthengine.android), v6.12.0 (6092)	HealthEngine Pty Ltd	500,000
READ_CALL_LOG			
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
	Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	10,000,000
	Health Mate - Total Health Tracking (com.withings.wiscale2), v4.9.1 (4090101)	Withings	1,000,000
BODY_SENSORS			
	Strava: Track Running, Cycling & Swimming (com.strava), v149.10 (1213397)	Strava Inc.	10,000,000
	LG Health (com.lge.lifetracker), v5.50.4 (2141050040)	LG Electronics, Inc.	10,000,000
	AIA Vitality Australia (com.vitality.aia.au), v3.4.904 (904)	AIA Australia	10,000
ANSWER_PHONE_CALLS			
	Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
	Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	10,000,000
RECEIVE_SMS			
	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000
	Health Mate - Total Health Tracking (com.withings.wiscale2), v4.9.1 (4090101)	Withings	1,000,000
SEND_SMS			
	Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000
	Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	10,000,000
ACCESS_MEDIA_LOCATION			
	Strava: Track Running, Cycling & Swimming (Table Continues)	Strava Inc.	10,000,000

Table 25 (Continued)

Permission	Top 5 Apps	Developer	# of Installs
	(com.strava), v149.10 (1213397)		
PROCESS_OUTGOING_CALLS	Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000

Table 26 lists the 5 most popular Health apps that requested the most permissions, whereas Table 27 lists the 5 most popular Health apps that requested the fewest permissions.

Top 5 Apps	Developer	# of Installs	Permissions
Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	10,000,000	34
Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	10,000,000	32
Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	50,000,000	30
Nike Run Club (com.nike.plusgps), v3.7.1 (1715881210)	Nike, Inc.	10,000,000	27
Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	10,000,000	25

Table 26: The 5 most popular Health apps that requested the most permissions.

Top 5 Apps	Developer	# of Installs	Permissions
Sleep Sounds (net.metapps.sleepsounds), v4.5.3.RC-Android-Free(69) (69)	Sound Sleep - Relaxing Sounds and White Noise	5,000,000	4
Huawei Health (com.huawei.health), v10.0.5.332 (1000055332)	Huawei Internet Service	100,000,000	5
Pedometer - Step Counter (com.tayu.tau.pedometer), v5.33 (56)	ITO Technologies, Inc.	10,000,000	5
Interval Timer (cc.dreamspark.intervaltimer), v2.1.1 (210100)	dreamspark	1,000,000	5
Heart Rate Monitor (com.repsi.hearttrate), v3.5 (35)	REPS	1,000,000	5

Table 27: The 5 most popular Health apps that requested the least number of permissions.

B.2.2 Permission Usage

While the previous subsection depicted the dangerous permissions *requested* by the apps that were tested, Table 28 lists the Health apps based on the dangerous permissions that were observed being *used* during the testing period.

Table 28: Health apps based on total number of permissions requested, the number of those that are considered “dangerous,” and the percentage of those dangerous permissions that were used during testing.

Top 5 Apps	Developer	# Requested	# Dangerous	% Dangerous Used
Garmin Connect™ (com.garmin.android.apps.connectmobile), v4.29 (5373)	Garmin	34	13	0.0
Fitbit (com.fitbit.FitbitMobile), v3.20 (20243498)	Fitbit, Inc.	32	15	0.0
Mi Fit (com.xiaomi.hm.health), v4.1.0 (50300)	Anhui Huami Information Technology Co.,Ltd.	30	13	15.4
Nike Run Club (com.nike.plusgps), v3.7.1 (1715881210)	Nike, Inc.	27	8	37.5
Yoho Sports (com.uthink.ring), v20.35.69 (412)	mCube Inc.	25	10	40.0
Myzone® (com.myzone.myzoneble), v2.32.6 (773)	MYZONE	24	12	0.0
Samsung Health (com.sec.android.app.shealth), v6.9.1.017 (6091017)	Samsung Electronics Co., Ltd.	24	7	0.0
WW (Weight Watchers Reimagined) (com.weightwatchers.mobile), v8.13.0 (813000)	WW International, Inc	23	9	11.1
adidas Running App by Runtastic - Running Tracker (com.runtastic.android), v11.1 (202005081)	Runtastic	22	7	0.0
Health Mate - Total Health Tracking (com.withings.wiscale2), v4.9.1 (4090101)	Withings	22	12	0.0
Calorie Counter - MyFitnessPal (com.myfitnesspal.android), v20.7.0 (14675)	MyFitnessPal, Inc.	22	8	0.0
LG Health (com.lge.lifetracker), v5.50.4 (2141050040)	LG Electronics, Inc.	22	7	57.1
Strava: Track Running, Cycling & Swimming (com.strava), v149.10 (1213397)	Strava Inc.	20	8	0.0
Pill Reminder & Medication Tracker - Medisafe (com.medisafe.android.client), v8.83.09320 (9320)	Medisafe®	19	9	0.0
MedAdvisor	MedAdvisor	18	8	25.0

(Table Continues)

Table 28 (Continued)

Top 5 Apps	Developer	# Requested	# Dangerous	% Dangerous Used
(medadvisor.main), v5.3.2 (80)				
Map My Ride GPS Cycling Riding (com.mapmyride.android2), v20.8.1 (20080100)	MapMyFitness, Inc.	17	7	0.0
Run with Map My Run (com.mapmyrun.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	17	7	28.6
Walk with Map My Walk (com.mapmywalk.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	17	7	28.6
C25K® - 5K Running Trainer (com.c25k), v143.51 (232)	Zen Labs Fitness	17	7	28.6
Map My Fitness Workout Trainer (com.mapmyfitness.android2), v20.9.0 (20090000)	MapMyFitness, Inc.	17	7	28.6
Google Fit: Health and Activity Tracking (com.google.android.apps.fitness), v2.31.22-130 (2023122130)	Google LLC	16	5	0.0
Pregnancy & Baby Tracker (com.wte.view), v4.14 (185)	What to Expect	16	4	0.0
vivofit jr. (com.garmin.android.apps.vivokid), v4.3 (194)	Garmin	15	5	0.0
Walking & Running Pedometer for Health & Weight (cc.pacer.androidapp), vp7.4.2 (2020041700)	Pacer Health	15	6	0.0
Anytime Fitness (com.anytimefitness.app), v2.10.0 (20631)	Anytime Fitness, LLC	15	6	0.0
Donate Blood (au.com.donateblood.donorapp.prod), v2.3.3 (1420)	Australian Red Cross Lifeblood	15	7	0.0
Kubofit (com.flg.kubofitapp), v2.1.0-2373 (1068)	Fitness Lifestyle Group	15	6	16.7
The Chemist Warehouse App (au.com.cwretailservices.cwapp), v1.9.0 (120)	CW Retail Services	14	6	0.0
Step Counter - Pedometer Free & Calorie Counter (pedometer.steptracker.calorieburner.stepcounter), v1.1.1 (61)	Leap Fitness Group	14	5	0.0
JEFIT Workout Tracker, Weight Lifting, Gym Log App (je.fit), v10.52 (314)	Jefit Inc.	14	6	0.0
Qantas Wellbeing (com.qantas.assure), v3.7.1 (375)	Qantas Airways Limited	14	7	0.0
myBupa (bupa.ProviderFinder), v2.10.1 (52)	Bupa Australia	14	5	0.0
Calorie Counter by Lose It! for Diet & Weight Loss (com.fitnow.loseit), v12.3.103 (11658)	FitNow, Inc.	14	5	20.0
HealthEngine	HealthEngine Pty Ltd	13	7	0.0

(Table Continues)

Table 28 (Continued)

Top 5 Apps	Developer	# Requested	# Dangerous	% Dangerous Used
(com.healthengine.android), v6.12.0 (6092)				
Clue Period Tracker, Ovulation & Cycle Calendar (com.clue.android), v19.1 (2858)	Clue Period Tracker by BioWink	13	2	0.0
Sweatcoin —It Pays To #StayHome (in.sweatco.app), v28.1 (1047)	Sweatco Ltd	13	4	0.0
Smiling Mind (com.smilingmind.app), v3.8.0 (1588907201)	Smiling Mind	13	1	0.0
AIA Vitality Australia (com.vitality.aia.au), v3.4.904 (904)	AIA Australia	13	7	0.0
My OSHC Assistant (com.aga.oshc.mobile), v3.2 (28)	Allianz Global Assistance - Australia	13	6	16.7
Zero - Fasting Tracker (com.zerofasting.zero), v1.7.5 (307)	Big Sky Health, Inc.	13	6	33.3
Freeletics Training Coach –Bodyweight & Mindset (com.freeletics.lite), v6.17.0 (346884)	Freeletics	13	5	40.0
Calm - Meditate, Sleep, Relax (com.calm.android), v4.25.1 (4120062)	Calm.com, Inc.	12	3	0.0
Mindbody: Fitness & Workout App (com.mindbodyonline.connect), v6.9.1 (16300)	MINDBODY Inc	12	6	0.0
Oura (com.ouraring.oura), v3.0.1 (44000)	Oura Health Ltd	12	5	0.0
Headspace: Meditation & Sleep (com.getsomeheadspace.android), v3.57.0 (62975)	Headspace for Meditation, Mindfulness and Sleep	12	6	0.0
My Medibank (au.com.medibank.phs), v4.10.1 (2406)	Medibank Private Limited	12	4	0.0
Runkeeper - GPS Track Run Walk (com.fitnesskeeper.runkeeper.pro), v10.6.3 (8785)	ASICS Digital, Inc.	12	6	16.7
Sleep Cycle: Sleep analysis & Smart alarm clock (com.northcube.sleepcycle), v3.10.0.4578-release (4578)	Sleep Cycle AB	11	3	0.0
Lifelog (com.sonymobile.lifelog), v4.0.A.0.28 (8388636)	Sony Mobile Communications	11	4	0.0
Express Plus Medicare (au.gov.dhs.expressplus.medicare), v2.3.0 (65)	Services Australia	11	4	0.0
Relax Melodies: Sleep Sounds (ipnossoft.rma.free), v10.5.2 (9757)	Ipnos Software	11	2	0.0
HCF My Membership (au.com.hcf.hcf), v6.0.5 (2004203)	HCF Australia	11	5	0.0
Quit Now: My QuitBuddy	ANPHA	11	5	0.0

(Table Continues)

Table 28 (Continued)

Top 5 Apps	Developer	# Requested	# Dangerous	% Dangerous Used
(com.theprojectfactory.quitbuddy), v2.6 (26)				
Blue Light Filter - Night Mode, Night Shift (com.eyefilter.nightmode.bluelightfilter), v1.4.7N (73)	Leap Fitness Group	11	1	0.0
PhysiApp® (com.physitrack.physiapp), v1.8.9 (354)	Physitrack Limited	11	3	0.0
AllTrails: Hiking, Running & Mountain Bike Trails (com.alltrails.alltrails), v11.1.1 (7829)	AllTrails, LLC	11	4	25.0
Pedometer - Step Counter Free & Calorie Burner (pedometer.stepcounter.calorieburner.pedometerforwalking), v2.0.0 (30)	Simple Design Ltd.	11	4	25.0
Insight Timer - Free Meditation App (com.spotlightsix.zentimerlite2), v13.5.28 (628)	Insight Network Inc	10	2	0.0
Lifesum - Diet Plan, Macro Calculator & Food Diary (com.sillens.shapeupclub), v7.8.0 (361)	Lifesum	10	3	0.0
Bluelight Filter for Eye Care - Auto screen filter (jp.ne.hardyinfinity.bluelightfilter.free), v3.5.1 (2053050190)	Hardy-infinity	10	2	0.0
CareMonkey (com.PeakConnection.CareMonkey), v4.7.35 (40735)	CareMonkey	10	3	0.0
Period Tracker, Ovulation Calendar & Fertility app (periodtracker.pregnancy.ovulationtracker), v1.47.49 (49)	Leap Fitness Group	10	3	0.0
Waking Up: A Meditation Course (org.wakingup.android), v1.5.53 (168)	Waking Up LLC	10	4	25.0
Twilight ▢ Blue light filter for better sleep (com.urbandroid.lux), v11.2 (363)	Urbandroid (Petr Nálezka)	9	1	0.0
Period Tracker - Period Calendar Ovulation Tracker (com.popularapp.periodcalendar), v1.710.211 (211)	Simple Design Ltd.	9	3	0.0
Six Pack in 30 Days - Abs Workout (sixpack.sixpackabs.absworkout), v1.0.21 (25)	Leap Fitness Group	9	2	0.0
13SICK, National Home Doctor (com.hds.homedoctor2), v5.9.7 (592)	National Home Doctor Service	9	3	0.0
Geocaching® (com.groundspeak.geocaching.intro), v8.22.0 (1081)	Groundspeak Inc.	9	3	0.0
Lose Belly Fat at Home - Lose Weight Flat Stomach (losebellyfat.flatstomach.absworkout.fatburning), v1.3.0 (30)	Leap Fitness Group	9	3	0.0
BetterMe: Home Workouts & Diet (com.gen.workoutme), v3.6.8 (364)	BetterMe Limited	9	2	0.0
nib Health Insurance (au.com.nib), v7.2.9 (2065)	nib Health Insurance	9	2	0.0
Fabulous: Self Care	TheFabulous	9	1	0.0

(Table Continues)

Table 28 (Continued)

Top 5 Apps	Developer	# Requested	# Dangerous	% Dangerous Used
(co.thefabulous.app), v3.62 (36202)				
Tunstall myCareTrack (au.com.tunstallhealthcare.mycaretrack), v1.5.7 (1522114200)	Tunstall	9	3	0.0
Carb Manager: Keto Diet Tracker & Macros Counter (com.wombatapps.carbmanager), v6.4.3 (109)	Wombat Apps LLC	9	5	20.0
Appointuit (com.sibers.appointuit), v1.7.5 (20)	Appointuit Pty Ltd	9	5	40.0
F45 Training (com.fitnessmobileapps.f45training), v4.3.2 (430200)	Branded Apps by MINDBODY	8	3	0.0
F45 Challenge (com.f45training.challenge), v2.1.9 (72)	F45 Training	8	2	0.0
Arm Workout - Biceps Exercise (armworkout.armworkoutformen.armexercises), v1.0.11 (11)	Leap Fitness Group	7	2	0.0
Monitor Your Weight (monitoryourweight.bustan.net), v4.9.9.9 (4999)	Husain Al-Bustan	7	2	0.0
Lose Weight App for Men - Weight Loss in 30 Days (menloseweight.loseweightappformen.weightlossformen), v1.0.9 (19)	Leap Fitness Group	7	2	0.0
Stronglifts 5x5 - Weight Lifting & Gym Workout Log (com.stronglifts.app), v2.6.21 (404)	StrongLifts	7	0	0.0
Australian Calorie Counter - Easy Diet Diary (au.com.xyris.eddflutter), v6.0.28 (343)	Xyris Software	7	3	33.3
HotDoc (au.com.hotdoc.android.hotdoc), v2.219.0 (41900)	HotDoc Online Pty Ltd	7	2	50.0
GP4Me (au.com.hotdoc.android.ipn), v2.216.0 (41600)	HotDoc Online Pty Ltd	7	2	50.0
HaloGP (au.com.hotdoc.android.primary), v2.216.0 (41600)	HotDoc Online Pty Ltd	7	2	50.0
Home Workout - No Equipment (homeworkout.homeworkouts.noequipment), v1.0.44 (44)	Leap Fitness Group	6	1	0.0
Period Tracker (com.period.tracker.lite), v11.6.1 (110)	GP International LLC	6	2	0.0
Blue Light Filter & Night Mode - Night Shift (com.ascendik.eyeshield), v3.11 (311)	Ascendik	6	0	0.0
Tabata Timer: Interval Timer Workout Timer HIIT (com.evgeniysharafan.tabatatimer), v5.2.1 (502001)	Eugene Sharafan	6	1	0.0
Sleepa: Relaxing sounds, Sleep (net.relaxio.sleepo), v1.7.3.RC-GP-Free(35) (35)	Sound Sleep - Relaxing Sounds and White Noise	6	0	0.0
Moshi: Sleep and Mindfulness	Mind Candy Ltd	6	0	0.0

(Table Continues)

Table 28 (Continued)

Top 5 Apps	Developer	# Requested	# Dangerous	% Dangerous Used
(com.mindcandy.sleepstories), v4.5.0 (653)				
Stretching Exercises at Home -Flexibility Training (stretching.stretch.exercises.back), v1.1.4 (26)	Leap Fitness Group	6	1	0.0
Flo Period tracker, Ovulation & Pregnancy tracker (org.iggymedia.periodtracker), v4.48.1 (44801)	Flo Health, Inc.	6	0	0.0
Women Workout at Home - Female Fitness (women.workout.female.fitness), v1.1.9 (25)	Leap Fitness Group	6	1	0.0
HeartBug (au.com.heartbug.app), v2.2.3 (31)	HeartBug	6	2	0.0
Interval Timer (cc.dreamspark.intervaltimer), v2.1.1 (210100)	dreamspark	5	0	0.0
Pedometer - Step Counter (com.tayu.tau.pedometer), v5.33 (56)	ITO Technologies, Inc.	5	0	0.0
Heart Rate Monitor (com.repsi.heartrate), v3.5 (35)	REPS	5	1	0.0
Pregnancy Week By Week (com.easymobs.pregnancy), v1.2.46 (76)	Amila	5	0	0.0
Plant Nanny ² - Your Adorable Water Reminder (com.fourdesire.plantnanny2), v2.1.13.1 (58)	Fourdesire	5	0	0.0
Coronavirus Australia (au.gov.health.covid19), v1.0.4 (13)	DTA App Developer	5	2	50.0
Huawei Health (com.huawei.health), v10.0.5.332 (1000055332)	Huawei Internet Service	5	1	100.0
Sleep Sounds (net.metapps.sleepsounds), v4.5.3.RC-Android-Free(69) (69)	Sound Sleep - Relaxing Sounds and White Noise	4	0	0.0

B.3 Third-Party SDKs

We were able to identify 196 SDKs embedded within the 103 Health apps.⁹⁵ We list the 40 most common SDKs in Table 29, along with the number of Health apps in which they were detected.

Table 29: The 40 most common SDKs identified within apps in the Health category.

SDK Name	Parent Company	Category	# of Apps	(% of Apps)
Google Mobile Services	Google	Development Aid Advertisement Mobile Analytics Authentication	96	(93.2%)
Firebase	Google	Development Aid Mobile Analytics Advertisement LBS Utility	91	(88.3%)
Google Gson	Google	Development Aid	69	(67.0%)
Crashlytics	Google	Mobile Analytics	66	(64.1%)
Facebook	Facebook	Social Network Advertisement Mobile Analytics	65	(63.1%)
ZXing ("Zebra Crossing")	ZXing Project	Development Aid	51	(49.5%)
Github	Github	Development Aid	49	(47.6%)
Google Ads	Google	Advertisement	45	(43.7%)
Glide	Bump Technologies	Development Aid	45	(43.7%)
Facebook Login	Facebook	Digital Identity Advertisement Mobile Analytics	44	(42.7%)
Facebook Share	Facebook	Social Network Advertisement Mobile Analytics	42	(40.8%)
picasso	Square Inc.	Development Aid	40	(38.8%)
Google Protocol Buffers	Google	Development Aid	38	(36.9%)

(Table Continues)

⁹⁵For an explanation of SDKs, see Section 4.1.2.

Table 29 (Continued)

SDK Name	Parent Company	Category	# of Apps	(% of Apps)
Google DoubleClick	Google	Advertisement	36	(35.0%)
Google Core Libraries for Java 6+	Google	Development Aid	36	(35.0%)
Google Play	Google Play	App Market	35	(34.0%)
Joda Time	Stephen Colebourne	Development Aid	35	(34.0%)
Apache Common	The Apache Software Founda- tion	Development Aid	35	(34.0%)
Facebook Analytics	Facebook	Mobile Analytics	31	(30.1%)
Facebook Places	Facebook	Map/LBS Advertisement	25	(24.3%)
Google Analytics	Google	Mobile Analytics	22	(21.4%)
Facebook Ads	Facebook	Advertisement	22	(21.4%)
Fasterxml	FasterXML	Utility	22	(21.4%)
Volley HTTP library	Google	Development Aid Networking	19	(18.4%)
OkHttp	OkHttp	Development Aid	18	(17.5%)
Branch	Branch Metrics	Mobile Analytics Advertisement	17	(16.5%)
Amplitude	Amplitude	Mobile Analytics	17	(16.5%)
Google Tag Manager	Google	Mobile Analytics	17	(16.5%)
Google Core Libraries (3rd Party)	Google	Development Aid	16	(15.5%)
JavaX Annotation API	JavaX Annotation API	Utility	16	(15.5%)
AppsFlyer	AppsFlyer	Mobile Analytics AdFraud	16	(15.5%)
SLF4J	SLF4J	Development Aid	15	(14.6%)
Moat	Oracle	Mobile Analytics	15	(14.6%)
Google Maps Utils	Google	Map/LBS	14	(13.6%)
Disk LRU Cache	Jake Wharton	Development Aid	12	(11.7%)
Mono for Android	Mono for Android	Development Aid	12	(11.7%)
myTarget	My.com	Advertisement	12	(11.7%)

(Table Continues)

Table 29 (Continued)

SDK Name	Parent Company	Category	# of Apps	(% of Apps)
		Social Networking		
MoPub	Twitter	Advertisement	11	(10.7%)
getui	getui	Advertisement Mobile Analytics Push Notifications	11	(10.7%)
adjust	Adjust	Mobile Analytics Advertisement	10	(9.7%)

Several of these SDKs included developer tools, which we characterize as SDKs that provide tools and functionality to app developers which are unlikely to be used for the transmission of user information. As a result, we separately present Table 30, which depicts the 40 most common SDKs with developer tools removed, along with the number of Health apps in which they were detected.

Table 30: The 40 most common SDKs identified within apps in the Health category, with developer tools removed.

SDK Name	Parent Company	Category	# of Apps	(% of Apps)
Google Mobile Services	Google	Development Aid Advertisement Mobile Analytics Authentication	96	(93.2%)
Firebase	Google	Development Aid Mobile Analytics Advertisement LBS Utility	91	(88.3%)
Crashlytics	Google	Mobile Analytics	66	(64.1%)
Facebook	Facebook	Social Network Advertisement Mobile Analytics	65	(63.1%)
Google Ads	Google	Advertisement	45	(43.7%)
Facebook Login	Facebook	Digital Identity	44	(42.7%)

(Table Continues)

Table 30 (Continued)

SDK Name	Parent Company	Category	# of Apps	(% of Apps)
		Advertisement Mobile Analytics		
Facebook Share	Facebook	Social Network Advertisement Mobile Analytics	42	(40.8%)
Google DoubleClick	Google	Advertisement	36	(35.0%)
Google Play	Google Play	App Market	35	(34.0%)
Facebook Analytics	Facebook	Mobile Analytics	31	(30.1%)
Facebook Places	Facebook	Map/LBS Advertisement	25	(24.3%)
Google Analytics	Google	Mobile Analytics	22	(21.4%)
Facebook Ads	Facebook	Advertisement	22	(21.4%)
Volley HTTP library	Google	Development Aid Networking	19	(18.4%)
Branch	Branch Metrics	Mobile Analytics Advertisement	17	(16.5%)
Amplitude	Amplitude	Mobile Analytics	17	(16.5%)
Google Tag Manager	Google	Mobile Analytics	17	(16.5%)
AppsFlyer	AppsFlyer	Mobile Analytics AdFraud	16	(15.5%)
Moat	Oracle	Mobile Analytics	15	(14.6%)
Google Maps Utils	Google	Map/LBS	14	(13.6%)
myTarget	My.com	Advertisement Social Networking	12	(11.7%)
MoPub	Twitter	Advertisement	11	(10.7%)
getui	getui	Advertisement Mobile Analytics Push Notifications	11	(10.7%)
adjust	Adjust	Mobile Analytics Advertisement	10	(9.7%)

(Table Continues)

Table 30 (Continued)

SDK Name	Parent Company	Category	# of Apps	(% of Apps)
Tencent Login	Tencent	Social Network	9	(8.7%)
newrelic	New Relic	Mobile Analytics	6	(5.8%)
New Relic	New Relic	Mobile Analytics	6	(5.8%)
Amazon Advertisement	Amazon	Advertisement	6	(5.8%)
Alipay	Alipay	Payment	6	(5.8%)
Tencent Wechat	Tencent	Social Network	6	(5.8%)
Twitter	Twitter	Social Network	6	(5.8%)
Optimizely	Optimizely	Mobile Analytics	6	(5.8%)
Integral Ad Science	Integral Ad Science Inc.	Mobile Analytics Advertisement AdFraud	6	(5.8%)
Bugsnag	Bugsnag	Mobile Analytics	5	(4.9%)
Flurry	Verizon	Mobile Analytics	6	(5.8%)
Segment	Segment	Mobile Analytics	5	(4.9%)
Inmobi	InMobi	Advertisement	5	(4.9%)
MixPanel	Mixpanel	Mobile Analytics	5	(4.9%)
Apptimize	Apptimize	Mobile Analytics	4	(3.9%)
Rubicon Project	Rubicon Project	Advertisement	4	(3.9%)